Bothell STEM 4

University of Washington Architectural Commission

August 10, 2020
Agenda—

— WHAT WE HEARD AT UWAC 1
— PROJECT DEFINITION
— SITING THE PROGRAM
Appreciate the concept of “knitting in” building and site

Study how the building responds to shallower slope conditions

How do the two institutions share the building? Explore nature as a uniting and healing force

Consider how landscape is shaping the building

Explore the connection/relationship to the north quad

Appreciates moments in nature along the hill rather than duplication of Discovery Hall north stair

If there is a feature stair facing the trees, make a convincing argument about its location and purpose

Concerned about the wide building option

Consider how Interior circulation could shift to allow for variety of experiences
Project Definition
Target Scope and Budget—
Detailed analysis of design and construction costs for recent university and community college projects provide a frame of reference for STEM 4. Eight projects of comparable program, size, complexity and geographic location were comprehensively evaluated.

Three were the basis of the 2019 capital budget request for STEM 4:
- WSU Everett
- Edmonds College, SET Building
- Grays Harbor College, STEM Building.

Four additional projects were evaluated:
- Everett Community College, Learning Resource Center
- Olympic College, College Instruction Center
- Shoreline Community College, HSAMCC
- UW Bothell, Discovery Hall.

STEM 4 cost per square foot is based on Option B.
### System Benchmarks - 03 Site

- **Olympic College**
  - CIC
  - $38/BSF

- **CC / UWB**
  - STEM 4
  - $57/BSF
  - 76,000 GSF

- **UWB**
  - HSEB - 50% Design Budget
  - $62/BSF

- **UW**
  - Population Health Facility
  - $39/BSF

- **Bainbridge Island**
  - Blakely Elementary
  - $60/BSF

- **UWB**
  - Discovery Hall
  - $139/BSF
SYSTEM BENCHMARKS - 05 EXTERIOR WALL

**SHORELINE ICHS**
$49/BSF
$101/WSF  23,686 Total WSF

**UW HSEB - 50% DESIGN BUDGET**
$72/BSF
$151/WSF  46,811 Total WSF

**UWB DISCOVERY HALL**
$82/BSF
$121/WSF  50,626 Total WSF

**UWB / CC STEM 4**
$68/BSF
76,000 GSF
$124/WSF*  40,091 Total WSF *(test-to-fit)

**OLYMPIC COLLEGE CIC**
$76/BSF
$137/WSF  43,963 Total WSF

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*Lease Crutcher Lewis + Mithun | Cascadia College + University of Washington Bothell*
SYSTEM BENCHMARKS
07 INTERIOR CONSTRUCTION

- **UW HSEB - 70% DESIGN BUDGET**
  - STEM 4
  - $86/BSF

- **CC / UWB STEM 4**
  - 76,000 GSF
  - $96/BSF

- **UW NANO ENGINEERING**
  - $110/BSF

- **UW CSE 2**
  - $121/BSF

- **UW POPULATION HEALTH FACILITY**
  - SHORELINE CC
  - HSAMCC
  - $85/BSF

- **Olympic College**
  - CIC
  - $110/BSF

- **UWB DISCOVERY HALL**
  - $121/BSF
Target budgets for STEM 4 are based on the project benchmarks, the system benchmarks and the test-to-fit scenario. They provide a road map for the development of the project during the design and construction phases.

* Benchmark projects include the cost of Construction Work Support (CWS) in Structure costs
Program—
VISION & GOALS

MEMORANDUM OF UNDERSTANDING

— Program Growth - Maximize space for instruction and research in a manner consistent with program goals and institutional standards and values.
— Flexible Learning Environments - Create learning environments that support collaboration, active learning, and faculty innovation while building community across students and faculty.
— Foster Collaboration - Design a physical environment that promotes interactions between UWB and Cascadia faculty, staff, and students.
— STEM Presence - Distribute STEM facilities across the campus as appropriate to improve operational efficacy, student access and relationships.

