UNIVERSITY OF CALIFORNIA

BERKELEY • DAVIS • IRVINE • LOS ANGELES • MERCED • RIVERSIDE • SAN DIEGO • SAN FRANCISCO

SANTA BARBARA • SANTA CRUZ

EXECUTIVE VICE PRESIDENT—
CHIEF FINANCIAL OFFICER

OFFICE OF THE PRESIDENT
1111 Franklin Street, 6th Floor
Oakland, California 94607-5200
510/987-9029

April 7, 2020

The Honorable Holly J. Mitchell
Chair, Senate Budget and Fiscal Review Committee
State Capitol
Sacramento, CA 95814

The Honorable Phil Ting
Chair, Assembly Committee on Budget
State Capitol
Sacramento, CA 95814

Ms. Keely Bosler
Director of Finance
State Capitol, Room 1145
Sacramento, CA 95814

Dear Senator Mitchell, Assembly Member Ting, and Director Bosler:

On August 30, 2019 in accordance with Sections 92493 through 92496 of the Education Code, the University of California submitted for your review and approval the University's 2020-21 State Capital Outlay proposal totaling $551.4 million. UC submitted detailed information on the proposal's $300 million *2020-21 UC State Seismic Program* on January 13, 2020. Based on these submissions the Department of Finance issued a preliminary approval for UC's State Capital Outlay proposal on February 14, 2020. With Public Preschool, K-12, and College Health and Safety Bond Act of 2020 (Proposition 13) not passing, the University is requesting some adjustments to its 2020-21 State Capital Outlay proposal.

As originally proposed, the $80 million *2020-21 Planning for Future State Capital Outlay* program would fund preliminary plans for critical high priority State-eligible major capital projects. With the exception of the San Diego campus' Revelle College Seismic project, these projects relied on funding from Proposition 13. Accordingly, the University is proposing the revisions to the 2020-21 State Capital Outlay proposal as discussed as follows.

Berkeley

The University continues to support its request for $6 million of planning funds for an Evans Hall Replacement Building project The replacement of Evans Hall is the campus' largest and most urgent seismic priority and represents over 45 percent of the campus space rated Seismic Level VI. The University submitted three seismic projects to be funded in 2020-21 with State General Funds supported (GF-supported) financing totaling $112.5 million – Durant, Stephens, and Wellman Halls. In addition, the University received approval for the Berkeley campus' University Hall Seismic project for $6.05 million in 2019-20 to be funded with GF-supported financing. While these projects are important, they are not as critical and their programs are not as student-facing as those in Evans Hall. With these factors, UC is withdrawing is 2020-21 submission for Durant, Stephens, and Wellman Halls and cancelling the University Hall project. The resulting $118.55 million would be part of a future 2021-22 State Capital Outlay request to fund the remainder of the Evans Hall project. A Capital Outlay Budget Change Proposal for this project may be found in Attachment 3.

Since there are no designated implementation funds for the remainder of the Hesse-O'Brien Replacement Building project, the University is withdrawing its request for $3 million of planning funds.

Davis

The Unified Teaching Lab, Seismic and Deferred Maintenance project addressed three seismic deficient buildings – Everson Hall, Sprocket Building, and Haring Hall – and addressed significant deferred maintenance in these three buildings and two additional buildings – Wickson Hall and Chemistry Annex Building. UC is proposing to redirect the $12 million of planning funds for this project to support a smaller project that would complete the seismic and critical deferred maintenance for the Sprocket Building only. A Capital Outlay Budget Change Proposal for this project may be found in Attachment 4.

San Diego

The University continues to support its request for $4.5 million of working drawing funds for the Revelle College Seismic Corrections project. This project provides critical seismic corrections to 260,000 gross-square-feet in Mayer and York Halls. The other phases of the project is supported in the *2020-21 UC State Seismic Program*.

Santa Barbara

Since there are no designated implementation funds for the remainder of the New Physics Building project, the University is withdrawing its request for $8 million of planning funds.

The University continues to support its request for $4 million of planning funds for the Chemistry Building Seismic Corrections project. Structural engineers have proposed a scope of work to retrofit the building by excavating and installing new foundations from the interior of the building that rely on novel drilling equipment and construction techniques. The campus needs to evaluate more traditional approaches to seismic retrofit as well. The planning funds would evaluate the feasibility of these alternatives and undertake design to establish a reliable project budget.

Santa Cruz

The University continues to support its request for $12.5 million of planning funds for the Thimann Laboratories Replacement project. Without the funding of Proposition 13, UC is now proposing to construct the replacement facility in two phases. The campus has funded and begun pre-design studies to develop the programmatic scope, schedule, and budget for the first phase building. The University will identify a funding plan for this project after completion of the pre-design effort. The requested planning funding will be utilized only after pre-design work confirms that the first phase can be completed within an identified funding plan. For additional information, a project summary may be found in Attachment 2.

The following table summarizes the requested updates to the *2020-21 Planning for Future State Capital Outlay* and *2020-21 UC State Seismic Program* and includes the Davis campus' Sprocket Building Seismic project.

	State General Funds Supported Financing		
Project	**Previous**	**Change**	**Proposal**
Systemwide – 2020-21 Planning for Future State Capital Outlay			
Berkeley – Evans Hall Replacement Building, Classroom Hub	$6,000,000		$6,000,000
Berkeley – Hesse-O'Brien Replacement Building, Engineering Crossroads	$3,000,000	($3,000,000)	-
Davis – Unified Teaching Lab, Seismic and Deferred Maintenance	$12,000,000	($12,000,000)	-
San Diego – Revelle College (Mayer and York)	$4,500,000		$4,500,000
Santa Barbara – Chemistry Building	$4,000,000		$4,000,000
Santa Barbara – New Physics Building	$8,000,000	($8,000,000)	-
Santa Cruz – Thimann Laboratories Replacement Building	$12,500,000		$12,500,000
Planning funds for detailed studies for up to 1,000 facilities with significant seismic deficiencies	$30,000,000		$30,000,000
Total	**$80,000,000**	**($23,000,00)**	**$57,000,000**
Davis – Sprocket Building Seismic	-	$12,000,000	$12,000,000
Systemwide - 2020-21 UC State Seismic Program			
Berkeley – Durant Hall Seismic	$20,010,000	($20,010,000)	-
Berkeley – Moffitt Library Seismic	$5,327,000		$5,327,000
Berkeley – Stephens Hall	$46,870,000	($46,870,000)	-
Berkeley – Wellman Hall	$43,793,000	($43,793,000)	-
Davis – Jungerman Hall	$12,200,000		$12,200,000
Davis – Mann Lab	$5,800,000		$5,800,000
Davis – Social Sciences and Humanities Building 2	$33,400,000		$33,400,000
Davis – Voohries Hall	$24,200,000		$24,200,000
Davis – Young Hall	$23,800,000		$23,800,000
Irvine – Social Sciences Lecture Hall	$2,261,000		$2,261,000
San Diego – Revelle College (Mayer and York)	$52,158,000		$52,158,000
Santa Barbara – Music Building Unit 1	$15,000,000		$15,000,000
Berkeley and Lawrence National Laboratory – Centennial Bridge	$15,181,000		$15,181,000
Total	**$300,000,000**	**($110,673,000)**	**$189,327,00**

Lastly, the University is requesting an amendment to the phasing for the Los Angeles campus' Public Affairs Building Seismic Improvements project. The working drawings were previously scheduled to begin in May 2020. The campus is now projecting that the phase will begin in July 2020. Since the phase will now start in 2020-21, UC is requesting an amendment to the funding plan to use GF-supported financing of

$1.15 million for working drawings. The $1.15 million of non-State funds originally budgeted for working drawings phase would be directed towards construction – the total project budget remains unchanged.

With these revisions, the University's 2020-21 State Capital Outlay proposal totals $423 million (please refer to Attachment 1). With Proposition 13 not passing, the University continues to be challenged to fund its critical State-eligible capital projects. These proposed adjustments will allow UC to continue its highest priority seismic projects. Your consideration of these amendments to the University's 2020-21 State Capital Outlay request is appreciated and I look forward to discussing this proposal with you. Please let me know if you have any questions.

Sincerely,

Paul Jenny
Interim Executive Vice President-Chief Financial Officer

Attachment

cc: Vice Chair and Members, Senate Budget and Fiscal Review Committee
Vice Chair and Members, Assembly Committee on Budget
The Honorable Anthony Rendon, Speaker of the Assembly
The Honorable Toni Atkins, President pro Tempore of the Senate
The Honorable Marie Waldron, Assembly Minority Leader
The Honorable Shannon Grove, Senate Minority Leader
Mr. Petek, Legislative Analyst
Mr. Constantouros, Principal Fiscal and Policy Analyst, Legislative Analyst's Office
Ms. McGee, Executive Secretary, Legislative Analyst's Office
Mr. Almy, Program Budget Manager, Department of Finance
Mr. Lief, Assistant Program Manager, Department of Finance
Ms. Lukenbill, Principal Program Analyst, Department of Finance
Mr. Katz, Finance Budget Analyst, Department of Finance
Ms. Contreras, Secretary of the Senate
Ms. Sue Parker, Chief Clerk of the Assembly
Ms. Leach, Office of the Chief Clerk of the Assembly
Mr. Martin, Assembly Budget
Ms. Lee, Senate Budget
Ms. McKinney, Senate Republican Fiscal
Ms. Nealon, Assembly Republican Caucus
Indexing Division, Office of Legislative Counsel

President Napolitano
Chief of Staff to the President Kao
Chief Policy Advisor to the President Kao
Associate Vice President & Systemwide Controller Arrivas
Associate Vice President Alcocer
Associate Vice President Flaherty
Interim Executive Director Friedman

ATTACHMENT 1

University of California 2020-21 State Capital Outlay

Project	State General Funds Supported Financing		
	Previous	**Change**	**Proposal**
Los Angeles – Public Affairs Building Seismic Improvements	$25,000,000		$25,000,000
Riverside – School of Medicine Education Building II	$93,600,000		$93,600,000
Systemwide – UC Sacramento Learning Complex	$11,400,000		$11,400,000
Systemwide – 2020-21 Planning for Future State Capital Outlay			
Berkeley – Evans Hall Replacement Building, Classroom Hub	$6,000,000		$6,000,000
Berkeley – Hesse-O'Brien Replacement Building, Engineering Crossroads	$3,000,000	($3,000,000)	-
Davis – Unified Teaching Lab, Seismic and Deferred Maintenance	$12,000,000	($12,000,000)	-
San Diego – Revelle College (Mayer and York)	$4,500,000		$4,500,000
Santa Barbara – Chemistry Building	$4,000,000		$4,000,000
Santa Barbara – New Physics Building	$8,000,000	($8,000,000)	-
Santa Cruz – Thimann Laboratories Replacement Building	$12,500,000		$12,500,000
Planning funds for detailed studies for up to 1,000 facilities with significant seismic deficiencies	$30,000,000		$30,000,000
Total	$80,000,000	($23,000,00)	$57,000,000
Davis – Sprocket Building Seismic	-	$12,000,000	$12,000,000
Systemwide - 2020-21 UC State Seismic Program			
Berkeley – Durant Hall Seismic	$20,010,000	($20,010,000)	-
Berkeley – Moffitt Library Seismic	$5,327,000		$5,327,000
Berkeley – Stephens Hall	$46,870,000	($46,870,000)	-
Berkeley – Wellman Hall	$43,793,000	($43,793,000)	-
Davis – Jungerman Hall	$12,200,000		$12,200,000
Davis – Mann Lab	$5,800,000		$5,800,000
Davis – Social Sciences and Humanities Building 2	$33,400,000		$33,400,000
Davis – Voohries Hall	$24,200,000		$24,200,000
Davis – Young Hall	$23,800,000		$23,800,000
Irvine – Social Sciences Lecture Hall	$2,261,000		$2,261,000
San Diego – Revelle College (Mayer and York)	$52,158,000		$52,158,000
Santa Barbara – Music Building Unit 1	$15,000,000		$15,000,000
Berkeley and Lawrence National Laboratory – Centennial Bridge	$15,181,000		$15,181,000
Total	$300,000,000	($110,673,000)	$189,327,00
Capital Projects Total	**$510,000,000**	**($121,673,000)**	**$388,327,000**
2020-21 Systemwide State Deferred Maintenance Program	$35,000,000		$35,000,000
Total State General Funds Supported Financing	**$545,000000**	**($121,673,000)**	**$423,327,000**

ATTACHMENT 2

Project Summary

Santa Cruz – Thimann Laboratories Seismic Replacement / Interdisciplinary Instruction and Research

The Interdisciplinary Instruction and Research project would have constructed a new building that will provide contemporary, flexible, interdisciplinary laboratory, and interactive teaching-learning spaces to accommodate the existing programs in the seismically deficient Thimann Laboratories building. Given currently available funding opportunities and the commitment to continually improve the excellence of the academic programs, the Santa Cruz campus has determined that the most feasible and cost effective pathway toward resolving this seismic safety issue is to construct a state-of-the-art interdisciplinary and flexible facility in two phases.

The proposed Interdisciplinary Instruction and Research Building Phase 1 project would prioritize student instructional space and research programs would be relocated to other campus facilities to the extent possible. All remaining Thimann Laboratories occupants would be moved as soon as can reasonably be accommodated following completion of phase 1, but in any case no later than 2030. This would be achieved through the construction of the phase 2 project or by other means of decanting.

The requested $12.5 million of funding would be utilized for preliminary plans, to procure services from campus project management staff, design consultants, and other professionals to develop preliminary plan documents including floor plans, elevations, preferred mechanical, structural and other systems, and finishes. Additional tasks or deliverables, such as program verification, environmental analysis, structural calculations, energy reports, environmental impact reports, and cost estimates would also be developed or procured.

