# Table of Contents

Executive Summary 1

Design Process 9
  PROGRAM 13
  ALTERNATIVE DESIGN STUDIES 17

Final Schematic Design 43
  NARRATIVE 43
  DRAWINGS 51

Campus Plan and Project Specific Patterns 75

Building Code Analysis 93

Project 101

Cost Estimate Summary 105

Approval/Signature 109

Outline of Sustainability Plan 113
  SUMMARY OF ECO-CHARETTE 113
  SUMMARY OF ENERGY CONSERVATION MEASURES 127

Appendix 131
  OUTLINE SPECIFICATIONS
  ECO-CHARETTE REPORT
  COST ESTIMATE
Executive Summary

The development of the East Campus Residence Hall is intended to assist the university in meeting a broad housing agenda. A number of goals originally identified in the Project Description are fundamental to the success of the project. These include helping to meet the long-term University plans to significantly expand the overall student housing capacity, to meet increases in freshman enrollment and contribute to University goals to house up to 25% of undergraduates in diverse housing types that offer residence sequenced independence and motivate them to live on campus for several years. The East Campus Residence Hall will provide residence hall “surge” space to house first year students while existing traditional style residence halls are remodeled or replaced. It will include of a greater variety of student living spaces than most existing residence halls at the University of Oregon for a diverse population of students that still retain the current in-residence staffing model (e.g., traditional double-occupancy rooms arranged with group showers and common areas, as well as other configurations). The project will house common areas and public spaces purposefully organized and designed to promote community for a wide spectrum of students, enhance the quality of the student living experience and contribute to the residential nature of the campus as a whole. In keeping with the university’s sustainable development practices, it will incorporate sustainable design to provide future energy savings for students through the creation of an energy-efficient facility with lower operations and maintenance costs. As practical, the building will create opportunities for residents to engage in sustainability initiatives with the building acting as a living/learning laboratory. Academic linkages and out-of-the-classroom learning spaces will be provided within the residence hall. Significantly, the East Campus Residence Hall will include a Learning Commons, the first in a residence hall, a suite of individual and group study spaces, augmented by technology and supported by full time librarian to ensure student access to, and support with, available information technology. Where ever possible there will be flexibility in design and construction to allow for building use and space changes over time and to ensure the long-term success of the residence hall as a university investment. Finally, the East Campus Residence Hall will continue the University’s commitment to notable campus architecture within the context of its needs. This entails the creation of buildings and spaces that improve the campus in durable, effective and affordable ways that fit seamlessly into the fabric of the campus.

The proposed East Campus Residence Hall will be located on the University of Oregon Campus. The site is in an existing asphalt parking lot on the corner of 15th Avenue to the north and Moss Avenue to the east.

The design consists of three residence towers that sit on a large ground floor base where common spaces are located. These components have been designed to achieve the following goals:

- Develop the east side of campus establishing connectivity to the existing and future buildings.
- Provide a minimum of 449 beds (439 beds plus 10 beds for the resident assistant).
- Include group learning spaces (learning commons, classrooms), a multipurpose room and a dining facility.
- Provide a physical environment that would promote interaction among students and facilitate the exchange of ideas.
The three bars of the residence towers have been oriented with the rooms facing north and south in order to take advantage of the solar orientation and reduce the cost for energy consumption.

They are connected at the ground floor which contains common spaces such as the learning commons multipurpose room, dining facility, classrooms, the nerve center, mail room and other shared spaces.

The layout creates two courtyards. The one to the north consists of a combination of a landscape and hardscape area adjacent to the multipurpose room to the east and to the dining/seating to the south. The courtyard to the southeast includes covered bike parking for the students.

The main entrance to the complex is located on the north side, along 15th Street. Secondary entrances/exits for the ground floor multipurpose room, dining facility and residence towers are located on the west side.