GOALS

— Create a national example for STEM education and collaboration between institutions.
— Provide learning environments that inspire students.
— Create academic pathways, research opportunities, and project-based learning experiences.
— Support faculty collaboration between institutions.
— Connect STEM 4 to the broader campus to foster interdisciplinary study.
— Enable students of both institutions to benefit by sharing ideas and working with each other.
— Extend career-oriented learning to serve students’ primary goal of success in the job market.
— Provide spaces that foster collaboration with external partners in industry.
General purpose classrooms will provide student-centered, active learning to students across campus including:
— lectures interspersed with small groups learning,
— facilitated project-based learning,
— case studies and
— Digital work sharing

Classrooms will be configured and equipped to support a variety of pedagogies.
— moveable desks for two students provide flexibility for configuring the classroom to support groupings of four, six or eight for small groups learning;
— audio visual support will enable instructors to deliver content to students in multiple formats;
— collaboration tools will provide access to digital (via WiFi) and analog media;
— writable wall surfaces;
— projector screens will be configured to allow simultaneous access to white boards and the projection of subject matter content; and
— some faculty preferred a combination of personal white boards and writable surfaces on multiple walls to enable display of student produced materials in “gallery” format.
Labs provide hands-on, experiential learning enabling students to apply subject matter content learned in the classroom. They provide access to space, software, and/or equipment that is not available in general purpose classrooms.

- Labs will be scheduled for teaching and research.
- Some labs will be used by clubs to meet in non-lab times.
- Open labs will enable students to practice on their own schedules.
- Capstone labs provide dedicated space for senior projects.

**Modular Planning and Flexibility**
Laboratory space is organized based on modular planning principles that set a grid of dimensions by which structural columns, walls and partitions are located.

- They provide flexibility for future modifications that may be required by changes in laboratory designation, equipment or departmental organization.
- They may be combined to produce large, open laboratories or subdivided to produce small instrument or special-use laboratories without requiring reconstruction of structural or mechanical building elements.
- They create laboratory spaces that are not obstructed by columns.

Module dimensions result from analysis of the laboratory bench space, equipment and circulation space.

- They accommodate technical workstations, instruments, and procedures.
- The space between benches is designed to allow people to work back-to-back at adjacent benches, allowing accessibility for disabled persons and movement of people and laboratory carts in the aisle.
- The module provides adequate open space for floor standing equipment.
Shared informal spaces allow students to connect with their peers and faculty. They are the connective tissue between people and institutions.

Students should have the choice of informal spaces for individual study, group study, and for socializing.

— Individual student study enables students to get work done before class.
— Students may want to continue the discussion that started in class in group study.
— Students engage with their peers in social spaces.
— Social space allows students to connect with visiting industry partners.
— Shared break rooms that are connected to faculty suites serving both institutions enable faculty to collaborate regarding pedagogical successes and challenges.
Site—
VISION & GOALS

MEMORANDUM OF UNDERSTANDING

— Flexible Learning Environments - Create learning environments that support collaboration, active learning, and faculty innovation while building community across students and faculty.
— Foster Collaboration - Design a physical environment that promotes interactions between UWB and Cascadia faculty, staff, and students.

These goals identify a clear vision of creating interior and exterior spatial relationships that promote community and creativity. A focus on the environmental impacts of the project also clarifies the need to provide effective and sensitive design interventions.

Guiding Principles

Through meetings with the campus working group, the design team has heard similar priorities stated.

— Celebrate the forest environment
— Make the formal design language engage with the site
— Make stormwater capture and treatment visible
— Create environmental learning opportunities

Campus Master Plan

The 2017 Campus Master Plan reinforces goals of the MOU and those gleaned from working groups. A cohesive campus character can be achieved by celebrating the forest and finding sensitive ways to work within it. The forest itself also serves as an educational tool, as the site fabric knits into it.