STATE OF CALIFORNIA
Capital Outlay Budget Change Proposal (COBCP) - Cover Sheet
DF-151 (REV 07/19)

Fiscal Year	Business Unit	Department	Priority No.
2020-21	6440	University of California	

Budget Request Name	Capital Outlay Program ID	Capital Outlay Project ID *(7 digits. For new projects leave blank)*

Project Title	Project Status and Type
Berkeley – New Academic and Classroom Building Project (Evans Hall Seismic Replacement Project)	Status: ☒ New ☐ Continuing Type: ☒ Major ☐ Minor

Project Category *(Select one)*
☐ CRI *(Critical Infrastructure)* ☐ WSD *(Workload Space Deficiencies)* ☐ ECP *(Enrollment Caseload Population)* ☒ SM (*Seismic)*
☐ FLS *(Fire Life Safety)* ☐ FM *(Facility Modernization)* ☐ PAR *(Public Access Recreation)* ☐ RC *(Resource Conservation)*

Total Request (in thousands)	Phase(s) to be Funded	Estimated Total Project Cost (in thousands)
$**6,000**	P	$123,823

Budget Request Summary
New Academic and Classroom Building Project - $6,000,000 for Preliminary Plans. The project will construct a 124,000 gross square foot academic/classroom building to house approximately 75% of the existing Evans Hall academic programs and replace Evans Hall classroom assignable square footage. Evans Hall is an approximately 284,000 gross square foot structure of 10-stories with a Seismic Performance Rating (SPR) of VI. The new building is the campus's highest seismic priority as Evans Hall represents 45% of the campus's space with a SPR of VI.

The total project costs are estimated at $123,823,000, including partial Preliminary Plans funded in 2017-18 ($1,100,000) and the remainder of Preliminary Plans ($6,000,000), Working Drawings ($5,918,000), and Construction ($110,805,000). The construction amount includes $103,977,000 for the construction contract, $4,763,000 for contingency, and $2,065,000 for architectural and engineering services. Second phase of Preliminary Plans are scheduled to begin in July 2020 and complete in June 2021. Working Drawings are scheduled to begin July 2021 and complete in December 2021. Construction is scheduled to begin in April 2022 and complete in December 2023.

Requires Legislation	Code Section(s) to be Added/Amended/Repealed	CCCI
☐ Yes ☒ No		**6924**

Requires Provisional Language	Budget Package Status
☐ Yes ☒ No	☐ Needed ☒ Not Needed ☐ Existing

Impact on Support Budget

One-Time Costs	☐ Yes	☒ No	Future Costs	☐ Yes	☐ No
Future Savings	☐ Yes	☒ No	Revenue	☐ Yes	☐ No

If proposal affects another department, does other department concur with proposal? ☐ Yes ☐ No
Attach comments of affected department, signed and dated by the department director or designee.

Prepared By	Date	Reviewed By	Date
Colleen Connor *Colleen Connor*	4/7/2020	Dana Santa Cruz *Dana Santa Cruz*	4/7/2020
Department Director	Date	Agency Secretary	Date

Department of Finance Use Only

Principal Program Budget Analyst	Date submitted to the Legislature

Berkeley Capital Strategies
UNIVERSITY OF CALIFORNIA

PROJECT PLANNING GUIDE

NEW ACADEMIC AND CLASSROOM BUILDING PROJECT (EVANS HALL SEISMIC REPLACEMENT PROJECT)

PROJECT #912788

Campus Approval:

April 1, 2020

Marc Fisher
Vice Chancellor – Administration
University of California, Berkeley

Date

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Evans Hall is the fifth largest academic building on the Berkeley campus. Built in c1971, the approximately 284,000 gross square feet (gsf) (155,000 assignable square feet (asf)) reinforced concrete building, with 10-stories and two below grade levels, has a seismic rating of Level VI. Housing approximately 12% of general assignment classrooms and 8% of campus general assignment classroom seats (26 rooms with approximately 930 stations) with over 3,500 daily visits, Evans Hall is by far the most urgent seismic priority at Berkeley for seismic remediation: the building represents over 45% of the campus' seismic problem as measured by space identified with a rating of VI in need of correction. The building is by far the largest building on a square footage basis to be rated VI on the Berkeley campus.

To achieve compliance with the UC Seismic Safety Policy requirements, the Campus proposes to replace the programs housed in Evans Hall in a multi-pronged approach, including replacement of a substantial portion of the existing program space in a new building. The campus identified replacement as the preferred seismic remediation strategy after evaluating a wide range of alternative solutions, including partial and full structural retrofits. Replacement is preferable because it would:

- provide superior levels of seismic safety and building systems performance,
- avoid the significant cost and disruption of relocating the occupants to other space during construction,
- optimize program functions and space utilization for current enrollment levels, and
- provide opportunities to align space allocation with current teaching and learning and work styles.

Evans Hall is also known to have extensive deferred maintenance and life-safety issues, including a lack of automatic fire sprinklers, secondary on-site water/fire pump, inaccessible doorways, and electrical systems at the end of their useful life. Furthermore, Evans Hall features inefficient and inflexible spaces and systems that inhibit instruction and research and that are difficult and expensive to retrofit to support current enrollment with spaces suitable for modern teaching pedagogy. These spaces impair the campus' ability to recruit and retain exceptional students and faculty. A replacement building project would also address these deficiencies.

Proposed Project

The campus proposes a new Classroom and Academic Building of approximately 74,400 assignable square feet (124,000 gross square feet) to permit the relocation of occupants from seismically-poor Evans Hall and to support past enrollment growth. The project provides traditional lecture halls, flexible classrooms, and active learning classrooms that support contemporary teaching pedagogies, and academic space for the departments of Mathematics and Economics. This proposed project (the new academic/classroom building) would house approximately 75% of the existing Evans Hall academic programs and replace the existing Evans Hall classroom assignable square footage assigned as classroom space. The occupants of Evans Hall not relocated to this new building would be located in other campus projects, including the proposed Data Hub building, which would not be funded with state funds. The existing Evans Hall building would be demolished after all occupants have been relocated; the Evans Hall site would be restored as open space until a future project consistent with the campus Long Range Development Plan is proposed.

The campus has evaluated a wide range of alternative solutions for Evans Hall, including partial and full structural retrofits, comprehensive renovation, and replacement. After this analysis, the campus proposes to replace and demolish Evans Hall because replacement buildings are more cost effective for addressing the known seismic issues and shifts in academic program teaching and learning. The campus must also make the highest and best use of limited development sites to provide space for increased enrollment long-term, and by constructing a new building on a vacant site and demolishing the existing building, the campus is able to provide new space without impacting other programs.

The *UC Berkeley 2020 LRDP*, adopted in January 2005, anticipated approximately one million net new gsf on the Campus Park (and 2.2 million gsf net new overall). The campus is currently developing a new LRDP, and this project is being planned to be consistent with the new long-range planning objectives.

Financial Strategy

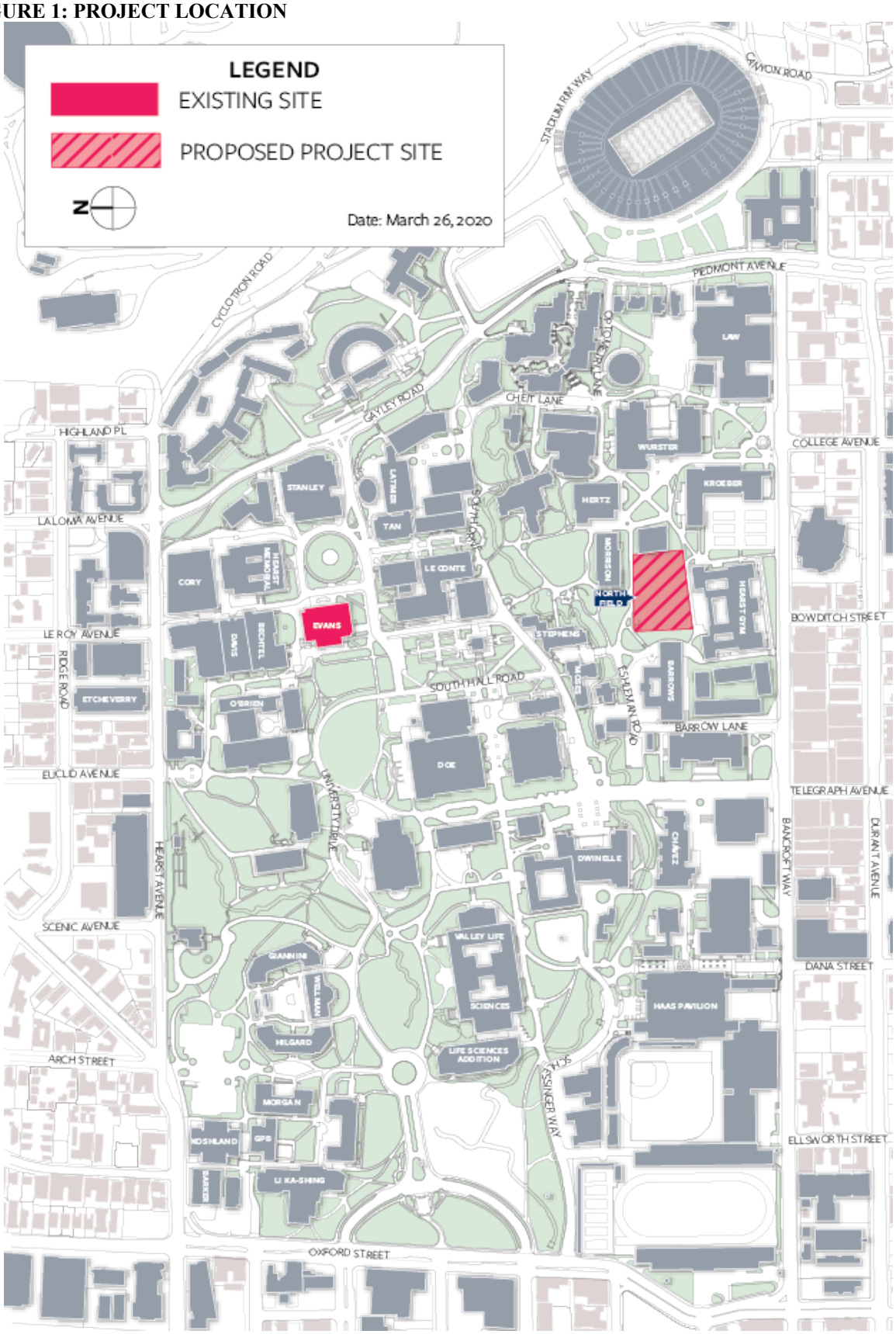
The project will be funded by $123.82m in external financing supported by State General Funds (California Education Code Sections 92495 et seq.). During the Preliminary Plan phase, the campus would refine the project to determine the optimal size and configuration of the proposed building achievable within the target budget, based on a

comprehensive set of program, design, and technical performance criteria developed through the campus's project development process. Given demand for limited campus resources, particularly for addressing emergent seismic issues and providing space for past enrollment growth, the Berkeley campus must develop projects that balance capital project costs, risk reduction, and program need.

Project Schedule

Project work would begin in July 2020. Construction would be anticipated to begin in 2022 through 2023 and occupancy in early 2024. A project schedule is included in Appendix 2.

FIGURE 1: PROJECT LOCATION



BACKGROUND AND PROBLEM STATEMENT

Evans Hall is the fifth largest academic building on the Berkeley campus. Built in c1971, the approximately 284,000 gsf (155,000 asf) reinforced concrete building, with 10-stories and two below grade levels, has a seismic rating of Level VI. Housing approximately 8% of campus general assignment classroom seats (approximately 930 stations), Evans Hall is by far the most urgent seismic priority at Berkeley for seismic remediation: the building represents over 45% of the campus' seismic problem as measured by space identified with a rating of VI in need of correction. While there have been minor renovations within Evans Hall, the campus has not made substantial structural alterations since the building opened.

The building is by far the largest building on a square footage basis to be rated VI on the Berkeley campus. Evans Hall is one of the campus's most intensively used buildings, with classroom space highly utilized for graduate and undergraduate teaching and an average daily occupancy of nearly 3,500. Because of the scale and occupancy of the building, surge is a major issue, relocating the occupants of Evans Hall in order to accommodate a construction project is particularly challenging for the campus; no comparable space is easily or readily available.

Table. Berkeley Campus Buildings Rated VI

Building	Approximate ASF / GSF	Primary Occupant and Use
Evans Hall	155,000 / 284,000	College of Letters & Sciences Academic Departments; 26 General Assignment Classrooms
University Hall	98,000 / 155,000	Administrative Units
Moffitt Library[1]	69,000 / 150,000	Library and Study Space, General Assignment Classroom
Stephens Hall	40,000 / 60,000	College of Letters & Sciences Office Space
Wellman Hall	27,000 / 45,000	College of Natural Resources Lab Space
Durant Hall	12,000 / 22,000	College of Letters & Sciences - Office of the Deans
Davis Hall	77,100 / 142,000	College of Engineering
Donner Addition	--	LBNL

Notes: (1) The campus plans to address the seismic deficiency in Moffitt Library in 2020-2021.
Data Source: UC Berkeley Capital Projects, June 2019.

Image 1. Aerial Perspective of Evans Hall, today

Program Issues

Not only does Evans Hall pose a severe life safety risk, but its inefficient spaces and systems inhibit instruction and research, and impair the campus' ability to recruit and retain exceptional students and faculty. Evans includes office and research space primarily for the College of Letters and Sciences – including the Department of Mathematics, Department of Statistics, and Department of Economics. Evans Hall houses 26 general assignment classrooms, including two tiered classrooms, as well as the College of Letters & Sciences Undergraduate Advising and the Mathematics and Statistics Library. The building is approximately 60% departmental offices and 15% classrooms, with the balance of the overall assignable space distributed to other academic space. The General Assignment classrooms accommodate approximately 930 stations.

Table. Evans Hall Existing Space Program

	Assignable Square Footage (asf)	% Breakdown
Office	91,200	59%
Research	3,000	2%
Library/Study	19,800	13%
Classrooms[1]	21,900	14%
Service Functions	18,400	12%
Total	**154,300**	**100%**

Notes: (1) Departmental and General Assignment. Source: UC Berkeley Academic Space Planning, 2019

Table. Evans Hall Population Characteristics, Major Program Occupants (2018-19 Fall/Spring Average)

Department	Undergraduate Major Headcount	Graduate Headcount	Regular Faculty Headcount	Approximate Course Enrollment	Assignable Square Feet (asf)
Economics	1,341	141.5	34.5	10,500	22,300
Mathematics	863	176.5	40.9	16,800	46,200
Statistics	380.5	104	12.6	9,300	23,900
General Assignment Classrooms	-	-	-	930 Stations / 26 classrooms	14,100
Other Functions[1]	-	-	-	-	47,700

Note: (1) Letters & Sciences Advising, Undergraduate Interdisciplinary Studies (UGIS); Data Science, and Goldman School of Public Policy; Math & Statistics Library. Source: CalAnswers, 2019; Academic Space Planning, 2019.