The following is a general description of the floor plan layout:

- The basement consists of mechanical, plumbing and electrical space, support spaces for building service and residential storage as indicated in the drawings. The floor elevation is at -15'-0" below grade first level.
- The ground floor includes the entry lobby, a nerve center (area desk and mail service, study spaces, residence living room, offices), group learning spaces (classrooms and learning commons), a multipurpose room with support space, a dining/seating area and a servery/kitchen area. There are also semi-suites, a director’s apartment and a resident scholar’s apartment as shown in the drawings.
- The mezzanine consists of a lounge/common kitchen, music rooms, and study rooms along the north side and semi-suites along the east side.
- The towers consist of residences. Each of them also includes a study room, a double height hearth space and a laundry room. The north tower has four residence stories and the middle and south towers have three residence stories above the ground floor. Toilets and showers are provided on each floor.
- Floor heights: assume 20’ at the ground level north end with floor ramps rising 3’ to the south for a first floor height of 17’ at the south end of the building. Residence room floor to floor height is 10’-0”.

The project construction budget for the East Campus Residence Hall is $49,500,000.

The estimated cost for the Schematic Design presented in this report is $5X,000,000. The design team and the user group have reviewed the project and identified $X,000,000 of savings though revisions to the program areas, building configuration, utility infrastructure and construction materials.

The total number of beds provided is 451. A cost estimate is included as part of this report.
East Campus Residence Hall – North View – Main Entrance

East Campus Residence Hall – Northeast Aerial

SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene
Design Process

The building program was developed with the ECRH User Group. The program consists of the Nerve Center which oversees the management of the building and provides key services to the occupants, a Multipurpose space, several Group Learning spaces which vary in size from 10-15 person spaces to 60 person classrooms, Director and Resident Scholar apartments, a Dining Facility with food service, building service and storage, and residence groups and hearths. Diagrams were created to assist with programming each of these key program components.

Group Learning Spaces

A variety of Group Learning Spaces were identified by the User Group, ranging from small group spaces for 2 to 4 students to larger spaces that could hold up to 50-60 students. Each room type must accommodate a variety of furniture configurations.
Residence Room Types
A variety of room types and configurations were developed during the concept design phase. Traditional rooms are single or double with common toilets and showers.

Double and single rooms are to have a sink in the room.

Semi-suites are single or double rooms with private toilets.

ROOM MIX:
Traditional (50%)
  15% singles
  35% doubles

Semi-suites (50%)

There are a variety of combinations with single and double rooms in suites with up to 6 beds sharing a toilet.

2, 3 and 4 bed preferred.

ROOM SIZE:

For both traditional and semi-suite rooms:

The double rooms are 225 sf to match those in the Living Learning Center.

Single rooms are 140 sf.

It is preferred not to mix rooms dedicated to upper classmen and freshmen. They should be separated by floor or wing.
Semi-suite Room Types

**SEMI SUITE D - 3 PERSON**
- Single: 142 SF
- Single: 142 SF
- Single: 142 SF
- 15 X 9.5
- 15 X 9.5
- 15 X 9.5
- 648 SF

**SEMI SUITE E - 4 PERSON**
- Single: 142 SF
- Single: 142 SF
- Double: 225 SF
- 15 X 9.5
- 15 X 15
- 17.5 X 13
- 13 X 11
- 730 SF

**SEMI SUITE F - 5 PERSON**
- Double: 225 SF
- Single: 142 SF
- Double: 225 SF
- 15 X 9.5
- 15 X 15
- 15 X 15
- 813 SF

**SEMI SUITE G - 5 PERSON CORNER**
- Double: 225 SF
- Double: 225 SF
- Double: 225 SF
- 15 X 15
- 17.5 X 13
- 13 X 11
- 810 SF

**SEMI SUITE H - 6 PERSON CORNER**
- Double: 225 SF
- Double: 225 SF
- Double: 225 SF
- 15 X 15
- 17.5 X 13
- 13 X 13
- 893 SF
Hearth Configurations

Multiple Residence Group Hearths were developed by the User Group. Three models were chosen to develop during the Schematic design Phase. The first two are different mixes of traditional double and single rooms and semi-suites. The third is all semi-suites. In all three models, the number of beds in the semi-suites will vary. The intent is to maintain a total project bed count that is 50% traditional doubles and singles and 50% semi-suites.
PROGRAM

The program includes a space list that identifies the spaces included in the East Campus Residence Hall. Associated with the space list are three columns showing the square footage for the current building program, the square footage currently shown in the drawings and the square footage referring to the program dated June 24, 2009.

