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Office of the President

TO MEMBERS OF THE COMMITTEE ON GROUNDS AND BUILDINGS:

ACTION ITEM

For Meeting of March 19, 2014

APPROVAL OF THE BUDGET AND APPROVAL OF STANDBY FINANCING AND INTERIM FINANCING, ENGINEERING VI – PHASE 2, LOS ANGELES CAMPUS

EXECUTIVE SUMMARY

The proposed project would involve construction of a 94,000 gross square foot (gsf) research laboratory facility to accommodate multi-disciplinary information science and computation research programs of the Henry Samueli School of Engineering and Applied Science (HSSEAS). The proposed facility would be built adjacent to the Engineering VI – Phase 1 building currently under construction on Westwood Plaza at the center of campus.

The building would provide research laboratories and offices for approximately 35 faculty, an incubation laboratory for the translation of the research to commercial use, and a 250-seat technology-enabled Learning Center equipped to serve both traditional and online engineering students. It would allow for the expansion of research activities and help to alleviate deficiencies in the engineering complex resulting from the growth of faculty and students during the past decade.

The project would provide HSSEAS with a collaborative environment to foster scientific discoveries; support the development of new technologies, inventions and educational programs; and create new commercial opportunities for high-growth industries dependent on computation research.

The Regents are being asked to:

1) Approve the project budget of $72.7 million to be funded by gift funds.
2) Approval of standby financing ($15,211,000).
3) Approve interim financing ($44,017,000).

RECOMMENDATION

The President of the University recommends that the Committee on Grounds and Buildings recommend to the Regents that:

1. The 2013-14 Budget for Capital Improvements and the Capital Improvement Program be amended to include the following project:

   Los Angeles: Engineering VI – Phase 2 – preliminary plans, working drawings, and construction – $72.7 million to be funded from gift funds.

2. The scope of the Engineering VI – Phase 2 project (the "Project") shall be for construction of a 94,000 gross square foot facility to accommodate multi-disciplinary information science and computation research programs of the Henry Samueli School of Engineering and Applied Science, including research laboratories and offices, an incubation laboratory for the translation of research to commercial use, and a technology-enabled learning center equipped to serve both traditional and online engineering students.

3. The President of the University be authorized to obtain standby financing not to exceed $15,211,000 for the Project. The President of the University shall require that:

   A. Interest only, based on the amount drawn down, shall be paid on the outstanding balance during the construction period.

   B. As long as the pledge balance is outstanding, the general revenues from the Los Angeles campus shall be maintained in amounts sufficient to pay the debt service and to meet the related requirements of the authorized financing.

   C. The general credit of the Regents shall not be pledged.

4. The President of the University be authorized to obtain interim financing not to exceed $44,017,000 for the Project. The President of the University shall require that:

   A. Interest only, based on the amount drawn down, shall be paid on the outstanding balance during the construction period.

   B. To the extent additional gifts are received as documented legally binding pledges, the interim financing will be converted to standby financing.

   C. As long as the debt is outstanding, general revenues from the Los Angeles campus shall be maintained in amounts sufficient to pay the debt service and to meet the related requirements of the authorized financing.

   D. The general credit of the Regents shall not be pledged.

5. The President of the University be authorized to execute all documents necessary in connection with the above.

BACKGROUND

A new research laboratory building is needed to provide the Henry Samueli School of Engineering and Applied Science (HSSEAS) with a collaborative environment for multi-disciplinary information science and computation research that cannot be accommodated within existing facilities. The proposed building would allow for the expansion of this research and help alleviate space deficiencies throughout the engineering complex resulting from the growth of faculty and staff during the past decade.

The proposed location on Westwood Plaza is on the former site of the seismically deficient Engineering 1A building that was demolished in 2012. The Engineering VI – Phase 1 project, approved in November 2011, is currently under construction on the north portion of this site. That project will provide 35,000 assignable square feet (asf) of specialized laboratories for the development of energy systems based on green technology. The Engineering VI – Phase 1 project, scheduled for completion in spring 2015, has been designed to accommodate a second phase of construction as contemplated by the proposed Project.

