SUBJECT	Faculty of Applied Science Digital Design Studio Board 2, UBC Vancouver
SUBMITTED TO	Property Committee
MEETING DATE	June 15, 2023
SESSION	Recommended session criteria from Board Meetings Policy: OPEN
REQUEST	**APPROVAL REQUESTED** IT IS HEREBY RESOLVED that the Property Committee, in accordance with authority delegated by the Board of Governors, grants BOARD 2 approval for the Faculty of Applied Science Digital Design Studio project at UBC Vancouver as follows: *i.* approval of the revised capital budget and operating budgets; *ii.* approval to issue the development permit; *iii.* authorization to proceed to working drawings and tender; and, *iv.* approval of a funding release of $1,400,000 for the next stage.
LEAD EXECUTIVE	Frank Laezza, Vice-President Finance & Operations
SUPPORTED BY	Gage Averill, Provost and Vice-President Academic, UBC Vancouver Bhushan Gopaluni, Vice-Provost and Associate Vice-President Faculty Planning John Metras, Associate Vice-President Facilities Michael White, Associate Vice-President, Campus & Community Planning Jennifer Sanguinetti, Managing Director, Infrastructure Development Yale Loh, Treasurer James Olson, Dean, Faculty of Applied Science

PRIOR SUBMISSIONS

The subject matter of this submission considered most recently by the Property Committee on June 16, 2022 (OPEN SESSION) – Board 1 Approval, Funding Release $1,400,000. Action/Follow up: Proceed with schematic design.

The following Executive Summary provides a status update from the date of the most recent submission.

EXECUTIVE SUMMARY

In accordance with the Capital Projects Policy, this Board 2 approval request for the Faculty of Science Digital Design Studio is provided as part of the project management process for construction projects over $5,000,000. The Board of Governors has delegated to the Property Committee the authority to make decisions on its behalf for construction projects between $5 million and $20 million. The aggregate estimated value of the Faculty of Science Digital Design Studio is $13,196,000.

The Faculty of Applied Science (APSC) Digital Design Studio will provide cutting-edge technology-enriched spaces to facilitate new courses and modes of instruction aligned with the Faculty's strategic plan. The design and fabrication technology in this new space will add critical capacity to the spectrum of workshop spaces available to APSC undergraduate and graduate students and will encourage new pedagogical opportunities for cross-disciplinary learning and training among APSC's programs. The project will also fill a critical fabrication workshop teaching and learning space gap for the School of Architecture + Landscape Architecture (SALA).

Design has proceeded smoothly for the 930 gross square metre infill project to be located at the south end of the Chemical and Biological Engineering (CHBE) service yard. The two-storey building is enclosed on three sides by the existing CHBE Building, and is fully connected to the building's atrium at both levels. The ground floor houses

workshop facilities and maker spaces, while the second level is dedicated to design studio, project assembly, video conference and informal learning spaces. Design and planning have included good acoustic separation of future noisy power tools and existing building classrooms, as well as consideration of the remaining building service yard. The building program is unchanged from Board 1 except for minor refinements to space areas including incorporating robotics into general workshop space rather than a separate Digital Robot Shop.

Public Consultation

The design team presented to the Advisory Urban Design Panel (AUDP) and received support on April 13, 2023. On April 19, 2023, a public open house was held. Approximately 15 people viewed the presentation boards and many spoke with staff regarding the project which was well received. Staff is confident that the project is ready to proceed to issuance of the Development Permit following Board 2 approval.

Sustainability Objectives

The project team has worked with Campus & Community Planning to develop ambitious but reasonable goals for a project of this size. The addition will utilize the existing CHBE building mechanical systems, which improves the energy performance of the project, offering a 3.3% annual energy cost savings when compared to the ASHRAE 90.1-2010 base building. However, this is an insufficient reduction to meet the pre-requisites for LEED v4, despite offering a reduction in Heat Load Intensity and GHGI of the existing buildings' systems by 2.2%. The project team is continuing to explore other points to achieve LEED Gold, however there are limited practical options.