The current program spaces list follows.
<table>
<thead>
<tr>
<th>Space List</th>
<th>East Campus Residence Hall</th>
<th>University of Oregon</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Building Program Areas</strong></td>
<td><strong>Current Plan Areas</strong></td>
<td><strong>Previous Program Areas</strong></td>
</tr>
<tr>
<td><strong>Nerve Center</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entry/Lobby</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Area for mail services</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Study Space</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Residential Common Room</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sustainable Center</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Director Office</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>IT Room</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Library Office</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Financial Office</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Multipurpose Space</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>Lobby</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Control Room</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Garage</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Furniture Storage Room</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Group Learning Space</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XL-200+</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>Large-200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>Medium-200</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Director's Apartment</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Resident Hall</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Food and Service Complex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Building Service</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Housing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Residence Group A</strong></td>
<td>40,780</td>
<td>40,780</td>
</tr>
<tr>
<td><strong>Residence Group B</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Floors</td>
<td>Public/Resident</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>--------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Residential lobby</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Laundry</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Ancillary storage</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Subtotal per Floor</td>
<td>20</td>
<td>200</td>
</tr>
</tbody>
</table>

**Residence Group C - 1 Floors - Total SF Per Building (Middle Tower)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Floors</th>
<th>Public/Resident</th>
<th>Public/Resident</th>
<th>Public/Resident</th>
<th>Public/Resident</th>
<th>Public/Resident</th>
<th>Subtotal per Floor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential lobby</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>0</td>
<td>200</td>
</tr>
<tr>
<td>Laundry</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ancillary storage</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Subtotal per Floor</td>
<td>20</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
</tbody>
</table>

**Residence Group D - 1 Floors - Total SF Per Building (South Tower)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Floors</th>
<th>Public/Resident</th>
<th>Public/Resident</th>
<th>Public/Resident</th>
<th>Public/Resident</th>
<th>Public/Resident</th>
<th>Subtotal per Floor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential lobby</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>0</td>
<td>200</td>
</tr>
<tr>
<td>Laundry</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ancillary storage</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Subtotal per Floor</td>
<td>20</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
</tbody>
</table>

**Residence Group D - Ground Floor (South Tower)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Floors</th>
<th>Public/Resident</th>
<th>Public/Resident</th>
<th>Public/Resident</th>
<th>Public/Resident</th>
<th>Public/Resident</th>
<th>Subtotal per Floor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential lobby</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>0</td>
<td>200</td>
</tr>
<tr>
<td>Laundry</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ancillary storage</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Subtotal per Floor</td>
<td>20</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
</tbody>
</table>

**Floor Plan Details and Calculations**

- Total GSF: 130,085
- Total NSF: 186,480
- Total Beds: 451
- GSF/Bed: 287 sq ft
- NSF/Bed: 412 sq ft
- Elevation Rooms: 106
- Mechanical Rooms: 106
- Mechanical Room Size: 106 sq ft
- Electrical Room Size: 106 sq ft
-总价：130,085
- NSF/GSF：287 sq ft
- NSF/GSF：106 sq ft
- 升降机间：106
- 机械间：106
- 机械间面积：106 sq ft
- 电气间面积：106 sq ft
Design Process

Schematic Design
East Campus Residence Hall
University of Oregon, Eugene
ALTERNATIVE DESIGN STUDIES

The Programming and Conceptual Design Phase of the East Campus Residence Hall built directly upon the Project Description, dated March 3, 2009, a document developed by the project User Group. Key goals include expanding the overall student housing capacity, providing a dining facility, living spaces, common areas and public spaces, supporting academic linkages and out-of-the-classroom learning.