While Evans Hall provides substantial space for these programs, much of it is inefficient and inflexible to support 21st century instruction and research. Each floor above level 2 consists almost entirely of hard walled offices along long hallways, with private academic offices ringing the outer limit of the building. Many of these offices – particularly on the west side of the building – have desirable views of the San Francisco Bay and Golden Gate or to the Berkeley Hills to the East; however, they range in size from approximately 150 sf to 350 sf – far larger than the campus space standards and well in excess of what is desirable for effective and appropriate office space utilization. Contributing to inadequate space, the building's systems are inefficient and out of date, and partially due to building exposure the building occupants experience widely variable temperature control throughout the building. Additionally, interior

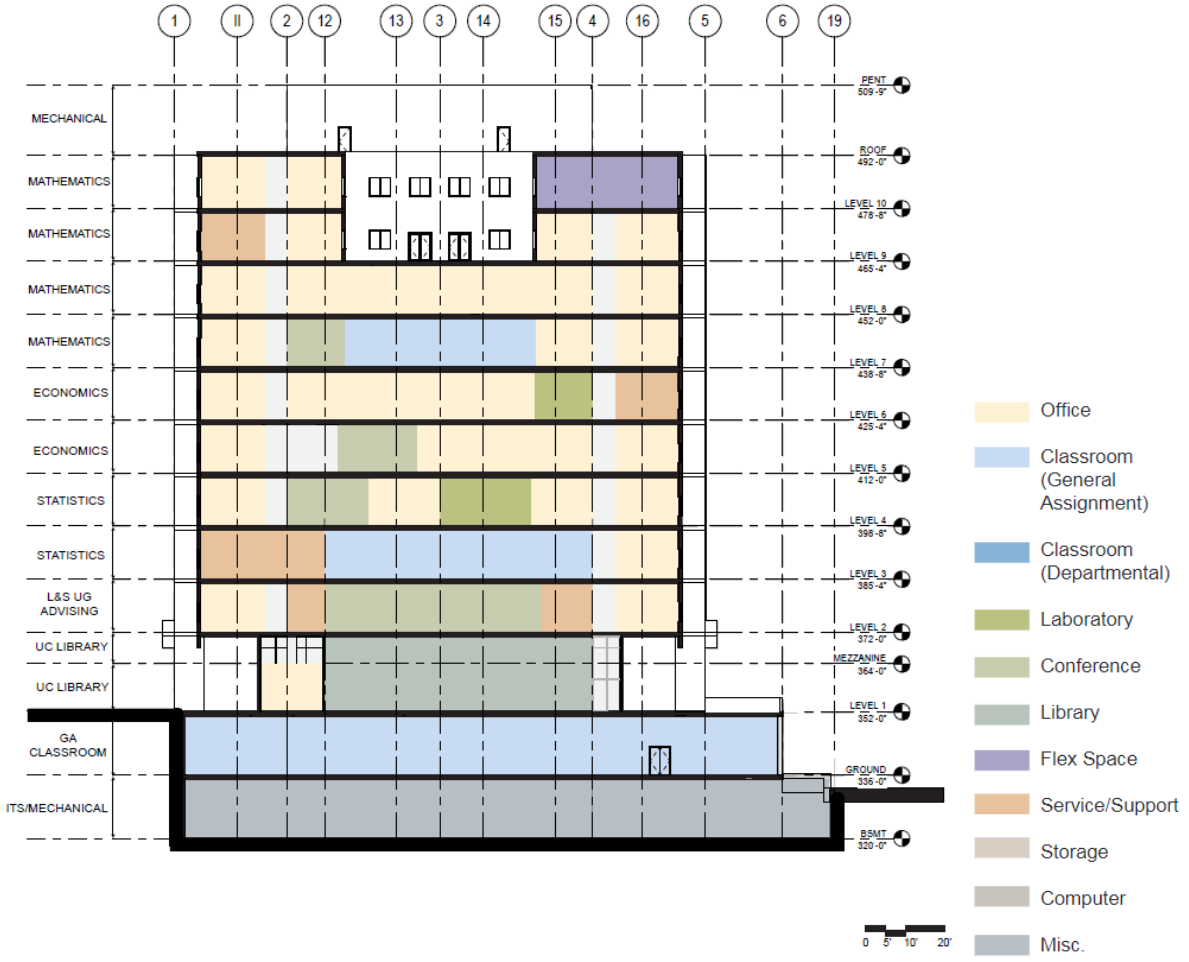
workspaces are housed in windowless and poorly ventilated rooms in the central core of the building. Spaces for interaction, both formal and informal, are severely inadequate or lacking, further impeding instructional delivery.

Photos: Interior Corridor, 2018 (Ratcliff); Classroom (UC Berkeley ETS Flickr (2013))

In conjunction with inadequate departmental space, demand for classroom space on the Berkeley campus has grown with current undergraduate enrollment trends across the University system. The campus struggles to meet the needs and preferences of faculty and students alike when scheduling classes throughout the academic year. The challenge is two-fold: 1) there must be proper sequencing of prerequisite classes, and 2) there must be enough appropriately sized and configured classrooms to support the campus's academic major programs. Enrollment growth, expanding academic programs, and a lack of available classrooms have led to a significant increase in course waitlists.

While the building's 26 general assignment classrooms are a critical component of the campus teaching mission, the campus continues to need more flexible and modern teaching spaces, particularly classrooms for active and project-based learning, which often require larger asf per occupant, resulting in a feeling that existing classrooms are cramped. Enrollment growth and classroom use demand has resulted in more classes being taught in evenings, which also results in secondary operational concerns on the campus. The Berkeley campus has no space flexibility to accommodate the existing classroom activities, or the other building programs, if a major renovation was to occur. This deficiency in the type and availability of classrooms is a key driver to replacing the space in seismically-poor Evans Hall with modern, appropriately sized and configured instructional space in the project.

Figure 2. Existing Evans Hall Space Program Diagram



Seismic Issues

In 2017 the campus received partial Preliminary Plans funding to evaluate the life safety, infrastructure, and code issues in Evans Hall. This phase assessed costs and potential options for addressing the identified seismic problem. Evans Hall has a current seismic performance level rating of VI. The building is constructed of light-weight concrete, with a structural system consisting of interior and exterior reinforced concrete frames with two groupings of interior reinforced concrete shear walls. Discontinuous walls occur in the transverse direction supported by the interior frames. The interior frames span north-to-south between the shear walls, consisting of regular shaped columns and beams. The exterior frames consist of irregular shaped columns supporting deep spandrel beams stepping in and out to match the slab edge. The floor system consists of a one-way concrete slab varying in thickness supported by concrete beams spanning between exterior frames and either walls or interior frames. The foundation system varies in elevation and consists of typical spread and continuous footings at the interior and exterior, respectively.

The structural analysis included a two level performance based evaluation: life-safety performance level and collapse prevention performance level, in compliance with the University's Seismic Safety Policy. Six major deficiencies were determined from the analysis based on not meeting the desired performance objective:

- Shear failure of the exterior frame columns
- Compression failure of interior frame columns supporting discontinuous walls
- Shear failure at shear wall piers in multiple locations over the height of the building
- Inadequate development of the interior girder-to-wall connections
- Localized shear failure of the roof beams supporting the discontinuous penthouse walls
- Shear failure of coupling beams

Life Safety, Deferred Maintenance and Other Building Issues

Per the 2016 California Building Code, Evans Hall meets the definition of a high rise building. The seismic option study evaluated Evans Hall under the 2016 California Building Code. The building has the following life-safety issues:

- No automatic sprinkler system, required for high-rise buildings
- No secondary, on-site water supply or fire pump
- The building has no known emergency power system or generator to support a fire pump or smoke control
- Emergency systems do not meet current standard requirements for detection, communication systems, and other controls
- Non-rated corridors (would not apply if an automatic sprinkler system is added)
- Exit stairs 1 and 3 would need to be upgraded to two-hour construction
- Improper handrail extensions
- Restrooms on floors 2-10 do not meet current accessibility standards
- Perimeter office doors do not meet current accessibility standard widths
- Maneuvering clearances at doors do not meet current standards, particularly at corner offices and stairs

In general, the building assessment concluded that building mechanical and electrical systems have reached their life expectancy and are no longer capable of serving the current and future needs of modern academic programs. Evans Hall currently uses 70% more energy per square foot than the Berkeley campus average and three times as much energy per square foot as the Berkeley campus standard for new buildings. The lack of temperature zone controls and systems flexibility results in less than satisfactory conditions for the building occupants. The antiquated equipment from the original building construction limits the feasibility of energy efficiency improvements and increases long term maintenance costs due to diminishing availability of spare parts. Many pieces of equipment, including the cooling tower, hot water circulating pumps, heat exchanger, and electrical panel boards and transformers, are in poor condition, and will need to be replaced. Most of the electrical distribution system feeders have reached their life expectancy and will also need to be replaced. The building lighting is mostly original, and the existing lamps are not compliant with current energy code or efficiency standards.

The total cost to address all FCA work in Evans Hall would be $68.9 million, in addition to the cost to address other fire, life-safety, and other programmatic issues. (Appendix 5, UC Berkeley Facilities Services, ICAMP, 2020)

PROPOSED PROJECT DESCRIPTION

After a rigorous assessment and alternatives analysis, the campus identified replacement and demolition of Evans Hall as its preferred approach to address the existing seismic safety and other building deficiencies. A new academic and classroom building (the “proposed project”) would accommodate approximately 75% of the existing program space housed in Evans Hall and the existing general assignment classroom space housed in Evans Hall. The proposed project would deliver an approximately 124,000 gsf (74,400 asf) facility to include instructional seats, space for student study and collaboration, and administrative and faculty office space for the departments of Economics and Mathematics. Other occupants of Evans Hall would be relocated to other campus buildings, including the proposed Data Hub building – these other moves would be funded and managed separately from the new academic and classroom building project. Once the existing Evans Hall is vacated, it would be demolished.

The proposed project would provide superior seismic safety to meet current code standards, at a minimum, as well as eliminate the other life-safety, accessibility, and deferred maintenance costs associated with maintaining Evans Hall in its current state. The new building would be designed to provide teaching and learning spaces aligned with modern pedagogies, with offices and other spaces designed to optimize space utilization ratios while meeting program and campus objectives within the target budget. The site currently occupied by Evans Hall would be available for new construction in the future as a separate project as planned for in the campus Long Range Development Plan.

While Evans Hall is by far the most urgent seismic priority at Berkeley, it is only a fraction of the campus’ seismic problem. Given the many other demands on limited campus resources, it is imperative each capital investment be optimized in terms of both cost and space utilization. For this reason, in moving forward with the replacement of Evans Hall, the starting point is not an aspirational ‘wish list’ of program spaces and features, but rather a project

budget based on a realistic assessment of resources. With the target project budget set at $124 million, the campus would examine a range of design options to determine the optimal size and configuration of the building achievable within the target budget, based on a comprehensive set of program, design, and technical performance criteria. While the objective is 74,400 asf, the size ultimately achievable within the budget depends on both design and market conditions.

Project Site

The proposed project would be located on the UC Berkeley Campus Park, shown in Figure 1. The *UC Berkeley 2020 Long Range Development Plan (2020 LRDP)*, adopted in January 2005, anticipated up to one million net new gsf on the Campus Park by 2020. The site is being analyzed for future development in the new LRDP currently under development for the Berkeley campus.

The project site is located in the south-central portion of the Campus Park. The site (known as North Field) is currently a recreational field used by ROTC, Physical Education programs, Recreational Sports programs, and informal recreation/play. The field dimensions do not align with current standards for Intramural or NCAA sport play, nor does the field have lights; therefore, its use is largely limited to practice and non-competitive activities. The project site adjacent to Barrows Hall, another major campus academic and classroom building for the College of Letters & Sciences, as well as Morrison Hall (Music) and JG Hargrove Music Library, Hearst Memorial Gymnasium (Physical Education, Recreational Sports), and Hearst Field Annex (temporary structures for surge space, student space). A new building on the North Field site would create a new hub for the College of Letters & Sciences in the south-central portion of the Campus Park and near the main undergraduate residential neighborhood adjacent to campus (the Southside Berkeley).

The site was selected through campus engagement led by the Executive Vice Chancellor and Provost (EVCP) with a series of conversations with the academic and administrative leadership, and consultation with the Department Chairs for Mathematics and Economics, and the University Registrar. Site evaluation considerations included convenience for faculty and students, physical planning and operational concerns, and academic program synergies with the buildings surrounding the new site.

As part of the Preliminary Plans phase, a physical concept would be refined for the site, including how best to accommodate the proposed program within the physical concept in terms of ideal space utilization, program cohesion, and project phasing. The campus intends to improve space utilization by rightsizing program spaces to meet today's teaching, learning and research pedagogy as part of the project. The opportunity to better serve campus instructional needs through purpose-built classrooms and new key instructional space types is a key project driver.

Proposed Program

The primary objective of the proposed project, a new academic and classroom building, would be to provide space to accommodate the academic programs currently located in Evans Hall. The new building's primary functions would include a large number of classroom stations, and space for the Department of Mathematics and Department of Economics. These spaces would be designed to be more efficient to achieve the target square footage. Secondary objectives would be to replace, but also reconfigure the classroom space allocation currently in Evans Hall to allow the campus to address utilization demand and align space with modern teaching pedagogy, create flexible spaces for student services that promote community and foster learning, and create of new collaborative and experiential learning spaces currently not available in Evans Hall. The project would establish a second student hub for the College of Letters & Sciences within the south-central portion of the Campus Park, proximate to the student services in Sproul Hall and the Lower Sproul Student Center.

The **Department of Mathematics** at Berkeley is generally recognized as one of the broadest, liveliest, and most distinguished departments of mathematics in the world. With approximately 55 regular faculty members representing most of the major fields of current research, along with 25 to 30 postdoctoral scholars, 180 graduate students, over 800 undergraduate majors, one of the finest mathematics libraries in the nation.

The **Department of Economics** is home to over 1300 undergraduate students, 120 graduate students and 54 faculty doing ground-breaking work in economic theory, econometrics, macroeconomics, and all major fields of applied research, and have served as policymakers at the highest levels, both in the U.S. and abroad. The Department has

produced five Nobel Prizes and six John Bates Clark Medals, an award given annually to that American economist under the age of forty who is judged to have made the most significant contribution to economic thought and knowledge.

The **General Assignment (GA)** classrooms in Evans Hall are managed by the Office of the Registrar and can be reserved for student, faculty or staff use. Most general assignment classrooms are available Monday–Friday 8am to 10pm. The Campus has approximately 210 GA classrooms with approximately 184,100 asf and 13,160 seats. Evans Hall houses 26 GA classrooms with approximately 930 seats - or about 12% of all of the campus's GA classrooms and 8% of its seats.