The project has also incorporated cross-laminated timber roof panels that offer a reduction in embodied carbon compared to the base building design of steel deck. The project team is exploring other measures to meet the 10% reduction from base building such as low-carbon concrete and steel, as well as a general strategy to reduce the amount of materials by exposing ceilings. Further sustainability updates will be reported at Board 3.

Capital Budget and Funding

The capital budget has increased to $13,196,000 from $12,861,000 due to continuing market escalation and despite both value engineering efforts and a robust contingency in the Board 1 budget. The project funding sources have been updated as follows:

Funding Source	**$**
SALA Capital Investment Fund	5,000,000
Faculty of Applied Science Surplus/Reserves	8,196,000
Total	**$13,196,000**

The Faculty of Applied Science has sufficient reserves to fund the full project if the SALA Capital Investment Fund target of $5 million is not achieved.

Risks

- Market escalation continues to be a challenge exceeding what was previously forecasted. A construction contingency has been included in the project budget to account for high market escalation.
- The new studio will be built adjacent to the CHBE building and will connect into it. There is a risk of unknown conditions inherent in the existing building as well as the underground conditions in the service yard. Extensive investigations of the existing building and the service yard will help mitigate this risk and minimize the impact on existing users. A construction contingency has been included in the project budget to deal with unforeseen items.

Preliminary Schedule

The following preliminary schedule has been updated to reflect Board 2 in June 2023:

Milestone	Target Date Board 1	Target Date Board 2
Executive 1+2	October 2021	October 2021
New Building Site Selection Committee Confirmation	January 2022	January 2022
Executive 3	May 2022	May 2022
Board 1	June 2022	June 2022
Board 2	March 2023	June 2023
Board 3	December 2023	December 2023
Construction Start	January 2024	January 2024
Construction Completion	March 2025	March 2025
Occupancy	May 2025	May 2025
Board 4	June 2027	June 2027