The HSSEAS is ranked in the top ten engineering schools among public universities nationwide by *U.S. News and World Report*. Founded in 1945, the School offers Ph.D., M.S., and B.S. degrees and comprehensive research and education in seven disciplines: 1) Bioengineering; 2) Chemical and Biomolecular Engineering; 3) Civil and Environmental Engineering; 4) Computer Science; 5) Electrical Engineering; 6) Materials Science and Engineering; and 7) Mechanical and Aerospace Engineering. An online learning program, ranked second in the nation by *U.S. News and World Report*, allows working engineers to earn M.S. degrees in Engineering from remote locations. HSSEAS also offers multi- and inter-disciplinary science and engineering programs that include Information Science and Computation Research.

Project Drivers

HSSEAS has experienced significant growth since the 1990s. The student population of undergraduate and graduate students has increased from 3,000 to more than 5,000; full-time equivalent faculty has grown from 112 to 154; and research expenditures have grown from approximately $50 million to $100 million. This growth has been absorbed into the engineering complex without an increase in space for the additional faculty and students. While the new Engineering VI – Phase 1 building replaces some lost square footage, it was designed to accommodate the needs of a highly specialized research program rather than the growth of faculty and students.

Information Science and Computation Research – a multi-disciplinary program with revenues per assignable square foot among the highest of all disciplines in HSSEAS – has not received a space or infrastructure upgrade in 30 years. This research is currently conducted in non-contiguous rooms in Boelter Hall that were designed decades ago to support the research of

single disciplines. Open workspace with appropriate technology infrastructure is needed to meet contemporary engineering challenges at the intersection of information, nanotechnology, and biological technologies that involve collaborations with other campus units in health sciences, medicine, and public health. Incubation laboratory space is also needed to ensure that the advancement and commercialization of technology becomes an integral component of engineering research.

A technology-enabled learning center is needed to better serve traditional engineering students and online engineering students who take courses simultaneously from the same instructors. The Master of Science Online program – the first such program in the UC system – allows working engineers and computer scientists to earn Master of Science degrees in Engineering from remote locations. The program, entirely self-supporting, has a current enrollment of 300 that is projected to grow to 1,000. Existing instructional space and broadcast facilities are located in rooms previously used for conferences in Boelter Hall that lack appropriate sight lines, acoustics, and technology infrastructure. A modern learning center would improve the educational experience for students, facilitate the growth of the online program, and simplify the logistics of serving both traditional and non-traditional students from a common venue.

PROJECT DESCRIPTION

The proposed project is for construction of a 94,000 gross square foot (gsf) (60,000 asf) research laboratory facility to accommodate HSSEAS's multi-disciplinary information science and computation research programs. The proposed facility would be built adjacent to the Engineering VI – Phase 1 building currently under construction on Westwood Plaza.

Engineering VI – Phase 2 would comprise five levels and a basement. It would accommodate a learning center on the ground level, dry research laboratories and faculty offices on levels two through four, and a technology incubation laboratory on the fifth floor. The basement would accommodate additional laboratory support space and mechanical equipment. Pedestrian bridges would link building corridors on the upper levels to the adjacent Engineering VI – Phase 1 building to the north and the Engineering IV building to the south.

The computational research laboratories and faculty offices would have the space configuration and technological infrastructure to support the development of: (1) new methods to analyze and secure large volumes of digital information ("big data"); (2) new wireless and customized computing applications to improve healthcare delivery; and (3) new computational platforms to improve the delivery of data over the internet. The incubation laboratory would facilitate the translation of this research to commercial use. The learning center would enhance the creative interaction of faculty and students, and provide a venue for integrating the results of ongoing research with the academic program.

The scope of work would include site clearing and grading; connections to campus utilities; provision of infrastructure to support the potential for wet labs on the top floor in the future; installation of a high-capacity freight elevator, audio visual systems, and specialty lighting; and

site improvements. Group 2 and 3 furniture and equipment would be procured and installed separately by HSSEAS, with re-use of some existing items anticipated.
Program components are described below.

Space Type	ASF
Computational Research Labs	13,700
Incubation Laboratory and Support	14,200
Research Interaction	4,700
Research Offices and Support	12,000
Administrative Offices and Support	3,100
Conference Rooms	900
Graduate Student Commons	700
Learning Center	10,700
Total	**60,000**

Computational Research Laboratories: Open and flexible dry laboratories equipped with computer workstations, and enabled by cloud computing technology, would be provided to support the collaborative exchange of ideas and problem solving among a broad spectrum of computer scientists and engineers. The spaces would be configured to accommodate changing research needs over time, including the potential to subdivide them for the particular requirements of individual research groups.