The original program also includes apartments for the Complex Director and a Resident Scholar. The area required for this is 170,000 GSF. An additional 16-20,000 GSF for a potential shell space for the Commissary and Catering kitchens was also studied during this phase.

The User Group is the primary client representative in the design process. For issues relating to the East Campus Open Space Framework, the User Group was assisted by the Open Space Advisory Group. The design team met regularly with the User Group and with the Open Space Advisory Group throughout the Programming, Conceptual Design and Schematic Design phases of the project.

The project goals indentified in the Project Description are fundamental to the success of the project. They consisted of helping to meet the long-term University plans to significantly expand the overall student housing capacity and to meet increases in freshman enrollment, contributing to University goals to house up to 25% of undergraduates in diverse housing types, providing residence hall “surge” space to house first year students while existing traditional style residence halls are remodeled or replaced. They also included the need of providing dining facility surge space, a variety of student living spaces for a diverse population of students, common areas and public spaces, enhancing the quality of the student living experience, incorporating sustainable design and operation, engaging the residents in sustainability initiatives as a living/learning laboratory. Other project goals consisted of providing flexibility in building design and construction to allow for building use and space changes over time, academic linkages and out-of-the-classroom learning within the residence hall, and future energy cost savings, continuing the University’s commitment to notable campus architecture within the context of its needs.

The East Campus Residence Hall site is the area to the east of the Museum of Natural and Cultural History, bordered on the north and south by East 15th and 17th Avenues, respectively, and to the east by Moss Street and to the west by Columbia Street.
SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene
Site concepts and requirements consist of extending the living, learning, dining, and social programmatic functions of the residence hall out to the adjacent exterior spaces; developing programmed exterior spaces to create flexible communal areas that act as social gathering spaces, recreational areas and quiet places to study or visit with friends; and concentrating the residence hall functions along 15th Avenue and Moss Street, near to existing residential facilities, so functions can be shared by all student residents. Other requirements consist of locating the project on a university street or promenade with strong connections between the building’s public functions and the pedestrian thoroughfare and with neighboring buildings, providing pedestrian pathways that connect to the campus and make the area a part of the campus, using land wisely to ensure accommodation of future development.

Site challenges and contextual issues consist of the location of the main entrance, the integration of the building rear service functions into existing conditions and ensuring that the residence hall respects and responds to the variety of facilities sizes adjacent to the site and within the “superblock”.

There were multiple factors underlying the discussions of the building layout. The major issues were identified by the User Group. On the ground floor, the Nerve Center is very important as the hub of the building. Ideally, all areas of the building’s ground floor (group learning areas, food service, the multipurpose room and major lounge areas) would be visible from the nerve center/area desk which will also supervise the main building entrance. This becomes a major criterion in evaluating the various concepts.

Additionally, there were concerns about the size and location of the loading dock area, especially if the project could accommodate the long range plans for the Commissary and Catering kitchens. There is no obvious place for loading, as there is no “back” to this building. Less kitchen program would mean less loading dock, which needs to be reflected in the schemes with less kitchen area. It was noted that removing the commissary program from the first phase would afford more flexibility in the configuration of the ground floor. Plan options were developed that considered various locations but the only convincing option located the loading dock on Moss Street at the south east corner of the building. The design team explored the idea of utilizing below grade loading, and discovered that this approach would not be workable due to the length of ramp required to get down to the required depth. The length required would exceed the width of the east-west building site.

The committee provided the following feedback on various aspects of the ground floor studies. Their suggestions consisted of locating the performance space near the nerve center, facing the study rooms to the courtyard for privacy and light, providing the Director’s Apartment with its own entrance access to a parking spot and a private yard, allowing the Resident Scholar and the Director apartments a direct connection to Moss Street, and providing a variety of outdoor spaces both social and private.