The following tables summarize the proposed project's preliminary space program: the overall space proportions would be aligned with the campus needs. Given the campus demand and need for classrooms, the target square footage assumed for classrooms is the minimum that would be provided in the new building and if resources allowed the campus would provide additional classroom space to meet the classroom needs identified in the on-going Long Range Development Plan and Campus Master Plan analysis.

The project would anticipate gaining space efficiencies by moving towards flexible shared spaces, which would allow a reduction in the number and square footage of individually-assigned spaces and refined in future programming phases. The campus expects to improve the ratio of asf to gsf from approximately 54% to at least 60%, consistent with space utilization improvements achieved with other recent projects constructed on the Berkeley campus.

The detailed configuration, size and assignment of the program spaces in the building would occur during the preliminary plan and programming stage of design, after the size and configuration of the building have been confirmed to align with the project budget.

Table. Preliminary Space Program, by Academic Function

Program Function	Evans Hall (Existing)	Existing % Breakdown	Proposed Project (New Academic + Classroom Building)	Proposed Project % Breakdown
Academic Departments	92,400 asf	60%	60,300 asf[1,4]	83%
General Assignment Classrooms	14,100 asf	9%	14,100 asf	17%
Other Academic Functions	22,500 asf	15%	- asf[2]	-
Student Services	25,300 asf	16%	- asf[3]	-
Total	**154,300 asf**	**100%**	**74,400 asf (124,000 gsf)**	**100%**

Notes: (1) Approximately 24,000 asf of space assigned to the Department of Statistics would be relocated to the proposed Data Hub building; (2) Smaller departments located in Evans Hall would be surged to other campus space; (3) Undergraduate Interdisciplinary Studies and Letters & Sciences Advising would be surged to other campus space; (4) Assumes that current space needs within existing departments would be achieved through improved space utilization.

Table. Preliminary Space Program, by Space Type

Program Function	Evans Hall (Existing)	Existing % Breakdown	Proposed Project (New Academic + Classroom Building)[3]	Proposed Project % Breakdown
Office	91,200 asf	59%	47,800 asf	64%
Research	3,000 asf	2%	100 asf	<1%
Library/Study	19,800 asf	13%	4,700 asf[2]	6%
Classrooms[1]	21,900 asf	14%	18,100 asf	24%
Service	18,400 asf	12%	3,700 asf	5%
Total	**154,300 asf**	**100%**	**74,400 asf (124,000 gsf)**	**100%**

Notes: (1) Departmental and General Assignment. Future programming efforts would explore opportunities to share departmental resources with the general assignment classroom users. (2) Assumes Math-Statistics Library is relocated and is not in the proposed project. (3) Final allocation by program function would occur in the programming phase of the preliminary planning process.

The project will provide appropriate new instructional classrooms and lecture halls to accommodate active learning pedagogies and project-based learning through the replacement of the general assignment classrooms and the departmental instructional spaces. Modern technology and social changes have led to new teaching methodologies focused on project-based, team-oriented problem solving, and interactive teaching and learning. The classrooms in Evans Hall, along with UC Berkeley's existing inventory of classrooms, are still primarily traditional in format, without the flexibility to provide arrangements and technologies used in active learning and teaching formats; and a new building would allow the campus to provide modern classroom spaces that are already at many of the campus's competitive peer institutions.

The campus would engage with the users of the existing North Field (Physical Education, Recreational Sports, ROTC) to identify alternative sites for the existing recreational uses on the site. Removal of existing recreational space is impactful to the student experience, particularly students unable or uninterested in participating in Intercollegiate or Club sports programs. Potential alternative sites could include more scheduled open recreation hours at Maxwell Family Field, Golden Bear Field, Underhill Field, or Goldman Field; a temporary field on the site of the existing Evans Hall (temporary until a new building is proposed on the site); partnerships with other local athletic facilities in the City of Berkeley; or partnerships with other institutions. Refined site planning in the preliminary plans phase could identify opportunities for recreation around the new building. Due to density and topography, the Berkeley campus has a dearth of available grass field recreation options and must make efficient use of limited resources.

Project Drivers

1. **Provide seismically safe space for campus instruction, to efficiently accommodate existing and future enrollment.** Classroom capacity is currently a factor limiting student access to courses necessary to support their timely progress toward graduation. Enrollment growth, expanding academic programs, and a lack of available classrooms have led to a significant increase in course waitlists. Current classrooms are oversubscribed and plans to upgrade existing classrooms to meet accessibility requirements will result in a reduction of the number of seats available. Existing classrooms are not always appropriately sized for modern teaching pedagogies being deployed by faculty.

    - The new classrooms and lecture halls in the project will expand inventory of instruction facilities and improve time-to-degree rates.
    - The new classroom stock would replace obsolete classrooms and lecture hall facilities that were constructed in the mid-20th century and lack the flexibility, amenities, and technology needed to accommodate contemporary active learning and teaching methods that have been developed to respond to changes in the social and technological world. For example, active learning classrooms

are designed to support teaching that is formulated around group and student participation and focused on project-based and team-oriented learning.
    - As a key component of Berkeley's General Assignment classroom stock, the classrooms in the project will position the campus to meet evolving teaching pedagogies and active learning methods.
    - These classrooms require the flexibility to rearrange furnishings and utilize digital and visual technology to support instruction. Across academic disciplines, well designed and functional classrooms are vital to curriculum being developed to teach students of today, as well as those in the future.
    - Classroom configurations and related amenities would incorporate many design elements to accommodate emerging pedagogy. The room and furniture designs, in conjunction with audiovisual technology, would be flexible to support interactive learning.
- The improved size and configuration for the classroom space will enable superior utilization, addressing bottlenecks in course progressions and scheduling challenges that lead to delayed through-put, and will provide opportunity to better support recent and projected enrollment growth.
- Providing classrooms that are designed for how today's students learn, in addition to being located within proximity to other student services (e.g., dining, housing, extracurricular, recreation) that undergraduates use throughout the day, would create a new student-activity hub and enhance the student experience. Providing informal study space in the building adjacent to classrooms could also alleviate some of the demand put on recently renovated study spaces on the campus, such as Moffitt Library Floors 4 & 5, and the MLK Jr Student Union, which has become a de facto study space despite having been designed as a dining commons.

2. **Provide safe, well-located and efficient space for Economics and Mathematics to enable those programs to function more efficiently and effectively in programmatically suitable ways.** The space used by the academic departments in Evans Hall is primarily solid-wall offices that do not align with current campus space standards. While the offices along the exterior of Evans Hall feature windows - often with dramatic views - the interior spaces typically lack natural daylight and other design features that promote health and occupant well-being. The campus intends to improve space utilization and match design spaces that promote academic collegiality and occupant health.
    - The space to replace their current facilities will be more efficiently designed. The formulation of the space program would offer the potential to assure the building functions productively in the short term and with agility over the long term.
    - Providing new space and relocating the building occupants from Evans Hall will enable the program continuity, without any break in instruction or research due to surge and temporary moves.
    - Location will enable current and foster future synergies with relevant departments for Economics and Mathematics.
    - New space will incorporate natural daylight and other occupant controls that ensure comfort and promote health, while also supporting other campus sustainability goals.

3. **Delivery upon responsible stewardship of limited resources and demonstrate leadership in sustainable practices that meet or exceed campus and system sustainability goals.** In addition to the programmatic needs and budgetary constraints, the alternatives analysis considered the environmental sustainability implications of retrofitting the existing Evans Hall compared to constructing a new replacement building, with particular attention to embodied carbon. The assessment identified that new construction could achieve higher performance, with improved occupant comfort, and take only 3.5 years for the embodied concrete lost by demolition of Evans Hall to be "paid back" by the greater efficiency of a new building versus a retrofit.
    - Replace an inefficient, resource-consumptive facility with one that can achieve superior performance with respect to energy and water efficiency, carbon impacts, and waste. Constructing a new facility will replace the wasteful and resource-intensive, systems currently in Evans Hall.
    - Provide a building that optimizes building occupancy and operational systems, reducing or eliminating inefficient spaces.
    - Meet or exceed campus and system wide sustainability goals to the fullest extent possible, within budget and programmatic constraints of the project.
    - Intensify use of an existing site on the Campus Park, consistent with the LRDP's goals of prioritizing academic and high-touch student programs for the main campus.

Proposed Building Design and Site Planning Objectives

The building would be a multi-story building with large lecture halls, active learning classrooms, and smaller flexible classrooms on the lower floors of the building with academic office and research space on upper levels. Multiple entries would be designed to facilitate efficient circulation to and within the building, and stairs would facilitate movement through the building during busy class changes, promote informal moments of interaction and engagement, and encourage healthy work life.

Due to current financial constraints, the campus is proceeding with a project that focuses on its current priorities; however, planning for the site will recognize the need for the campus to accommodate additional space in the future – particularly space to accommodate enrollment growth trends and surge space for other seismic correction projects. The proposed project would occupy only a portion of the North Field site, reserving space for future development as part of a separate project.

Architecture

The proposed building would be designed to respond to its context, as well as the operational needs of both the academic departments and general assignment classroom program. The new building's design would be informed by the Berkeley campus *Physical Design Framework* principles, including:

- Informed by the classical, beaux-arts and the informal, picturesque ensembles of the Campus Park
- Creating places of interaction and promoting activity at key nodes, including the building entrances and major routes to/from the building
- Oriented to take advantage of natural daylighting and passive cooling opportunities to maximize building sustainability and life-cycle costs
- A composition primarily of orthogonal forms and relationships to the surrounding buildings
- A clearly articulated base, middle and top with variations in color, texture, and wall/window ratio
- Strategic use of glass for features or spaces where programs dictates greater transparency, particularly commons spaces and group study spaces
- Preserving significant views and open spaces within the Campus Park
- Concealed mechanical and service systems, with enclosures integral to the building architecture

The new building's architecture would be set amongst an eclectic ensemble of academic buildings representing all eras of the Campus Park history: the 1927 Beaux-Arts Hearst Memorial Gymnasium, the 1958 Morrison Hall and 1964 Barrows Hall representing the residential-scale style and utilitarian modern styles, respectively, and the 2004 Jean Gray Hargrove Music Library representing modern contemporary architecture. While the proposed project's design would be its own, the creation of open spaces around the new building and integrated with the surrounding landscape would allow the building to stand on its own merits while part of the campus's overall architectural ensemble. The architecture and site planning would be informed by the National Register Landmark status of Hearst Gym.

The building would become a new major activity center in the south-central portion of the Campus Park, and its orientation and entrances would be guided by the major pedestrian routes, including the north-south pedestrian path extending from Moses Halls and Stephens Hall, across Strawberry Creek, to Barrows Hall, Hearst Gym, and eventually south to Bowditch Street, a key street for pedestrians coming from student housing in the Southside. Peppertree Lane, which runs along the north edge of the project site, is the main east-west foot/bike path of travel for the area, connecting the new building to Sather Gate/Sproul Plaza to the west and the Arts Quad to the east. Multiple entrances and key access at the northwest and southwest corners of the site could facilitate major flows of students entering and exiting the building at class change times from lower floors, while other entrance points could allow for quieter egress for departmental functions that would be located on upper floors.

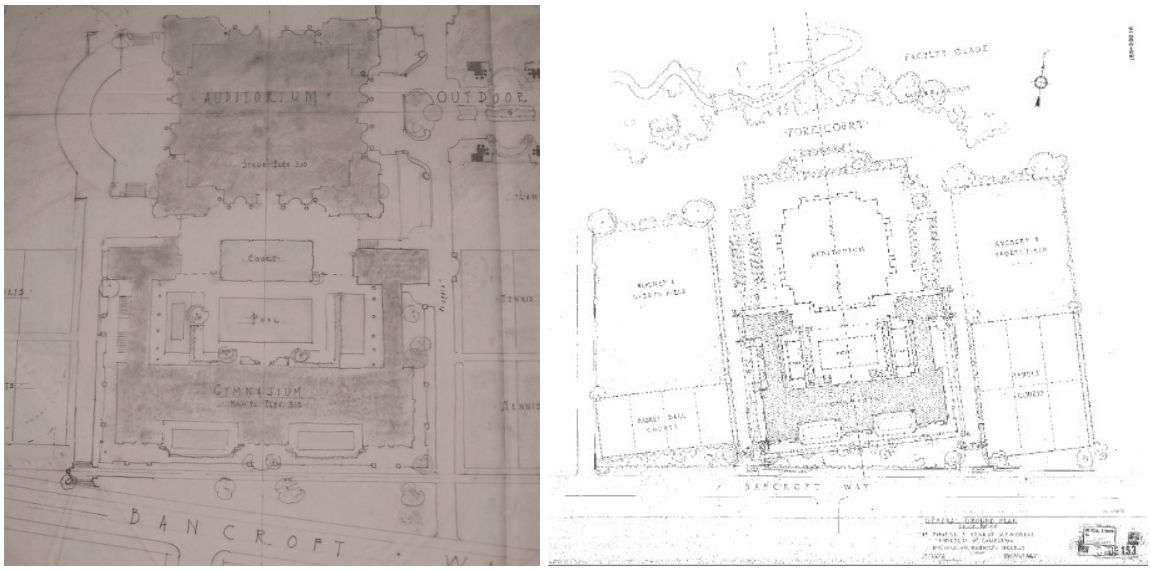


Image: 1925 Site Plans, Environmental Design Archives

Interior Program Space

The Berkeley campus intellectual community desires robust immersive interaction and collaboration. Space dedicated to meeting and conference spaces would be a mix of open and enclosed spaces, various sizes to accommodate both large gatherings and small group work, placed at key nodes of circulation as well as in locations to facilitate informal interaction to reinforce a sense of mission and mutual purpose that invites exchange of ideas and support a vital and dynamic community.

Research spaces would be designed to maximize flexibility for the current needs and for future endeavors. The programs in Evans currently occupy inflexible, solid wall offices and interior spaces that do not necessarily align with optimal or ideal efficiencies. The new spaces would be planned to match current work and research styles, with a mix of tradition, shared, or drop-in spaces that permit interactive and team-based work. The space would have flexibility to adapt or change space in the future more easily as research or space need changes. The campus proposes to accommodate the existing assigned square footage to each department (Mathematics and Economics) within a more efficient footprint; the new space would be optimized to ensure it could accommodate existing space needs, consistent with current campus space allocation standards.