Incubation Laboratory and Support: A technology incubation laboratory would be provided with the potential for private use activity. The facility, to be managed by HSSEAS's Institute for Technology Advancement, would be staffed by a core of experts with business and technology experience who work closely with industrial partners and government agencies to facilitate the development and commercialization of scientific discoveries at UCLA. The laboratory space would have the mechanical distribution, utility infrastructure, and vibrational stability to support both dry and wet laboratory use.

Research Interaction: Space would be provided to facilitate opportunities for impromptu meetings and collaborations among researchers, faculty, students, and staff. These would include designated breakout areas on each floor and dedicated spaces for quiet study. A variety of seating options would be provided.

Research Offices and Support: Private offices would be provided for 35 faculty, with shared offices for postdoctoral scholars and graduate students. Office space would also be provided for administrative and technical staff, and for graduate student support.

Conference Rooms: Shared conference rooms in a range of sizes would be provided to support research activity in the building.

Graduate Student Commons: Lounge space would be provided for graduate students involved in the computational research program. This dedicated space for graduate students would provide an informal environment away from the laboratories for sharing research ideas and findings.

Learning Center: A 250-seat technology-enabled classroom would be provided for the dissemination of course material to engineering students through traditional lectures, workshops, and symposia, and non-traditional students taking online courses. The classroom will be designed to accommodate an audience of 50 for distance learning and larger audiences of up to 250 for lectures and multi-media presentations. It will be divisible into two spaces – one with movable tables/seating and the other with fixed-tiered seating – that are equipped to support simultaneous events as well as record and broadcast to remote locations. The learning center would also include meeting space that can be used for office hours with online students via teleconferencing, breakout sessions, and hosting visiting alumni; exhibit space for the presentation of student work and the display of artifacts showcasing the School's achievements; and a pre-function/reception area.

Proposed Location

The proposed site is a portion of the parcel formerly occupied by Engineering 1A, a seismically deficient structure demolished in 2012. It is located immediately adjacent to the engineering complex on Westwood Plaza, and faces the traffic turnaround and pedestrian area at the terminus of Westwood Plaza. The site is bounded by the Engineering VI – Phase 1 project to the north, Engineering V to the east, Engineering IV to the south, and Westwood Plaza to the west.
A location map is included in Attachment 2.

Schedule
Recommendation of design approval by the Regents Committee on Grounds and Buildings is projected for May 2014. Construction is estimated to commence in April 2015, with completion in September 2017.

ATTACHMENTS:
Attachment 1: Alternatives Considered
Attachment 2: Location Map
Attachment 3: Project Budget
Attachment 4: Funding Plan
Attachment 5: Summary of Financial Feasibility
Attachment 6: Delivery Model

ATTACHMENT 1

ALTERNATIVES CONSIDERED

Summary of Project Drivers:

- Accommodate growth of faculty and students that have been absorbed into the engineering complex during the past decade without an increase in space.

- Provide dry laboratory space for Information Science and Computation Research with appropriate technology infrastructure that is conducive to the collaborative exchange of ideas and problem solving.

- Provide a technology incubation laboratory for the translation of the research into commercial use.

- Provide a technology-enabled learning center equipped to serve both traditional engineering students and to support the high demand for courses from the existing Master of Science Online program.

Alternatives Considered:

- **Lease/Purchase:** Space with large open areas and the supporting infrastructure for experimental and multidisciplinary research is not available for lease or purchase near campus.

- **Renovation:** Existing facilities in the engineering complex and across the campus are fully utilized and are not configured to provide open and flexible laboratory space. This alternative is undesirable given that: it would be disruptive to existing research programs; staging within occupied buildings that are under construction is challenging; and there is no place within the existing complex that can accommodate a Learning Center.

- **New Construction proximate to or in HSSEAS**: New construction immediately adjacent to the existing engineering complex could be configured and sized to accommodate the proposed program. Relocation of highly productive researchers to a new facility would provide space within the existing engineering complex for the planned growth of faculty during the next five years.

Opportunity Cost of Not Building the Project:

- The School has not added new space during the past decade even though there has been a 100 percent increase in research activity, a 30 percent increase in student enrollment, and a 25 percent growth in faculty. Recent new facilities have not provided additional space for the growth of faculty and students: Engineering V only partially replaces square

footage lost when Engineering 1 was demolished in phases between 2004 and 2012, and Engineering VI – Phase 1 replaces some square footage lost when Engineering 1A was demolished and supports a highly specialized research program.