APPENDICES

1. Context Location Map
2. Functional Program
3. Preliminary Capital and Operating Budgets

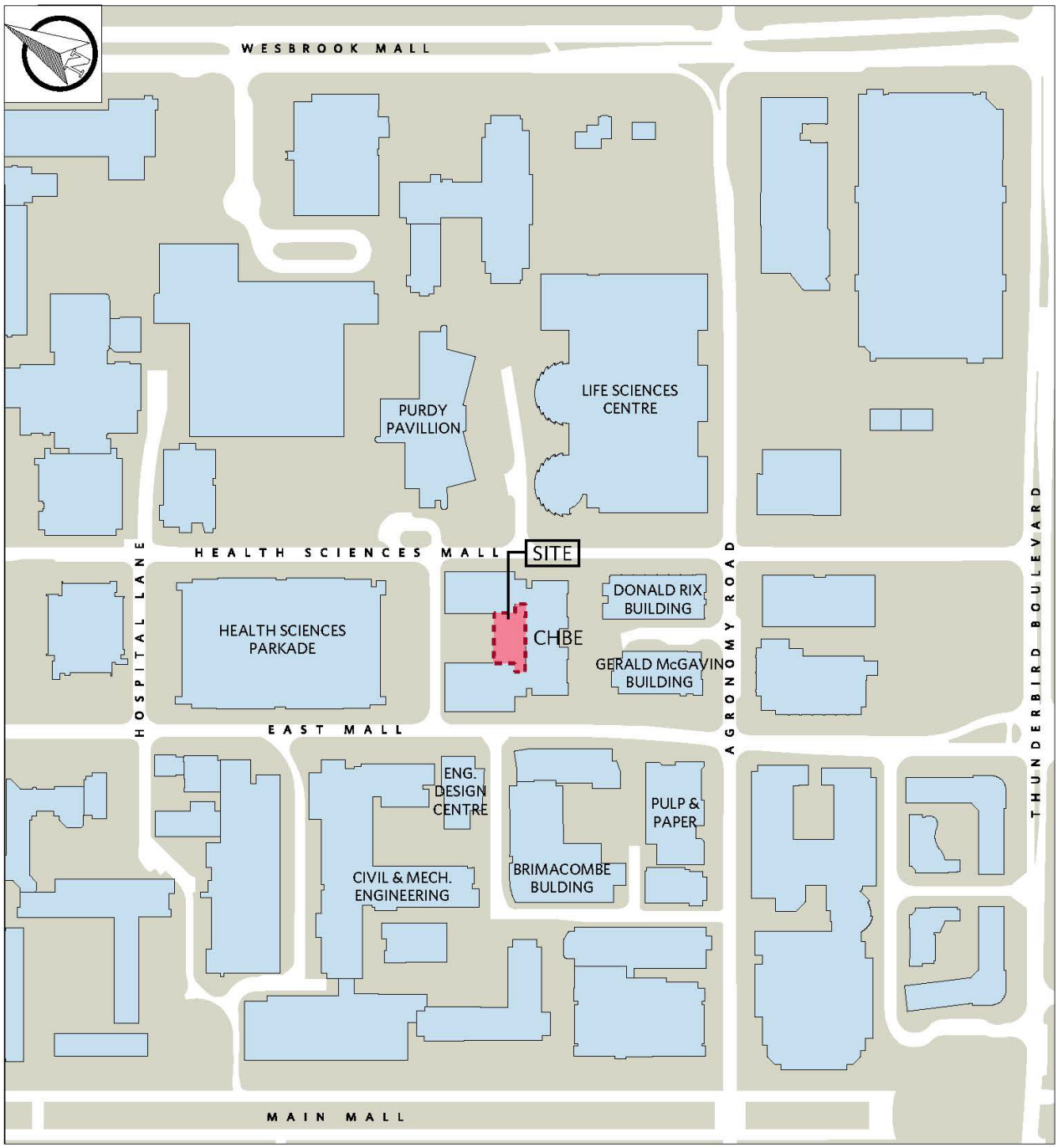
PRESENTATIONS

1. Faculty of Applied Science Digital Design Studio Board 2 Approval Request

SUPPLEMENTAL MATERIALS (optional reading for Governors)

1. Schematic Design Site Plan
2. Schematic Design Renderings

Appendix 1 – Context Location Map



Appendix 2 – Functional Program

The program has been refined to include the following components:

Component	Net Area (square metres)	Net Area (square feet)
Program Component		
Virtual Design Teaching & Learning		
Classroom/Labs & Studios	180	
Virtual Conference Rooms	45	
Sub-total Virtual Design Teaching & Learning space	225	2,422
Workshop & Fabrication		
Fabrication Shop	297	
Assembly Labs	165	
Storage & Technician Offices	20	
Sub-total Workshop & Fabrication space	482	5,188
Exhibit Area		
Gallery and lounge	123	
Sub-total Exhibit Area	123	1,324
Subtotal Net Area	**830**	**8,934**
Gross-up @ 1.12 x net area	100	1,076
TOTAL Building Gross Area	**930**	**10,011**

Appendix 3 – Preliminary Capital and Operating Budgets

Preliminary Capital Budget

Project Services (Infrastructure Development) has provided the following capital cost estimate update for the Applied Science Digital Design Facility project. This is a class C estimate with an accuracy of +/-15%.

Project Capital Cost Breakdown	$
Construction	
Construction	8,600,000
Construction Contingency[1]	850,000
Construction Subtotal	**9,450,000**
Cash Allowances	
FF+E[2]	200,000
Service Requests to UBC Facilities	55,000
UBC IT + AV	120,000
Secure Access	52,000
Cash Allowances Subtotal	**427,000**
Soft Costs	
Consultants	1,527,000
Project Management	595,000
Permits - BP/IIC	81,000
Insurance/Legal	51,000
Commissioning, Inspection + testing	315,000
Soft Costs Subtotal	**2,569,000**
Building Subtotal	**12,446,000**
GST	211,000
Construction Period Financing[3]	0
Retained Risk	129,000
Escalation Contingency	410,000
PROJECT TOTAL	**$13,196,000**

Area (Gross Square Feet)	*10,011*
$ Per Square Foot	*$1,318*

[1] A contingency is included at this time due to the inherent complexities of tying into an existing building, and unknown conditions.

[2] The cost of the fabrication equipment (3D printers, etc.) and digital design computers is outside this project budget.

[3] Treasury has confirmed that no construction period financing is required.