A major programmatic need to be addressed in the design will be the adaptation of the classroom space to match modern teaching pedagogy and learning styles. The new classroom space in the proposed project would be designed to meet the current classroom needs, as identified in the on-going Campus Master Plan/LRDP process, in terms of active learning spaces, project-based learning areas, larger/flexible rooms, and spaces with adaptable technologies. The building would meet functional requirements of contemporary instructional facilities designed to support both traditional and active learning-teaching pedagogies. Active learning classrooms facilitate group learning in an environment designed for interaction and group function, problem-solving activities, the use of electronic response monitoring, and digital streaming of materials to and from teachers and students and student groups.

Classrooms would have adjustable seating that allows students to work collaboratively while still having access to technology resources. Flexibility will be built into the classroom plans to allow the rooms to be adapted in the future as needs change. The project would support the traditional lecture format and allow students to transition into small breakout discussions and group work. The project would include dedicated spaces to provide for independent and group study needs. Study areas would be furnished in flexible arrangements to accommodate a variety of group sizes and would include both desk-height tables and chairs as well as some soft furnishings. Post-lecture discussion areas would be located outside classrooms and would include flexible seating and equipment to support continued discussion between students and instructors.

Sustainability Objectives

At a minimum, the proposed project will comply with the University of California Policy on Sustainable Practices. As required by the policy, the buildings will adopt energy efficiency and sustainability to the fullest extent possible, consistent with budgetary constraints and regulatory and programmatic requirements. During the design phase, the campus would explore opportunities to show further leadership in sustainable design, consistent with university objectives for energy and carbon neutrality.

As part of the seismic options study completed in 2018, the campus hosted a stakeholder charrette to establish targets for energy efficiency and project sustainability. The group included building occupants, campus sustainability leaders (including faculty and students), the Office of Sustainability, campus planners, facilities managers, and others that manage building systems. The discussion included small group discussions on building energy usage, occupant comfort, water use, transportation, resilience, and building materials. The group identified the following goals for the replacement project (the same goals were also required of a retrofit option):

- Occupant comfort is critical. The existing spaces in Evans Hall often lack functional controls, leaving some spaces too hot or too cold; other spaces lack natural daylight or air. Features that provide occupant comfort without sacrificing building sustainability or impacting energy use are important.
- The new building should be an all-electric heat pump based system. For the most part, the existing building is not cooled, except for some high heat-load spaces, as is Berkeley's current policy. The new building assumes a similar scenario for cooling just high heat-load spaces.
- The project should achieve 44% better than the UC Benchmark for the new building case, or a target EUI of 35kBtu/sf/yr.
- The building should comply with the current version of T24 at the time of construction or retrofit, and the design needs to meet all applicable California Building Codes as well as ASHRAE 55 for comfort.
- The building should strive to be a zero carbon building.

FINANCIAL STRATEGY

The seismic problem at the Berkeley campus is enormous, but the campus has made significant progress in addressing it. The campus has utilized a variety of funding sources in addition to State funds – such as gifts, grants, student fee referenda, and auxiliary revenues – whenever feasible. Given the magnitude of the campus - and more broadly the university - seismic issue, the campus proposes to leverage any available State funding with other available funding sources, including philanthropy, to advance its capital program.

The Berkeley campus anticipates a proposed project budget of $123.82 million funded by external financing supported by State General Funds (California Education Code Sections 92495 et seq.). The Capital Improvement Budget is included as Attachment 1. While the objective would be to meet the proposed space target, the replacement building size achievable within the budget will be dependent on program, design, and market conditions, as well as upfront and life-cycle costs such as operation, maintenance and renewal. The base cost would be informed by the core needs for the replacement of Evans Hall followed by opportunistic space moves to address past campus enrollment growth and accommodate improved learning spaces.

Table. Summary of Proposed Project Budget[1]

Category	Amount	Percentage
Preliminary Plans (2017-18)	$1,100,000	0.9%
Preliminary Plans (2020-21)	$6,000,000	4.8%
Working Drawings, Construction and Equipment (2021-22)[2]	$116,723,000	94.3%
Total Project Budget	$123,823,000	**100%**

Notes: (1) Excludes $11.5 million for demolition of Evans Hall. (2) The following projects are cancelled: 2020/21-Durant Hall ($20.010m), Stephens Hall ($46.870m), Wellman Hall ($43.793m); 2019/20-University Hall ($6.050m). Source: Capital Improvement Budget, Attachment 1.

RELATIONSHIP TO UNIVERSITY MISSION AND OBJECTIVES

The project supports the instruction and research mission of the University of California by providing seismically safe facilities for teaching and research. Other relevant objectives and policies from the *UC Berkeley 2020 LRDP* include:

- Provide the space, technology, and infrastructure we require to excel in education, research, and public service.
    - Eliminate 'poor' and 'very poor' seismic ratings in campus buildings through renovation or replacement.
    - Minimize nonstructural hazards to improve life safety and program continuity.
    - Design future projects to minimize energy and water consumption and wastewater production.
- Build a campus that fosters intellectual synergy and collaborative endeavors both within and across disciplines.
    - Accommodate new and growing academic programs primarily through more intensive use of university owned land on the Campus Park.
    - Prioritize Campus Park space for programs that directly engage students in instruction and research.
- Maintain and enhance the image and experience of the campus, and preserve our historic legacy of landscape and architecture.
    - Implement a program of strategic investment in new and enhanced campus open spaces.
    - Create places of interaction at key nodes of activity.
- Plan every new project as a model of resource conservation and environmental stewardship.
    - Incorporate sustainable design principles into capital investment decisions.
    - Base capital investment decisions on life cycle cost, including the cost of known future expenditures.
    - Design new projects to minimize energy and water consumption and wastewater production.
    - Design new buildings to a standard equivalent to LEED 2.1 certification. Design new buildings to outperform the required provisions of title 24 of the California Energy Code by at least 20 percent.
- Plan every new project to represent the optimal investment of land and capital in the future of the campus.
    - Evaluate a full range of alternate solutions in capital investment decisions.
    - Base capital investment decisions on life cycle cost, including the cost of known future expenditures.
    - Consider joint ventures that leverage university resources with private land and capital.

The campus is currently in the process of updating its 2020 LRDP and anticipates seeking Regent approval of a new LRDP and new LRDP EIR in July 2021, after which the new LRDP and LRDP EIR would guide campus planning decisions. Planning for the proposed project is occurring concurrently to the new LRDP process, allowing both to be informed by each other. The objectives and policies of the 2020 LRDP are generally consistent with the preliminary findings of the new LRDP process; and the campus would anticipate that the proposed project would be consistent with the 2020 LRDP as well as the new LRDP/LRDP EIR.

ENVIRONMENTAL IMPACT SUMMARY

The Campus anticipates that the project would be evaluated pursuant to the California Environmental Quality Act (CEQA) at a future date. Typically, the campus has planned and evaluated space replacement and/or growth as part of its Long Range Development Plan process, and the campus is currently in the process of developing a new LRDP and LRDP EIR. As planning for the replacement building is occurring concurrently then subsequent to the adoption of the new LRDP, the campus would anticipate that the project could be tiered from the new LRDP's EIR. An Environmental Impact Classification form is included in Appendix 3.

ALTERNATIVES CONSIDERED

The alternative analysis conducted for the project in 2018 determined that a replacement building would be more cost effective for addressing the seismic issue and shifts in academic program needs. A replacement building also reduces program surge needs, which in the case of Evans Hall would be significant, costly and impactful to the campus.

The alternatives analysis was conducted to ensure that the preferred replacement option met the campus need to balance capital project financial resources and seismic safety with other campus goals around physical planning and

sustainability. Through the course of the alternatives analysis, the campus engaged a variety of campus constituents to gather input representing varied voices and viewpoints. The chosen alternative – replace and demolish – was favorable from both a cost-basis, as well as from performance, life-cycle cost, schedule, program, physical planning, and sustainability evaluation criteria.

a. Seismic Retrofit Only – Not Chosen

As part of its analysis the campus examined strategies that included work on the existing building, including eliminating upper floors to reduce load, exterior column strengthening, and exterior column replacement. While this would upgrade the building to current standards with respect to seismic safety, life safety and access, it would leave the largely original building systems in place. The building systems do not meet modern standards for energy conservation, including the University objective of LEED silver performance. To make the substantial investment required for code and seismic upgrades – including the considerable cost to vacate the building during construction – without also improving building performance to modern standards of function and conservation, would result in a building that is safe but largely obsolete. This alternative would also require a lengthy and costly strategy for interim space, and the campus currently lacks any interim space at the scale that would be required for the Evans Hall project. As part of the alternatives assessment, the campus also evaluated potential phasing options for surging the building, including isolating specific floors and/or isolating certain walls/facades where active work occurred; however, none of the partial surge phasing options was cost effective or feasible given existing campus space constraints and program requirements. Finally, while only one of many considerations in the alternatives assessment, the 2020 LRDP and New Century Plan identified the replacement of Evans Hall as a physically planning goal in order to re-establish a view corridor that was envisioned in the 1892 Hearst Plan for the campus.

b. Demolish Only – Infeasible

This option would require the campus to absorb approximately 155,000 asf of academic, teaching, and research space into other campus buildings. This option is infeasible, as the space strategy would be costly and highly impactful to academic programs across the campus. While the campus recognizes that some of its buildings could have better space utilization, none would be able to be reconfigured at a scale that could accommodate the major academic departments within Evans Hall on a piecemeal basis. Additionally, many other buildings that might be considered have their own seismic and deferred maintenance issues that would need to be addressed as part of space renovations.

c. Demolish and Replace – Not Chosen/Infeasible

The 2020 Long Range Development Plan and 2003 New Century Plan envisioned that there would be new academic space built on the Evans Hall at some point in the future. Replacement could produce a more functional and flexible building than renovation, because it would be unconstrained by the form of the existing building. It would also allow the programs now housed in Evans Hall to return to the same site. However, because the entire building would have to be relocated to interim space so the existing building can be demolished and a new one constructed, the problem of interim space is substantial. In the future, if or when a building is constructed on the Evans Hall site, the existing programs could conceivably return to this location; however, in the interim a new building to accommodate them would need to be constructed elsewhere first.

CAPITAL IMPROVEMENT BUDGET
BUDGET DATA

UNIVERSITY OF CALIFORNIA
BERKELEY CAMPUS

New Academic and Classroom Building Project	912788	TBD	CCCI: 6924 EPI: XXX
Project Title:	Project Number:	CAAN:	Cost Indexes:

A FUNDING SCHEDULE — Univ. Priority No.

Totals (000's)	Prefunded	2020-2021	2021-2022	2022-2023	2023-2024
P 7,100	1,100	P 6,000			
W 5,918		W	5,918		
C 110,805		C	110,805		
E 0		E			
(Tot. Proj.) $ 123,820	1,100	6,000	116,723	0	0

B FUNDING REFERENCES

	Column (1)	Column (2)	Column (3)	Total all Sources (4)
Account No:				
Source:				

C COSTS

						%
0	Site Clearance	$	$	$	$ 250	0.2
1	Construction				103727	83.8
2	Exterior Utilities					0.0
4	Site Development					0.0
5	Fees				7959	6.4
6	A&E/PP&C				2665	2.2
7	Surveys, Tests, Plans, Specs				1306	1.1
8	Special Items				3153	2.5
	SUBTOTAL	$	$	$	$ 119060	96.2
9	Contingency 4.6%				4763	3.8
	TOTAL P-W-C	$	$	$	$ 123823	100.0
3	Group 2&3 Equipment					0.0
	TOTAL PROJECT	$	$	$	$ 123823	
	Available Funding					
	Anticipated Surplus (Deficit)	$	$	$	$123820 $	

D FINANCING

State Funds	123823
TOTAL	$ 123823

E STATUS OF PROJECT:

Name:	Shannon Holloway	Signature: Sincerely, Shannon Holloway Director		Budget No.	1
Title:	Director	Title: Director, Capital Projects		Date	
Prepared By:	Shannon Holloway	Approved for Campus, Date: 04-07-2020		Orig Date	3/31/2020
Program:	Fiscal:	Signature:		Revised	
Cost:		Title:			
		Approved AVP-PPC, Date:			

CAPITAL IMPROVEMENT BUDGET
ANALYTICAL DATA

UNIVERSITY OF CALIFORNIA
BERKELEY CAMPUS

New Academic and Classroom Building Project	**912788**	**TBD**	**CCCI:**	**6924**
			EPI:	**XXX**
Project Title:	Project Number:	CAAN:	Cost Indexes:	

F ANALYTICAL DATA

	Column (1)	Column (2)	Column (3)	Total All Sources (4)	
ASF per PPG **3/20**	ASF	ASF	ASF	**74,400**	ASF
ASF Current	ASF	ASF	ASF		ASF
OGSF	OGSF	OGSF	OGSF	**125,000**	OGSF
Ratio (ASF Current/OGSF)	to 1.00	to 1.00	to 1.00	**0.60**	to 1.00
Construction Cost per ASF	/ASF	/ASF	/ASF	**$1,394.18**	/ASF
Construction Cost/ OGSF	/OGSF	/OGSF	/OGSF	**$829.81**	/OGSF
Total PWC Cost per ASF	/ASF	/ASF	/ASF	**$1,664.25**	/ASF
Total PWC Cost per OGSF	/OGSF	/OGSF	/OGSF	**$990.56**	/OGSF
Gr. 2&3 Equip. Cost/ ASF	/ASF	/ASF	/ASF	**$0.00**	/ASF

G CONSTRUCTION COST ANALYSIS

	COSTS	UNIT COSTS $/ASF	UNIT COSTS $/OGSF	%	REMARKS
• Concrete & Structure	$				
• Closing -in					
• Finishing					
• Group 1 Equipment					
a. SUBTOTAL-Gen Constr.	$	$	$		
b. HVAC					
c. Plumbing					
d. Electrical					
e. Elevators					
f. Other					• Identify
TOTAL BUILDING COST ONLY	$	$	$	**0.0**	
g. Additional Bldg. Costs					• Identify
TOTAL BUILDING + ADD'L COSTS	$	$	$		
h. Other Construction		Identify			
i. Other Construction		Identify			
TOTAL CONSTRUCTION COST	$	Same as Schedule C, Item1 (line 24) Page 1			

H NOTES:

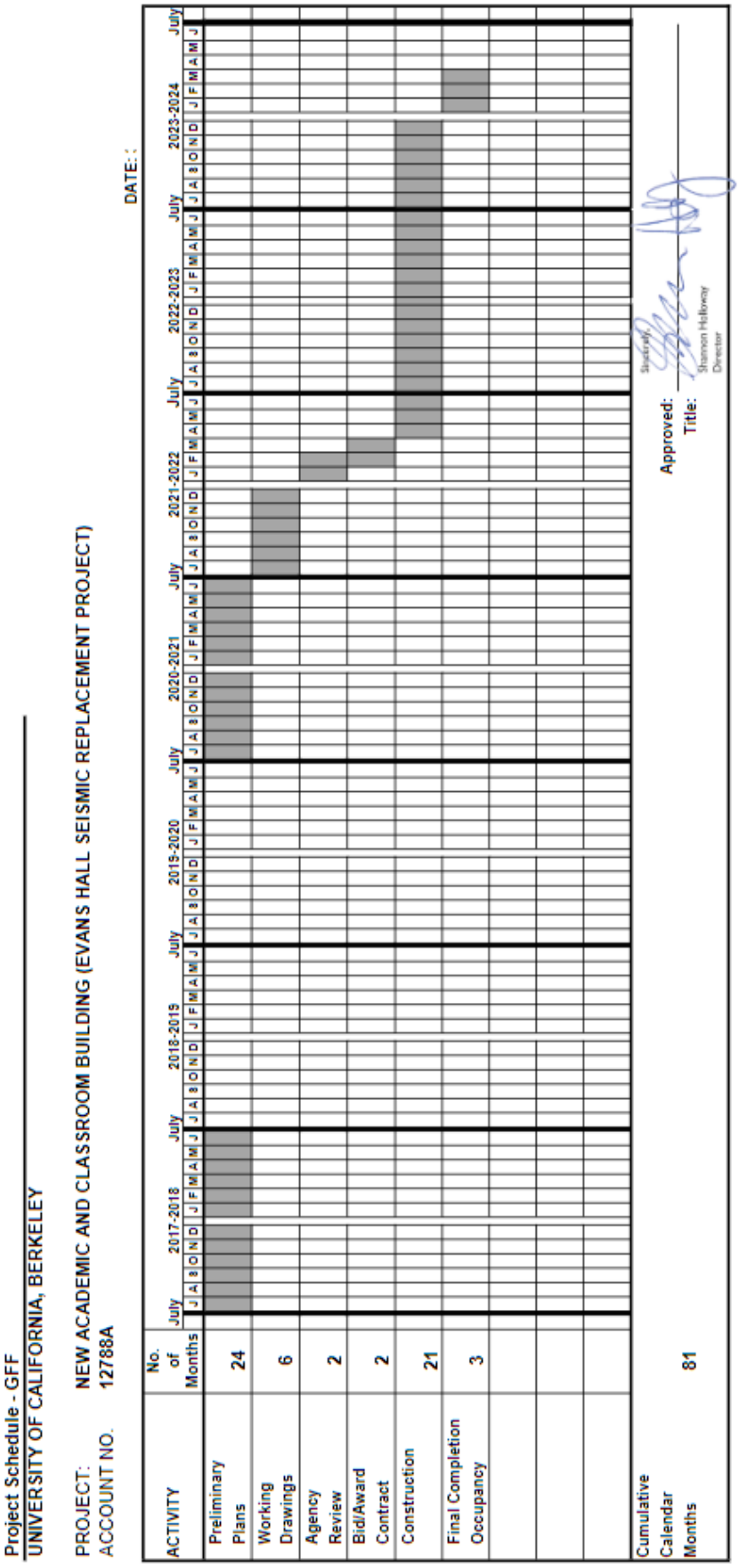
Items included under 8.0 Special Items:

Advanced Planning Expenses	1,675
Special Consultants	535
Hazardous Materials Assessments	10
Preconstruction Services	117
Project Reviews	235
Code Compliance Fees	396
TOTAL	2,968

Budget No.	
Date	
Orig Date	**3/31/2020**
Revised	

Prepared By: Shannon Holloway

APPENDIX 2: PROJECT SCHEDULE



APPENDIX 3: ENVIRONMENTAL IMPACT CLASSIFICATION FORM

UNIVERSITY OF CALIFORNIA -- ENVIRONMENTAL IMPACT CLASSIFICATION

Campus: Berkeley **Project Account:**

Project Title: Evans Hall Seismic Replacement Project

For purposes of compliance with the California Environmental Quality Act of 1970 (CEQA), and Amended University of California Procedures for Implementation of CEQA, this project has been reviewed and initially classified as indicated below. Please check (X) as appropriate. Include project description and appropriate local map.

☐ I **EXEMPT FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT OF 1970**
When it can be seen with certainty that there is no possibility the action will result in physical change to the environment (15061(b)(3)), or the action is specifically exempted by statute (15260-15285), the project is classified as generally exempt from CEQA.
General/Statutory Exemption: §

☐ II **CATEGORICALLY EXEMPT* --** This project falls under the indicated Class(es) of Exemption(s), none of the exeptions to the exemption apply (15300.2), and there is no significant effect on the environment. (For complete list see CEQA Guidelines Section 15300):

- ☐ Class 1: Existing facilities
- ☐ Class 2: Replacement or Reconstruction
- ☐ Class 3: New Construction of Small Structures
- ☐ Class 4: Minor Alterations to Land
- ☐ Class 6: Information Collection
- ☐ Class 11: Accessory Structures
- ☐ Class 13: Acquisitions for Conservation
- ☐ Class 16: Transfer of Ownership of Land in Order to Create Parks
- ☐ Class 17: Open Space Contracts
- ☐ Class 23: Normal Operations
- ☐ Class 25: Transfer of Ownership of Land to Preserve Open Space
- ☐ Class 30: Minor Actions to Prevent Release of Hazardous Substances
- ☐ Class 31: Historical Resource Restoration/Rehabilitation
- ☐ Class 32: Infill Projects
- ☐ Class 33: Small Habitat Restoration Projects
- ☐ Other:

***Exemptions should be supported by a memorandum to the file documenting project compliance with the specific exemption conditions and exceptions to ensure CEQA defensibility.**

☐ III **INITIAL STUDY --** This project is not statutorily or categorically exempt from CEQA; an Initial Study is to be prepared to determine if the project may have a significant effect on the environment.
☐ Stand-Alone Checklist ☐ Tiered Initial Study (15152):

☑ IV **ENVIRONMENTAL IMPACT REPORT (EIR) --** It is known that the project will have a significant effect on the environment and an EIR will be/has been prepared.
☐ Programmatic ☐ Stand-Alone (Project-Specific)
Additional project analysis:
☐ None/Findings Only ☐ Addendum ☐ Subsequent ☐ Supplement to EIR

Real Estate Transaction Type: ☐ Acquisition ☐ Sale ☐ Lease ☐ Easement ☐ License

Project Description: *[Insert brief project description, provide supporting documentation as appropriate]*

The Evans Hall Seismic Replacement project will demolish Evans Hall and replace it in a phased project on other University-owned sites. The campus identified replacement as the preferred seismic remediation strategy after evaluating a wide range of alternative solutions, including partial and full structural retrofits. Evans Hall is rated Seismic Performance Level VI, and significant structural damage is anticipated in the event of a moderate to large earthquake. Seismic improvements must be implemented to achieve compliance with the UC Seismic Safety Policy requirements as updated in 2017. Evans Hall has a significant backlog of deferred maintenance. Most building systems are original to the building's construction in 1971 and are beyond their useful life. The campus will replace the Evans Hall program in separate buildings because replacement building is more cost effective for addressing the known seismic issues and shifts in academic program affiliations; a campus need to make the highest and best use of limited development sites to provide additional space for increased enrollment. The existing Evans Hall would be demolished after the replacement buildings are complete. The project is consistent with the 2020 LRDP and LRDP EIR as the documents considered demolition of Evans Hall and the construction of new academic buildings on other University-owned sites.

V. Does this project conform to an approved LRDP? ☑ YES ☐ NO ☐ N/A

VI. CAMPUS ADMINISTRATION

Prepared by: T. Green Date: 1/3/2020 [sign] Timothy P Green

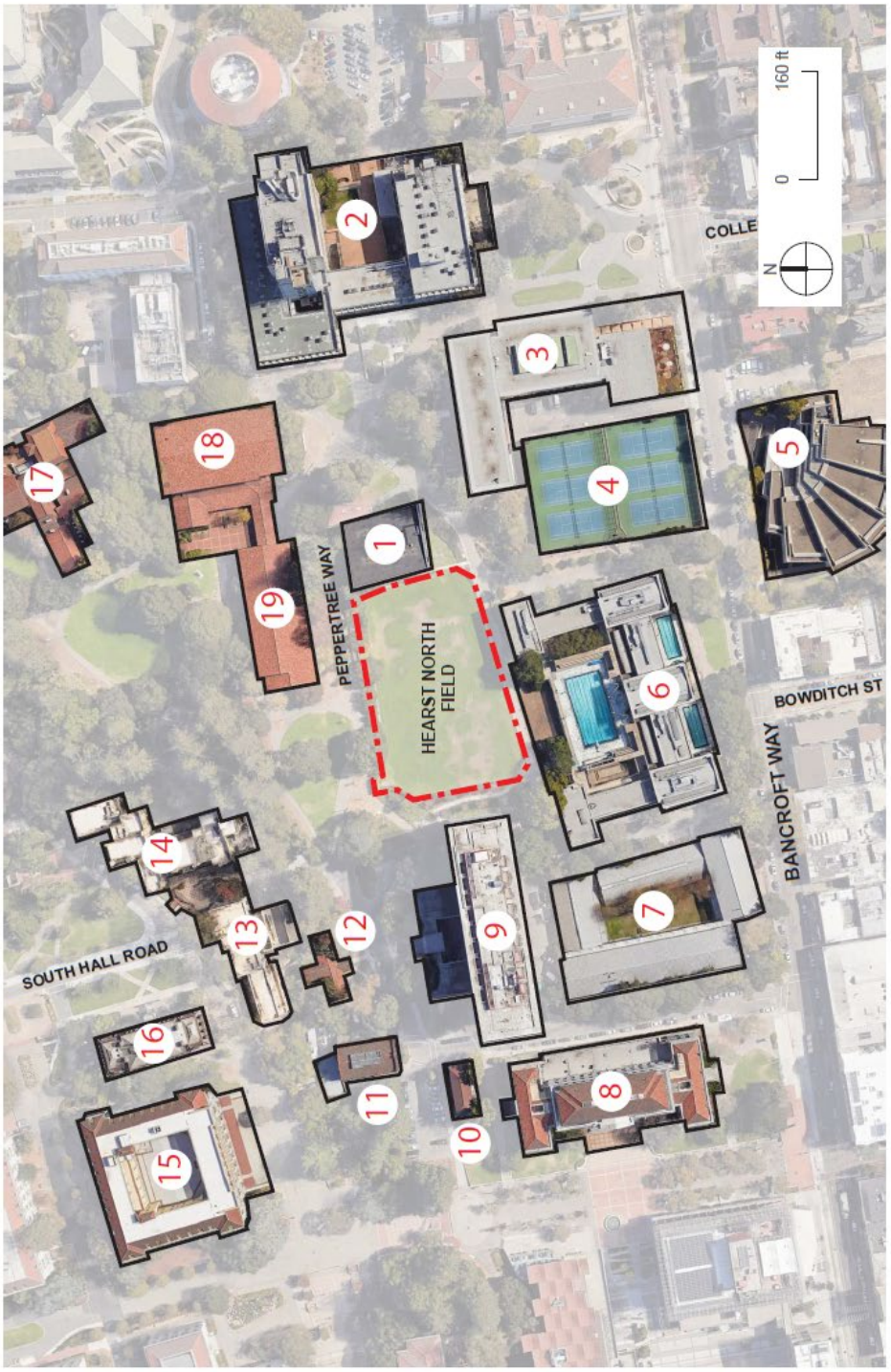
Local Approved by W. Hillis Date: 1/3/2020 [sign]

VII. OFFICE OF THE PRESIDENT ☐ Concur with Classification ☐ Do not Concur

Signed: Date: 1/10/2020

FORM DATE 09/2017 UCOP Form EIC

APPENDIX 4: PROJECT GRAPHICS



NORTH FIELD SITE - VICINITY MAP

1. Hargrove Music Library
2. Wurster Hall
3. Kroeber Hall
4. Bancroft Parking Structure
5. Woo Hon Fai Hall
6. Hearst Memorial Gymnasium
7. Hearst Field Annex
8. Sproul Hall
9. Barrows Hall
10. Architects & Engineers
11. Old Art Gallery
12. Anthony Hall
13. Moses Hall
14. Stephens Hall
15. Wheeler Hall
16. South Hall
17. Faculty Club
18. Hertz Hall
19. Morrison Hall


WURSTER HALL 9 STORIES
KROEBER HALL 4 STORIES
BANCROFT WAY
HERTZ HALL 2 STORIES
OPTOMETRY LANE
HARGROVE MUSIC LIBRARY 3 STORIES
BANCROFT PARKING STRUCTURE 1 STORY
MORRISON HALL 2 STORIES
PEPPERTREE WAY
HEARST NORTH FIELD
HEARST MEMORIAL GYMNASIUM 3 STORIES
BARROWS HALL 8 STORIES
HEARST FIELD ANNEX 1 STORY
MOSES HALL 4 STORIES
ANTHONY HALL 1 STORY
ESHLEMAN ROAD
OLD ART GALLERY 1 STORY
A & E 3 STORIES
BARROW LANE
SPROUL HALL 4 STORIES
N
0
80 ft
ACCESSIBLE PATH
PROPOSED SITE
STRAWBERRY CREEK
SUN PATH
PREVAILING WIND
(E) LANDSCAPE
BIKE PATH
VEHICULAR CIRCULATION
PEDESTRIAN CIRCULATION
(E) BUS STOP
VEHICULAR ENTRY
GATHERING AREA
NORTH FIELD SITE - SITE ANALYSIS

APPENDIX 5: Building Deferred Maintenance Data

Table. Building Deferred Maintenance Values

FCA Code	Estimated Value (DM$)
Red (All Years)	$242,550
Yellow (Action Year 1)	$3,467,409
Yellow (Action Year 2)	$13,974,950
Yellow (Action Year 3-5)	$51,160,309
Yellow (Action Year 6+)	-
Green (All Years)	$37,835
FCA Total	$68,883,053

Sources: UC Berkeley Facilities Services, 2020

STATE OF CALIFORNIA
Capital Outlay Budget Change Proposal (COBCP) - Cover Sheet
DF-151 (REV 07/19)

Fiscal Year	Business Unit	Department	Priority No.
2020-21	6440	University of California	

Budget Request Name	Capital Outlay Program ID	Capital Outlay Project ID *(7 digits. For new projects leave blank)*

Project Title	Project Status and Type
Davis – Sprocket Building Seismic Corrections	Status: ☒ New ☐ Continuing Type: ☒ Major ☐ Minor

Project Category *(Select one)*
☐ CRI *(Critical Infrastructure)* ☐ WSD *(Workload Space Deficiencies)* ☐ ECP *(Enrollment Caseload Population)* ☒ SM (*Seismic)*
☐ FLS *(Fire Life Safety)* ☐ FM *(Facility Modernization)* ☐ PAR *(Public Access Recreation)* ☐ RC *(Resource Conservation)*

Total Request (in thousands)	Phase(s) to be Funded	Estimated Total Project Cost (in thousands)
$**12,000**	PWC	$12,000

Budget Request Summary

Sprocket Building Seismic Corrections - $12,000,000 for Preliminary Plans, Working Drawings, and Construction. The project will provide seismic corrections and high priority deferred maintenance to Sprocket Hall, a 20,000 gross square foot building that currently houses the College of Agricultural and Environmental Sciences and College of Letters and Sciences. Space types include research laboratories, and academic, administrative, and research offices. Sprocket Hall has a Seismic Performance Rating (SPR) of VI and would be upgraded to SPR IV.