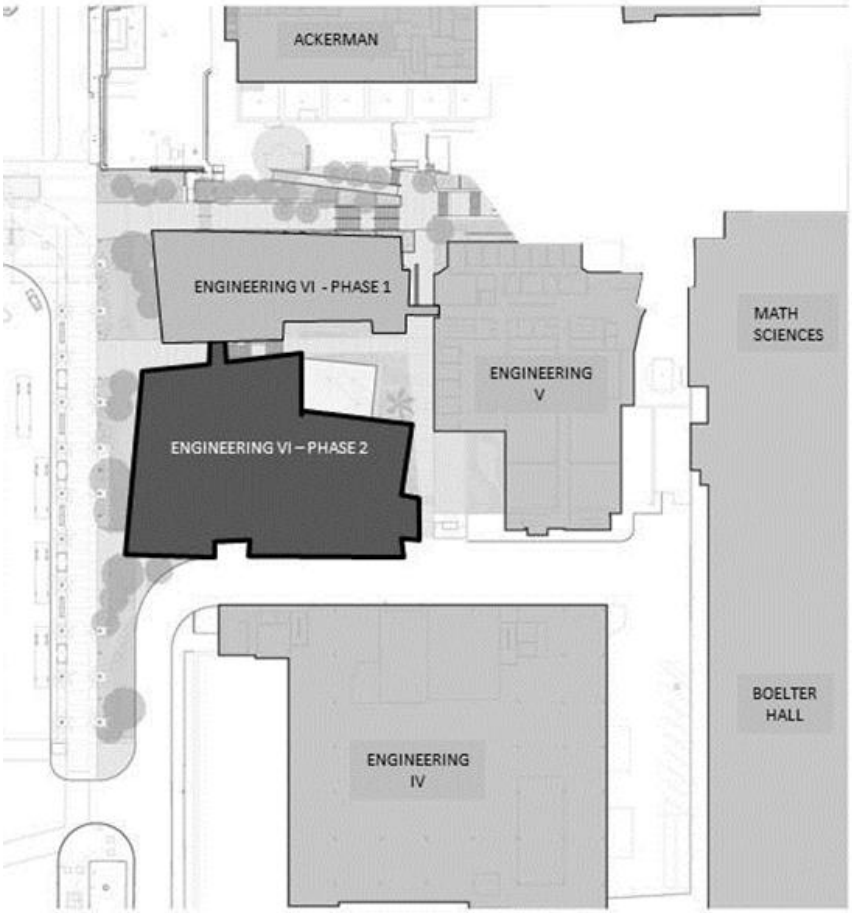
- Prospective hires at competing institutions are typically offered guaranteed access to modern research space in their recruitment package. UCLA must have an available inventory of computational laboratory space to remain competitive. Recent engineering facilities have provided primarily new and renovated wet laboratory space.

- Federal and industrial funding agencies require the identification of modern research space as a prerequisite for the grant funding of research centers. Availability of additional inventory of modern laboratory space would support continued growth in this area.

- Absence of a Learning Center would constrain the growth opportunities of the self-supporting Master of Science Online program, currently projected to grow from 300 to 1,000 students.

ATTACHMENT 2

Location Map



ATTACHMENT 3

PROJECT BUDGET
CCCI 6564

Category	Amount	% PWC
Site clearance	117,000	0.2
Building	54,271,000	74.7
Exterior utilities	596,000	0.8
Site development	2,162,000	3.0
A & E Fees	3,952,000	5.4
Campus administration	1,335,000	1.8
Surveys, tests, plans	1,164,000	1.6
Special items (other) (1)	1,979,000	2.7
Special items (interest expense)	1,760,000	2.4
Contingency	5,364,000	7.4
PWC	72,700,000	**100%**
Group 2 & 3 Equipment (2)		
Project Cost	**$72,700,000**	

Project Statistics	
GSF	94,000
ASF	60,000
ASF:GSF ratio	64%
Building Cost/GSF	$577
Project Cost/GSF	$773