The importance of an enriched campus experience for all users is evident in the CMP. A responsibility to develop the site in a sustainable way, another guiding principle, frames the approach to applying the feedback from campus fit working groups.
PLANTING CHARACTER

The Bothell campus has unique features to its landscape that help define the character. The building location crosses the upland conifer forest and the more managed landscape of the campus core. Selecting native species to heal in the disturbance of the construction process is part of the newly formed character of the site. Plants and trees from the Western Red Cedar and Douglas Fir dominant forest will compliment the existing ecology. Some areas of more highly maintained planting near the building may be composed of both native and adapted species, while bioretention and water treatment areas will be planted with species suitable for those purposes from the native palette.

The site is divided into three planting zones: Base Scope, Less Intensive Planting, and Intensive Planting. Each zone has different planting characteristics and focuses on specific areas of the site.

- **Base Scope**: Less intensive planting, including specialized bioretention areas.
- **Less Intensive Planting**: More intensive planting with a mix of trees, shrubs, and ground cover.
- **Intensive Planting**: The most intensive planting with a focus on trees, shrubs, and perennials.

The diagram illustrates the proposed STEM building, service court, access points, parking spaces, retaining walls, and other key features of the site.
EAST END ENTRY PLAZA

PRECEDENTS

- Sky UK Headquarters - Urban
- Seattle University Lemieux Library - Berger Partnership
- Stanford Medical School - Tom Leader Studio
- New College House - MVL
- Waller Park - MLA
- University of Pennsylvania New College House - MLA

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ADDING VALUE

The site scope definition process identified a list of project opportunities that are not currently identified in the site plan. The following may be considered opportunities to add to the site design.

Public Space at the Crescent Path

The east plaza that is a part of the baseline scope for the project will provide public space between the Crescent path and the building. Additional value can be added to the project by enhancing this design with higher quality materials, additional square footage, expanding planting areas or additional site appurtenances.
Building—
**VISION & GOALS**

**MEMORANDUM OF UNDERSTANDING**

— Create learning environments that support collaboration, active learning, and faculty innovation while building community across students and faculty.

— Maximize space for instruction and research in a manner consistent with program goals and institutional values.

— Display the campus’ commitment to environmental and economic sustainability, including by seeking to minimize life-cycle costs and carbon footprint.

**CAMPUS MASTER PLAN**

— Modulate and articulate buildings to create human scale at the base and meet the sky at the roofline.
— Provide flat roofs for buildings perpendicular to topography.
— Complement materials and colors in adjacent campus buildings.
— Create safe, human scale spaces that provide calm, contemplative environments.
— Provide active facades, locate programs that connect to adjoining pathways.

**GOALS**

— Knit the building into the landscape in terms of its plan, section and articulation.
— Transparency inside and outside that puts, programs on display, creates awareness of career pathways.
— Local views into the forested, hillside environment north and south, regional views over campus to the east.
— Interconnection of interior spaces that facilitate access and wayfinding, creates sense of community within the building.
— Foster engagement in public spaces, entrances, stairs and hallways.
— Program adjacencies and shared spaces that promote interaction between the college and the university.
— Create a variety of type and scales of outdoor and indoor spaces to accommodate program uses.
— Maximize daylight.
ACTIVE FAÇADES
CIRCULATION

- Locate stairs to encourage movement near building entrances. The east stair will be visually prominent using custom materials and transparency to the exterior.
- Design hallways designed to foster engagement, group work and individual study spaces adjacent.
- Two elevators to provide redundancy.
DAYLIGHT

Building Orientation / Layout

- Rectilinear building form maximizes north and south exposures.
- 31 foot deep program bays maximize daylight penetration.

Exterior Walls

- Fenestration located to provide balanced daylighting within spaces.