The total project costs are estimated at $12,000,000, including Preliminary Plans ($690,000), Working Drawings ($990,000), and Construction ($10,320,000). The construction amount includes $8,831,000 for the construction contract, $617,000 for contingency, and $872,000 for architectural and engineering services. Preliminary Plans are scheduled to begin in July 2020 and complete in February 2021. Working Drawings are scheduled to begin March 2021 and complete in August 2021. Construction is scheduled to begin in January 2022 and complete in June 2023.

Requires Legislation	Code Section(s) to be Added/Amended/Repealed	CCCI
☐ Yes ☒ No		**8014**

Requires Provisional Language	Budget Package Status
☐ Yes ☒ No	☐ Needed ☒ Not Needed ☐ Existing

Impact on Support Budget

One-Time Costs	☐ Yes	☒ No	Future Costs	☐ Yes	☐ No
Future Savings	☐ Yes	☒ No	Revenue	☐ Yes	☐ No

If proposal affects another department, does other department concur with proposal? ☐ Yes ☐ No
Attach comments of affected department, signed and dated by the department director or designee.

Prepared By	Date	Reviewed By	Date
Colleen Connor *Colleen Connor*	4/7/2020	Dana Santa Cruz *Dana Santa Cruz*	4/7/2020
Department Director	**Date**	**Agency Secretary**	**Date**

Department of Finance Use Only

Principal Program Budget Analyst	Date submitted to the Legislature

UC DAVIS
UNIVERSITY OF CALIFORNIA

Project Planning Guide

for

Sprocket Building

Seismic Corrections

Project Account #953630

April 2020

CAMPUS APPROVAL

Prepared by:

_____
Leslie Carbahal, Director
Capital Planning
Design and Construction Management

Approved By:

_____
Jim Carroll, Associate Vice Chancellor and
University Architect
Design and Construction Management

CAMPUS APPROVAL

Prepared by:

Leslie Carbahal

Leslie Carbahal, Director
Capital Planning
Design and Construction Management

04/02/2020

Approved By:

_____

Jim Carroll, Associate Vice Chancellor and
University Architect
Design and Construction Management

University of California, Davis
Sprocket Building Seismic Corrections
Project Number 953630
April 2020

Table of Contents

Executive Summary

The University of California, Davis proposes to provide seismic corrections and high priority deferred maintenance to the Sprocket Building. The Sprocket Building, formerly known as the Food Science and Technology Building, is a two-story reinforced concrete structure. Sprocket has received a Seismic Performance Rating (SPR) of VI with seismic deficiencies in wall anchorage and load path. Significant structural damage is anticipated in the Sprocket Building in the event of a moderate to large earthquake. The project delivers seismic corrections to ensure Sprocket meets the UC Seismic Safety policy. Mandatory code corrections triggered by the structural work would potentially include, but are not limited to, accessibility and egress upgrades and fire/life safety improvements. Upon completion of the work, the SPR would be upgraded to IV.

The approximately 20,000 gross-square-feet (gsf) Sprocket Building has not been structurally upgraded or significantly renovated since it was built in 1964. Sprocket is occupied by a number of departments in the College of Agricultural and Environmental Sciences and the College of Letters and Sciences. Space types in the facility include research laboratories, and academic, administrative, and research offices.

The seismic work is an interior and exterior retrofit strategy that retrofits existing shear walls; adds collector beams at the roof and second floor; strengthens the roof diaphragm; strengthens the roof to wall connections; strengthens the second floor to wall connections; strengthens the in-plane wall capacity to the foundation; and interconnects walls in selected locations to improve their overturning capacity. Related repairs and restoration scope would include roofing removal and replacement; modifications to building systems; and replacement of ceilings, lighting, and finishes in areas impacted by the work. Exterior restoration will address building landscape and access disrupted by the seismic correction work. Deferred maintenance corrections address electrical distribution among other high priority needs, and code triggered improvements include upgrades to the fire safety systems as well as entry doors, restrooms, drinking fountains, door hardware and signage, and exterior path of travel.

Construction will be phased and timed to allow for the building to remain occupied as much as possible during construction. In order to minimize impacts to building occupants to the extent possible, the project will explore options for weekend, off-hour, and summer work, particularly for utility shutdowns. If necessary, a small portion of the building's occupants would be relocated for the full construction window in combination with rotating internal occupants to support the repairs.

Problem Statement

The Sprocket Building is home to multiple departments within the College of Agricultural Sciences and the College of Letters of Sciences. Space types currently located in the facility include research laboratories and academic, administrative, and research offices.

The Sprocket Building

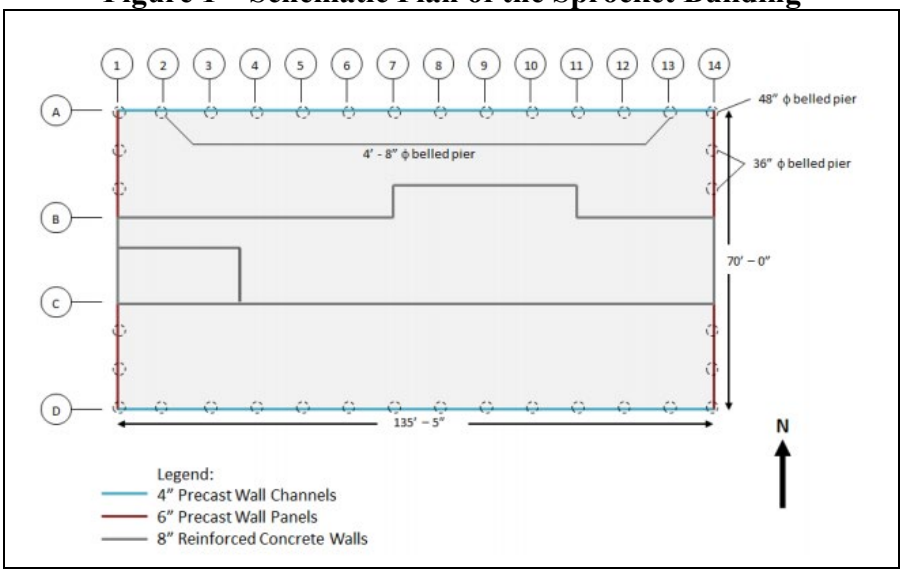
The Sprocket Building, constructed in 1964, is a two-story facility with a partial basement that acts as an equipment chase. Sprocket is a reinforced concrete structure located on the core UC Davis campus, with Cruess Hall to the north and east, the Student Housing Administration Building to the west, and Hoagland Hall to the south across the Sprocket Bikeway. There are also several temporary buildings (TB 188, 189, 16) in the immediate vicinity. The facility accommodates research and related support space and academic, research and administrative offices.

The Sprocket Building consists of precast concrete wall panels, floor channels, and roof T's in combination with cast-in-place walls and floor topping. The gravity force resisting system consists of precast concrete T beams at the roof level and precast concrete channel beams at the second floor. The slabs of adjacent T and channel beams are interconnected with field welded hairpin bars intermittently spaced along the beam lengths. The second-floor channels support a light-weight concrete topping slab that is reinforced with welded wire fabric and has additional reinforcing at the channel beam slab joints. Perimeter precast concrete wall panels support the precast beams at the perimeter and cast-in-place concrete walls support the precast beams at the interior. The perimeter walls are supported on shallow belled piers and the interior walls are supported on continuous footings.

The lateral force resisting system consists of the interconnected precast concrete T's and channels and their topping slabs, the perimeter and interior concrete walls, and the concrete slab-on-grade. The roof T's connect to the perimeter walls with through-belts embedded into a perimeter cast-in-place concrete beam. The concrete beam is cast on top of the precast concrete walls and doweled into the wall with threaded dowels in precast inserts. The roof beam slab is not positively connected to the interior concrete walls. Instead, the cast-in-place walls are cast up against the sides of the precast T webs. The interior shear wall is discontinuous below the ground floor to accommodate the equipment chase below.

Figure 1 provides a schematic floor plan of the Sprocket Building.

Figure 1—Schematic Plan of the Sprocket Building



Seismic Deficiencies

A structural analysis has determined that Sprocket Hall does not have adequate seismic resistance to comply with the UC Seismic Safety Policy. The Sprocket Building received a SPR of VI due to seismic deficiencies in shear wall overturning resistance, shear wall flexure, spandrel shear, interconnections between precast roof T's, slab-to-wall connectors, and out-of-plane wall connections. In addition, the building lacks well defined collector beams.

The roof T-beam slabs are interconnected with three welded hair-pin dowels per panel. These dowels have low shear capacity resulting in a high demand to capacity for the wall-to-slab connections. The dowels between the perimeter walls and the slab-on-grade also have low shear capacity resulting in high demand-to-capacity ratios. A number of walls also lack shear transfer into the slab on grade due to utility channels below the wall.

Seismic corrections are proposed for the Sprocket Building. Sprocket has structural elements that are vulnerable to damage in a seismic event, including the connections between the concrete roof T-beams and the walls; spandrel beams in shear; the shear walls themselves, in flexure and overturning; wall to slab-on-grade connections; and out-of-plane wall connections as well as lack of well-defined collector beams.

Fire/Life Safety and Accessibility Deficiencies

The building does not comply with current accessibility codes under the Americans with Disabilities Act or the California Administrative Code. Modifications are needed to provide code-compliant entry doors, elevators, restrooms, drinking fountains, door hardware, and signage. There are also deficiencies to the building's fire alarm and fire sprinkler systems.

Project Description

Seismic Corrections, Code Upgrades, and Deferred Maintenance (State-funded)
The proposed project would provide seismic corrections in the Sprocket Building. The project components described in this section reflect the most critical facility needs for the Sprocket Building as identified during project planning and preliminary engineering studies. The exact seismic solution will be the subject of further assessment during design and limited by projected construction market conditions at the time of bid. Upon completion of the work, the seismic rating for the building would be upgraded to a seismic performance rating of IV.

Seismic Corrections

- Add exterior drilled piers and grade beams on east and west sides of the building and through bolts into existing walls.
- Extend fiberglass reinforced plastic (FRP) strapping up precast panel joints on the east and west.
- Sawcut existing ground floor slab and install new grade beam from north to south.
- Thicken existing concrete wall at mechanical room and add two concrete columns.
- Add collector beam at ceiling of first floor and on roof.
- Add FRP straps to precast roof tee joints.
- Add FRP, concrete fill, and angle brackets on east and west exterior walls.
- Add angle connector between concrete walls and roof tees.
- Add double angle connector between interior concrete walls and roof tees.
- Add horriz angle connector between interior concrete walls and floor tees.
- Interior and exterior work as triggered by areas disrupted by seismic corrections: landscape, finishes, roofing, waterproofing, painting, and other improvements including but not limited to the following:
    - Site work required to support new piers and grade beams.
    - Removal and replacement of interior and exterior finishes and relocation of piping, conduit, and ductwork associated with FRP strapping and wall and beam additions and modifications.

Deferred Maintenance

- Electrical distribution maintenance, including replacement of eight panelboards/motor control centers, and one switchboard.

Code Upgrades

- Access upgrades to ensure code compliant access (entry doors, elevators, drinking fountains, door hardware, and signage) and restrooms; and
- Fire alarm and fire sprinkler upgrades.

Program Improvements (Non-Stated Funded)
The mandatory seismic correction and code-triggered upgrade work may provide an opportunity to make program improvements in the Sprocket Building. The campus is evaluating program

improvements to select areas of the building, which may or may not be directly impacted by the seismic work. Potential additional improvement under consideration are building-specific but could include reconfiguration of walls to improve space utilization and functionality; modifications to the building systems; and replacement of ceilings, lighting, and finishes not impacted by seismic or deferred maintenance work. A cost-benefit analysis of potential additional improvements will be conducted during the preliminary planning phase of the project and any non-State funded scope and budget increases recommended to be included in the project will be requested at the time of budget and design approval.

Space Impacts

It is anticipated that the building will remain occupied during construction. The seismic work will disrupt occupied portions of the building. Challenges anticipated for building occupants include relocations mandated by the work, disruption to research, wayfinding challenges, bike and vehicle parking displacement, temporary restroom, and utility shutdowns. Construction noise may also impact building occupants and the project will explore options to minimize disruption.

Construction will be phased to allow for as much continued occupancy as possible during construction. A portion of the building's occupants may need to be relocated for the full construction window and rotating additional internal relocations would be necessary to support the repairs. Campus Space Planning will work with the building occupants to provide temporary relocation space and to coordinate the internal relocations for those displaced by construction. Work would be timed to minimize the impacts of construction to building occupants.

No impacts to usable building square footage or program space or a change in use are anticipated to result from this project.

Cost Basis and Funding Plan

The campus has completed general pre-design studies and cost analyses for this project. A Tier 2 evaluation as well as some additional studies have been completed in order to assess the seismic condition of the Sprocket Building.

The project will be funded by $12 million in external financing supported by State General Funds (California Education Code Sections 92495 et seq.). Any increase in budget for program improvements scope identified during preliminary planning will be funded by non-State resources.