Comparable Projects

CCCI: 6564

Campus	Project	Original Cost Index	GSF	Adjusted Bldg Cost per GSF	Adjusted Const Cost per GSF
UCI	Engineering Unit 3	4328	149,938	$466	$601
UCLA	Engineeering VI - Phase 1	6006	62,500	$671	$927
UCM	Science & Engineering	4019	173,483	$550	$635
UCM	Science & Engineering 2	5565	101,873	$760	$981
UCR	Engineering Bldg. Unit 3	5697	90,636	$632	$804
UCSD	Structural & Materials Engr. Bldg.	4632	183,400	$464	$580
			Average Value:	**$591**	**$755**

Notes

(1) Special Items include CEQA documentation, peer reviews, constructability review, specialty consultants, agency fees, LEED™ fees, and hazardous material survey.

(2) Furniture and equipment to be procured separately.

ATTACHMENT 4

FUNDING PLAN

Funding Sources

Project Cost	
Gift Funds	72,700,000
Total	**$72,700,000**
Funding Schedule	
Preliminary Plans	3,150,000
Working Drawings	2,482,000
Construction	67,068,000
Total	**$72,700,000**
Funding Available	
Gifts in Hand	13,472,000
Gifts Pledged (Standby Financing)	15,211,000
Gifts to be Confirmed (Interim Financing)	4,750,000
Gifts to be Raised (Interim Financing)	39,267,000
Total	**$72,700,000**
Standby Financing of Gifts	**$15,211,000**
Interim Financing of Gifts	**$44,017,000**

ATTACHMENT 5

SUMMARY OF FINANCIAL FEASIBILITY

Los Angeles Campus	
Project Name	**Engineering VI – Phase 2**
Project ID	**940252**
Total Estimated Project Costs	**$72,700,000**

Proposed Sources of Funding	
Gifts/Interim Financing	**$72,700,000**

Gift Schedule

Gift Funds	
Cash on Hand	**$13,472,000**
Pledged (Standby)	**$15,211,000**
To be Raised (Interim)	**$44,017,000**
Total	**$72,700,000**

A. Interim Financing

If $44,017,000 has been pledged around the end of construction, the campus would proceed with standby financing and use the interest only payment until all pledges have been paid.

Financing Assumptions	
Secondary Anticipated Repayment Source	**General Revenues of the Los Angeles campus**
Secondary Anticipated Fund Source	**Facilities and Administrative Cost Recovery Funds**
Financial Feasibility Rate	**4.00%**
Interest Only Payment	**$1,760,000**

Below are results of the financial feasibility analysis for the proposed project using the campus' debt affordability model. The financial projections take into consideration market conditions, new sources of revenue and all previously approved projects [and, [if any,] the external financing proposed above].

	Campus Financing Benchmarks	
Measure	**10 Year Projections**	**Approval Threshold**
Debt Service to Operations	**3.7% (max)**	**6.0%**
Debt Service Coverage	**2.61x (min)**	**1.75x**
Expendable Resources to Debt	**n/a**	**1.0x**

The campus debt model and financing benchmarks, shown above reflect converting the interim financing to external financing using the century bond for any unrealized gifts. The campus will return to the Regents for approval if such action is required. The use of the century bond is a conservative approach given that the bond is already included in the campus' debt model. At the time of external financing, the campus will consider all available financing options.

Financing approval requires the campus to meet the debt service to operations benchmark and one of the two other benchmarks for approval.

Measure	***Definition***
Debt Service to Operations (%)	*Annual Debt Service* *Total Operating Expenses*
Debt Service Coverage (x)	*Operating Income + Depreciation + Interest* *Annual Debt Service*
Expendable Resources to Debt (x)	*Expendable Financial Resources (unrestricted net assets + temporarily restricted net assets – net investment in plant)* *Total Debt Outstanding*

ATTACHMENT 6

DELIVERY MODEL

The campus evaluates alternative delivery models for new capital projects. Construction Manager-at-Risk in combination with a Best Value bidder selection methodology have the potential to allow the project to achieve greater control of cost and schedule than with conventional project delivery methods. Recent experience with Best Value methodology, with its prequalification requirements and qualitative evaluation, has resulted in bids from a wider range of experienced contractors who had not previously participated in projects on the UCLA campus, while the Construction Manager-at-Risk contracting method has allowed the campus to receive the benefit of contractor expertise during the design phase of the project. Based on the unique characteristics of this project, the campus will evaluate appropriate delivery models during the preliminary planning phase.