Lightwell

- An interior lightwell provides daylight access to the primary circulation and informal study areas as well as interior facing program elements.
- Multistory opening between levels 2 - 4 to provide daylight access to interior circulation and inboard programmatic elements like informal student learning and interior offices.
- Will be atmospherically open to levels 2 and 3 which is allowed by building code.
- Level 4 will be separated with glazed partitions to mitigate an 'Atrium' condition.
4 Stories

- This is preferred scale of building in North Campus Quad
- Has been found to be cost optimal compared to a 5 story scheme with a smaller footprint

- 14'-6" average floor to floor heights
- Individual floor heights may be adjusted to accommodate specific programmatic needs
- The finish floor elevations of Levels 1 and 4 align with on-grade building entries and bookend the building height to so these levels can be optimized for universal accessibility.

- Building height approximately 60' high from grade at East Plaza, well under the zoning height limit.
- Building width approximate 80' to 115'
- Width will modulate depending on plan geometry and size of lightwell
- Building Length approximate 240' - 280

SCALE
Siting the Program—
LOCATING THE BUILDING

- Maximize efficiency of ADA access, services access and preservation of upland forest.
- Maintain minimum 20' from CC-3 to meet fire separation requirements and provide construction and maintenance access.
- Align with the east face of Discovery Hall to fit existing campus geometry and bracket the north campus quad.
- Take advantage of view corridor between CC-1 and Library Building.
EAST END ACCESS

The east end of the building faces the campus core, and will be a larger paved and planted area with site furnishings and lighting. An accessible route through the building to the campus core passes through here. The plaza space may consist of a level space for lab projects to be visible outdoors and opens up to the Cascadia quad. The connection to the Crescent Path and the quad make this an important space for integrating the building into the campus.
ACCESS - WEST

Access to the west end of STEM 4 has been studied from a number of perspectives. Utilizing the existing West Campus Lane service road proved to be the most logical way to accommodate service, emergency, pedestrian and ADA access to this side of the building. A paved service yard can accommodate both delivery vehicles and trash and recycling pick. Pedestrians are protected by the addition of a new sidewalk connecting to the north access to the West Parking Garage and moving the existing bollards to block vehicular access further down the service drive. By connecting to the service road, an accessible grade can be achieved to the 4th floor entrance to the building.

LEGEND
- FIRE ACCESS
- ACCESSIBLE ROUTE
- PEDESTRIAN ROUTE
- VEHICULAR ACCESS
- SITE BOUNDARY
ENGAGING THE SITE

- Transparency of primary facades, opening the building to campus and putting STEM on display.
- Programmatic uses at grade selected to maximize visibility and connection to campus and functional requirements.
- Maximize activation of façade near the primary pedestrian circulation.
- Promote intuitive wayfinding of entrances.
- Spaces along the south side of the building with views of the upland forest and wetlands.
- Informal interior spaces will include areas for quiet study and recharging.
I - FLOOR PLANS
I - FLOOR PLANS

LEVEL 1

LEVEL 2

LABS & CLASSROOMS

STUDY

OUTDOOR LEARNING

ME SHOP

LABS & CLASSROOMS

OUTDOOR PROJECTS

ENTRY / OVERLOOK

ENTRY PLAZA

CRESCENT PATH

LINEAR - FLOOR PLANS

OUTDOOR LEARNING

LABS & CLASSROOMS

STUDY

FACULTY OFFICES

FACULTY OFFICES

ADA ACCESS

SERVICE ACCESS

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LEVEL 1

LEVEL 2

LEVEL 3

LEVEL 4

I - FLOOR PLANS

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LABS & CLASSROOMS

STUDY

OUTDOOR LEARNING

OUTDOOR LEARNING

ME SHOP

OUTDOOR PROJECTS
STORMWATER
INFORMAL TRAILS
SERVICE ACCESS
FIRE ACCESS
ENTRY PLAZA
ENTRY WALK
LEGEND
N
0 100
CRESCENT PATH
110TH AVE NE
NE CAMPUS WAY
WEST CAMPUS ACCESS DRIVE
'Y' - SITE PLAN
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Discussion