Sustainability

The project will comply with the UC Sustainable Practices policy. As required by the policy, the project will adopt energy efficiency and sustainability to the fullest extent possible, consistent with budgetary constraints, defined project scope, and regulatory and programmatic requirements.

Relationship to University Mission and Objectives

The project supports the instruction and research mission of the University of California by improving the seismic safety of facilities for teaching and research in a campus academic building.

Alternatives

Seismic correction of the Sprocket Building is the best option to bring the building into compliance with the UC Seismic Safety Policy. The facility is occupied by active academic and administrative programs and research in direct support of fulfilling the University's mission. The Davis campus is generally space constrained and does not have vacant space resources that would allow for the permanent relocation of all building occupants without constructing replacement space. Demolition and replacement is also not a viable alternative; the work proposed in this project represents approximately thirty-six percent of the replacement cost of the building, which generally continues to function well for the uses it supports.

The project proposes to renovate the Sprocket Building to a SPR of IV in compliance with the UC Seismic Safety Policy. The campus does not have information about the incremental cost associated with upgrading the building to a rating of III beyond the anticipated minimal acceptable performance rating of IV.

Project Location Map

UNIVERSITY OF CALIFORNIA DAVIS, CALIFORNIA
SPROCKET BUILDING SEISMIC CORRECTIONS
PROJECT NO: 953630

Site Plan

UNIVERSITY OF CALIFORNIA DAVIS, CALIFORNIA
SPROCKET BUILDING SEISMIC CORRECTIONS
PROJECT NO: 953630

NTS

Capital Improvement Budget

CAPITAL IMPROVEMENT BUDGET
BUDGET DATA

UNIVERSITY OF CALIFORNIA
CAMPUS: DAVIS

	Project Title: Sprocket Building Seismic Corrections	**Account Number:** Campus Reference 953630		Asset No.	CCCI: 8014 EPI: Cost Indexes	
A	**FUNDING SCHEDULE**	Prefunded				
	Totals (000's)	(2019-20)	(2020-21)	(2021-22)	(2022-23)	
	S P $690 W $990 C $10,320 E		P $690 W $990 C $10,320 E			
	Total Project $12,000		$12,000			
B	**FUNDING REFERENCES**					
		Column (1)	Column (2)	Column (3)	Total All Sources	
	Account No.					
	Source					
C	**COSTS**					%
0	Site Clearance				$260,000	2.2%
1	Construction				$8,053,000	67.1%
2	Exterior Utilities				$345,000	2.9%
4	Site Development				$173,000	1.4%
5	Fees				$1,235,000	10.3%
6	A&E/PP&C				$530,000	4.4%
7	Surveys, Tests, Plans & Specifications				$265,000	2.2%
8	Special Items				$522,000	4.4%
	SUBTOTAL				$11,383,000	94.9%
9	Contingency 7.0%				$617,000	5.1%
	TOTAL P_W_C				$12,000,000	100.0%
3	Group 2 & 3 Equipment					
	TOTAL PROJECT				$12,000,000	
	Available Funding					
	Available Surplus/(Deficit)					
D	**FINANCING**					
	State Funds (AB-94) $12,000,000					
	TOTAL $12,000,000					
E	**STATUS OF PROJECT**					
	Project Planning Guide					
	Name: Jim Carroll Title: AVC & University Architect Prepared By: A.Timm	Signature: Leslie Carbahal Name: Leslie Carbahal Title: Director of Capital Planning Approved for Campus, Date:		Budget No. Issue Date Revised Revised	1 3/23/20	
	Program: Fiscal: Cost:	Signature:_____ Title: Approved AVP_PPC, Date:				

Page 1 of 2

Capital Improvement Budget

CAPITAL IMPROVEMENT BUDGET
BUDGET DATA

UNIVERSITY OF CALIFORNIA

CAMPUS: DAVIS

Project Title:	Account Number:		
Sprocket Building Seismic Corrections	Campus Reference 953630	Asset No.	CCCI: 8014 EPI: Cost Indexes

F ANALYTICAL DATA

	Column (1)	Column (2)	Column (3)	Total All Sources
ASF Per PPG	ASF	ASF	ASF	ASF
ASF Current	ASF	ASF	ASF	13,779 ASF
OGSF	OGSF	OGSF	OGSF	19,829 OGSF
Ratio (ASF Current / OGSF)	to 1.00	to 1.00	to 1.00	0.69 to 1.00
Construction Cost Per ASF	/ASF	/ASF	/ASF	$584.44 /ASF
Construction Cost Per OGSF	/OGSF	/OGSF	/OGSF	$406.12 /OGSF
Total PWC Cost Per ASF	/ASF	/ASF	/ASF	$870.89 /ASF
Total PWC Cost Per OGSF	/OGSF	/OGSF	/OGSF	$605.17 /OGSF
Grp. 2 & 3 Equip Cost / ASF	/ASF	/ASF	/ASF	/ASF

G CONSTRUCTION COST ANALYSIS

H Notes:

Sub 8 Items:

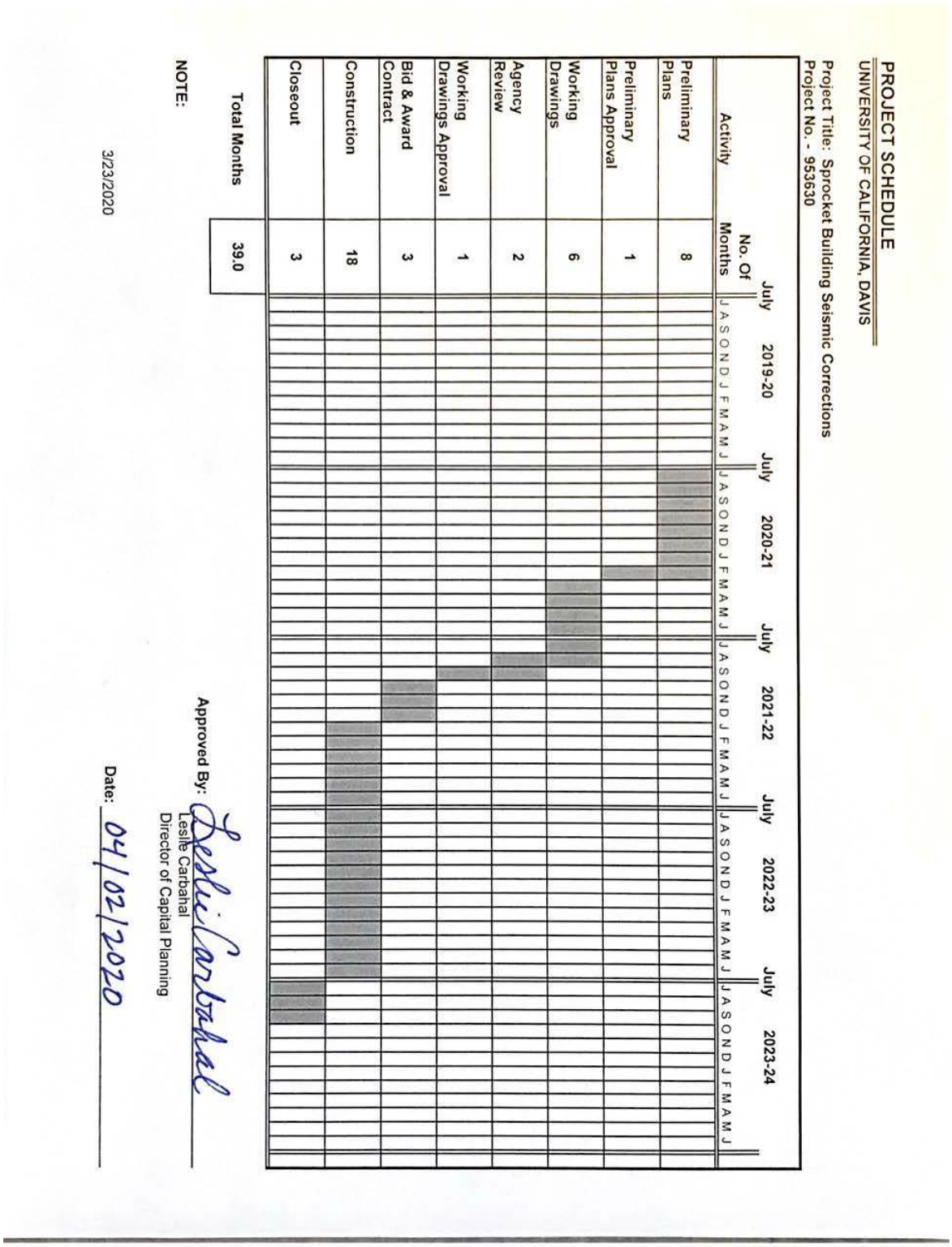
Environmental / EIR Services	50,000
As-Built Survey	30,000
Value Engineering / Constructibility Review	90,000
Agency Review (DSA & Fire Marshall)	70,000
Haz. Mat. Surveys & Testing	75,000
Commissioning	40,000
Independent Structural / Seismic Review	25,000
Specialty Inspection - Code Compliance	62,000
Special Consultant (Historic Bldg., Radiological, WP)	80,000
Subtotal	**522,000**
Interest During Construction	
Total Sub 8	**522,000**

Prepared By: A.Timm

Budget No.	1
Issue Date	3/23/20
Revised	
Revised	

Page 2 of 2

Schedule



PROJECT SCHEDULE
UNIVERSITY OF CALIFORNIA, DAVIS

Project Title: Sprocket Building Seismic Corrections
Project No. - 953630

Activity	No. Of Months	July 2019-20 J A S O N D J F M A M J	July 2020-21 J A S O N D J F M A M J	July 2021-22 J A S O N D J F M A M J	July 2022-23 J A S O N D J F M A M J	July 2023-24 J A S O N D J F M A M J
Preliminary Plans	8					
Preliminary Plans Approval	1					
Working Drawings	6					
Agency Review	2					
Working Drawings Approval	1					
Bid & Award Contract	3					
Construction	18					
Closeout	3					
Total Months	39.0					

NOTE:

Approved By: Leslie Carbahal
Leslie Carbahal
Director of Capital Planning

Date: 04/02/2020

3/23/2020

Environmental Impact Classification

UNIVERSITY OF CALIFORNIA ENVIRONMENTAL IMPACT CLASSIFICATION

Campus/Field Station/Division *Davis* **Project Account** 953630

Project Title Sprocket Building Seismic Corrections Project

For purposes of compliance with the California Environmental Quality Act of 1970 (CEQA), and Amended University of California Procedures for Implementation of CEQA, this project has been reviewed and initially classified as indicated below. Please check (**X**) as appropriate. Include project description and appropriate local map with your submission.

☐ **I. EXEMPT FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT OF 1970 -** When it can be seen with certainty that there is no possibility the action will result in physical change to the environment (15061(b)(3)), or the action is specifically exempted by statute (15260-15285), the project is classified as generally exempt from CEQA. General/Statutory Exemption: § _____

☐ **II. CATEGORICALLY EXEMPT -** This project falls under the indicated Class(es) of Exemption(s), none of the exceptions to the exemption apply (15300.2), and there is no significant effect on the environment (for complete list see CEQA Guidelines Section 15300):

____	Class 1:	Existing Facilities	____	Class 17:	Open Space Contracts or Easements
____	Class 2:	Replacement or Reconstruction	____	Class 23:	Normal Operation of Facilities for Public Gatherings
____	Class 3:	New Construction or Small Structures	____	Class 25:	Transfer of Land: Natural Conditions/Historical Resources
____	Class 4:	Minor Alterations to Land	____	Class 30:	Minor Actions: Prevent Hazardous Waste/Substances
____	Class 6:	Information Collection	____	Class 31:	Historical Resource Restoration/Rehabilitation
____	Class 11:	Accessory Structures	____	Class 32:	In-Fill Development Projects
____	Class 13:	Acquisition for Conservation	____	Class 33:	Small Habitat Restoration Projects
____	Class 16:	Transfer of Land Ownership for Parks	____	Other:	_____

☐ **III. INITIAL STUDY -** This project is not statutorily or categorically exempt from CEQA; an Initial Study is to be prepared to determine if the project may have a significant effect on the environment.

☐ Stand-Alone ☐ Tiered Initial Study (15152): _____

☒ **IV. ENVIRONMENTAL IMPACT REPORT (EIR) -** It is known that the project will have a direct or cumulatively significant effect on the environment and an EIR will be/has been prepared. Identify the type of EIR:

☒ Programmatic ☐ Stand-Alone (Project-Specific) UC Davis 2018 Long Range Development Plan EIR (SC# 2017012008)

Additional project analysis:

☐ None/Findings Only ☒ Addendum ☐ Subsequent ☐ Supplement to EIR: _____

PROJECT DESCRIPTION -

UC Davis will complete structural seismic safety corrections to Sprocket Building located in the central campus. A structural analysis has determined that Sprocket Building does not have adequate seismic resistance to comply with the UC Seismic Safety Policy. The scope of the seismic work is an interior and exterior retrofit strategy that retrofits existing shear walls; adds collector beams at the roof and second floor; strengthens the roof diaphragm; strengthens the roof to wall connections; strengthens the second floor to wall connections; strengthens the in-plane wall capacity to the foundation; and interconnects walls in selected locations to improve their overturning capacity. Related repairs and restoration scope would include roofing removal and replacement; modifications to building systems; and replacement of ceilings, lighting, and finishes in areas impacted by the work. Exterior restoration will address building landscape and access disrupted by the seismic correction work. Deferred maintenance corrections address electrical distribution among other high priority needs, and code triggered improvements include upgrades to the fire safety systems as well as entry doors, restrooms, drinking fountains, door hardware and signage, and exterior path of travel.

The project is subject to the California Environmental Quality Act (CEQA). As Sprocket Building is over 50 years old, a review of its historical significance will be undertaken. It is anticipated that either a categorical exemption or an addendum will prepared. Prior to document approval, a CEQA determination will be made and appropriate documentation completed.

V. Does this project conform to the approved LRDP? ☒YES ☐NO ☐NA *[If NO or NA, include explanation in Project Description above]*

VI. Heather Davis — Prepared by Heather Davis; 4/3/20 — Date; Matt Dulcich — Local Approval by Matt Dulcich; 4/2/20 — Date

VII. OFFICE OF THE PRESIDENT

☒ Concur with Classification ☐ Do not concur with Classification

Signed _____ **4/7/2020** Date

FORM DATE 9/2016 (UCOP Form EIC)