Preliminary Operations and Maintenance Cost

Annual operation costs will be calculated at the standard rate ($8.60/gsf/year for new buildings) and paid by the Faculty of Applied Science. The current O&M rate is under review and may increase prior to final Board 3 approval. Lifecycle capital costs will be funded by the UBC operating budget and Provincial government through the Routine Capital Program.

Applied Science Digital Design Facility	**$/gsf**	**APSC**
Total Gross Area (sf)		10,011
OPERATION COSTS[1]		
Annual Operations + Maintenance	$6.37	$63,770
Utilities	$2.23	$22,325
Total O+M Cost	**$8.60**	**$86,095**
LIFECYCLE CAPITAL COSTS[2]		
Cyclical Maintenance	$3.51	$35,139
Modernization / Upgrade	$0.93	$9,310
Total Capital Renewal Cost	**$4.44**	**$44,449**

[1] Final costs will be based on actual built areas and are subject to change pending final design and construction.

[2] Lifecycle Capital Costs are covered by the UBC Operating Budget (Routine Capital program).

Faculty of Applied Science
Digital Design Studio
Board 2 Approval Request

June 2023

Jennifer Sanguinetti
Managing Director, Infrastructure Development

Introduction and summary

Proposed Digital Design Centre will:

- Provide cutting-edge, technology-enriched spaces supporting APSC Strategic Plan
- Add critical workshop space to encourage new pedagogical opportunities for cross-disciplinary learning and training
- Fill critical fabrication workshop gap for SALA

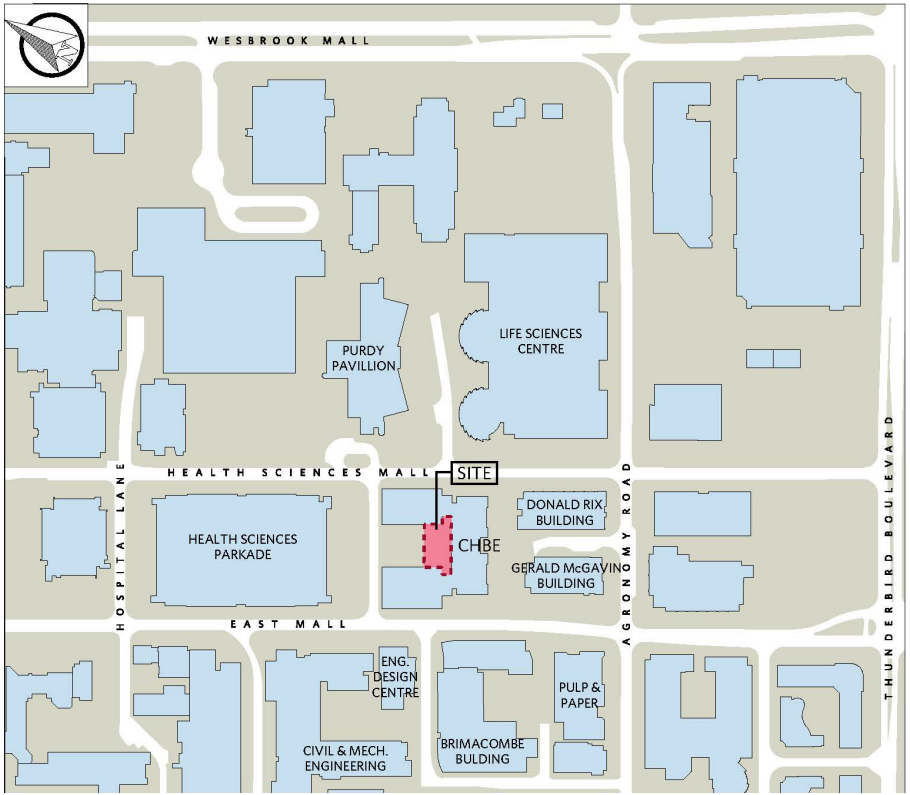
Additional details

- Addition will be a 930 sq m (10,011 sq ft) facility – 162 sq m decrease from Board 1
- Since Board 1, minor program refinements e.g. incorporating robotics into general workshop space rather than having a separate shop
- The two-storey building is enclosed on three sides by the existing CHBE Building and fully connected to the building's atrium at both levels

Additional details

- Capital cost estimate is $13,196,000; $335,000 increase from Board 1
- Increase due to market escalation despite value engineering & contingency
- Funding from Faculty, including SALA Capital Investment fund & Faculty reserves

Additional details – Site Map



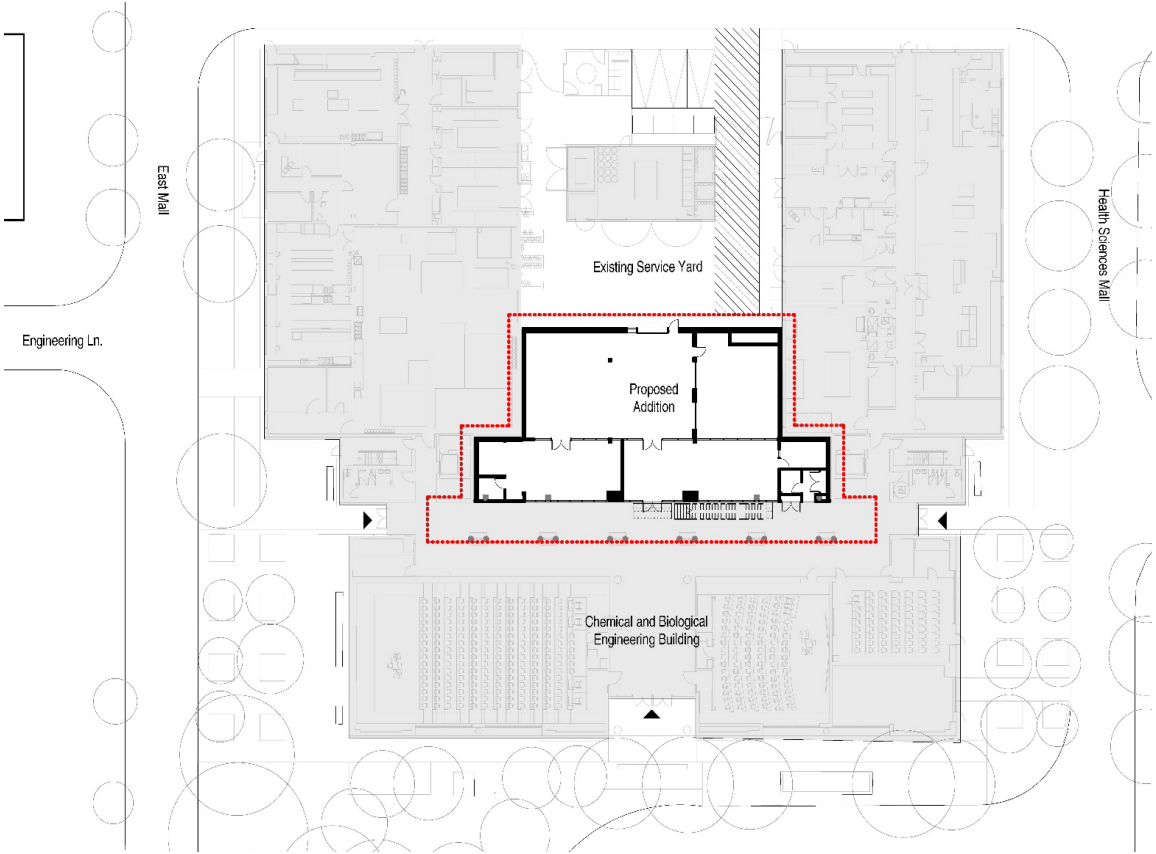
Additional details – Schematic Design

Exterior view from north service yard

Additional details – Schematic Design

Interior view of workshop space

Additional details – Site Plan

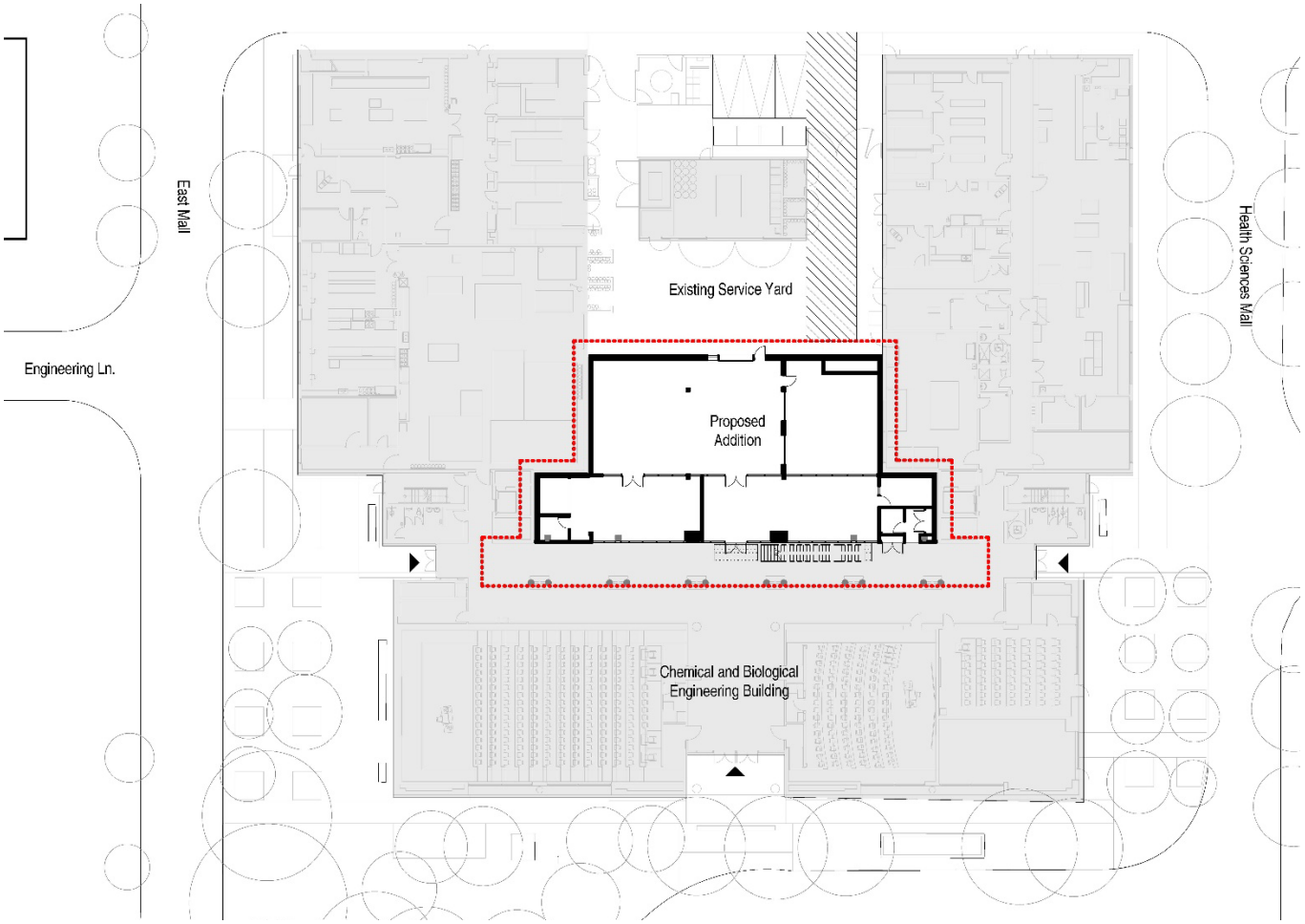


Discussion and decision points

Board 2 approval of the APSC Digital Design project:

1. Approval of the revised capital and operating budgets;
2. approval to issue the development permit;
3. authorization to proceed to working drawings and tender; and
4. approval of funding release of $1,400,000 for next stage.

Supplemental Materials 1 – Schematic Design Site Plan



Supplemental Materials 2 – Schematic Design Renderings

Exterior view from north service yard

Exterior view of south entrance

Interior view of entrance from the Chemical and Biological Engineering Building

Interior view of atrium

Interior view of workshop space