There was some interest in exploring ground floor residence rooms. The ground floor units are very popular at the LLC – not only preferred by those with disabilities, but also popular with rental occupants in the summer. Isolation is not considered a problem for those units.

The selected concepts incorporated as many of the suggestions of the ground floor layout options as practical.
**Schematic Design**

East Campus Residence Hall
University of Oregon, Eugene

**Concept A**

- **Museum of Natural + Cultural History**

**East Campus Residence Hall**

**View from SE**

- East Campus Axis
- Laundry Study Space
- Hearth 2
- Study Space
- Laundry Storage

**Floor Plan**

- **Heath 1**
  - 19 traditional single beds [x4 fl = 76 beds]
  - 44 traditional double beds [x4 fl = 176 beds]
  - 12 semi-suite single beds [x4 fl = 48 beds]
  - 50 semi-suite double beds [x4 fl = 200 beds]

- **Heath 2**
  - 0 traditional single beds [x4 fl = 0 beds]
  - 0 traditional double beds [x4 fl = 0 beds]
  - 6 semi-suite single beds [x4 fl = 24 beds]
  - 30 semi-suite double beds [x4 fl = 120 beds]

- **Heath 3**
  - 15 traditional single beds [x4 fl = 60 beds]
  - 12 traditional double beds [x4 fl = 48 beds]
  - 4 semi-suite single beds [x4 fl = 16 beds]
  - 14 semi-suite double beds [x4 fl = 56 beds]

**Loading Area**

- East 15th Ave
- Moss St
CONCEPT_b1

ALTERNATE B

SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene
CONCEPT_b1

museum of natural + cultural history

possible expansion

east 15th ave

moss st

east campus axis

ALTERNATE B

SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene

19 traditional single beds [4 x 4.75 = 76 beds]
44 traditional double beds [4 x 1.75 = 176 beds]
12 semi suite single beds [4 x 1.75 = 48 beds]
50 semi suite double beds [4 x 2 = 200 beds]

hearth 1 [44 total beds]
4 traditional single beds [4 x 1.75 = 14 beds]
4 semi suite single beds [4 x 1.75 = 48 beds]

hearth 2 [36 total beds]
6 semi suite single beds [4 x 1.75 = 48 beds]
30 semi suite double beds [4 x 1 = 120 beds]

hearth 3 [45 total beds]
15 traditional single beds [4 x 1 = 60 beds]
12 traditional double beds [4 x 1 = 48 beds]
4 semi suite single beds [4 x 1.75 = 48 beds]
14 semi suite double beds [4 x 1 = 56 beds]
CONCEPT_c

ALTERNATE C

SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene
Design Process

CONCEPT c

AlTERNATE C

Schematic Design
East Campus Residence Hall
University of Oregon, Eugene

[Diagram showing floor plans and room layouts, with details on room counts and bed configurations.]

- Hearth 1: 44 total beds
  - 4 traditional single beds [x4 fl = 16 beds]
  - 2 traditional double beds [x4 fl = 8 beds]
  - 6 semi suite single beds [x4 fl = 144 beds]
  - 20 semi suite double beds [x4 fl = 200 beds]

- Hearth 2: 36 total beds
  - 6 traditional single beds [x4 fl = 0 beds]
  - 0 traditional double beds [x4 fl = 0 beds]
  - 30 semi suite single beds [x4 fl = 30 beds]
  - 30 semi suite double beds [x4 fl = 60 beds]

- Hearth 3: 45 total beds
  - 15 traditional single beds [x4 fl = 30 beds]
  - 12 traditional double beds [x4 fl = 0 beds]
  - 6 semi suite single beds [x4 fl = 144 beds]
  - 14 semi suite double beds [x4 fl = 30 beds]

[Additional details on room configurations and bed counts.]
CONCEPT_d

PLAN VIEW

VIEW FROM NW

ALTERNATE D

SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene
PREFERRED CONCEPT

SITE PLAN

SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene
PREFERRED CONCEPT

GROUNDFLOOR

museum of natural + cultural history
possible expansion

GROUND FLOOR

east 15th ave

moss st

east campus axis

includes:

- museum of natural + cultural history
- possible expansion

LOADING BUILDING RELATED OPEN SPACE

GROUND FLOOR

- 56,255 sq ft ground floor
- 6,905 sq ft mezzanine
- 19,230 sq ft basement
- 120,320 sq ft typical floors
- 202,800 sq ft total

MAIL SERVICE CONTROL BOOTH

PERFORMANCE STAGE GR RM

W UH MEETING DIR OFF
ENTRY/ LOBBY / LOUNGE

CATERING OFFICE + EMPLOYEE
LOADING / STAGING / RECYCLING

MJAN LARGE EX LARGE RES LIV RM

up LARGESM LG 350'-0" 226'-3" 17'-2"

MEETING SPACE

STUDY AREA

STORAGE JANITOR STORAGE ELECTRICAL

HEARTH 1 [10,805 sq ft]

hearth 1 [42 total beds]
8 traditional single beds [x4 fl = 32 beds]
28 traditional double beds [x4 fl = 114 beds]
2 semi suite single beds [x4 fl = 8 beds]
4 semi suite double beds [x4 fl = 16 beds]

hearth 2 [11,535 sq ft]

hearth 2 [43 total beds]
9 traditional single beds [x4 fl = 36 beds]
18 traditional double beds [x4 fl = 72 beds]
4 semi suite single beds [x4 fl = 16 beds]
12 semi suite double beds [x4 fl = 48 beds]

hearth 3 [10,320 sq ft]

hearth 3 [39 total beds]
0 traditional single beds [x4 fl = 0 beds]
0 traditional double beds [x4 fl = 0 beds]
13 semi suite single beds [x4 fl = 52 beds]
26 semi suite double beds [x4 fl = 104 beds]

17'-2" 336'-0" 60'-0"
Design Process

SCHEMATIC DESIGN

East Campus Residence Hall
University of Oregon, Eugene

Schematic Design

East Campus Residence Hall
University of Oregon, Eugene

PREFERRED CONCEPT

MEZZANINE

museum of natural + cultural history

possible expansion

east 15th ave

60'-0"

east campus axis

moss st

6,905 sq ft

RESIDENT SCHOAR APT

COMMUN

KITCHEN

STUDY SPACE

Lющим

LARGEMED MUSIC

STUDY SPACE

RESIDENT SCHOAR APT

COMMUN

KITCHEN

STUDY SPACE

Lymoon

LARGEMED MUSIC

STUDY SPACE
SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene
PREferred Concept

SECTIONS

SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene
During the beginning of the Schematic Design Phase, the design team developed the preferred concept as illustrated in following diagrams. Several options for the ground floor were also studied.

The scheme keep evolving and two schemes were developed for the 50% cost estimate. Both schemes consists of basement mechanical space, support space for other utilities and support space for the kitchen, as indicated in the drawings. The towers consist of residences. Each of them also includes a double height hearth space, a study room and a laundry. The difference between the two schemes remains in the ground floor main service kitchen. In one scheme the ground floor includes the lobby/seating/servery area, a small kitchen, a shelled space for future commissary kitchen, a performance space with support space, a learning commons area, a common grounds and semi suites as shown in the following drawing.
In the other scheme, at the ground floor a commissary and catering kitchen are located in lieu of the shelled space. See the following drawings.
SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene
Typical Residence Tower Floor
Final Schematic Design

NARRATIVE

Architectural Design Narrative
The East Campus Residence Hall consists of three residence towers/bars that rest on a larger ground floor plan. The ground floor contains common spaces such as the multipurpose room, dining facility, classrooms, group study rooms, mail room, area desk, learning commons and other shared spaces.

The design of the building creates two courtyards. The north courtyard is enclosed by the building on all four sides. Provision is made for landscape maintenance access. The courtyard has seating areas adjacent to the learning commons on the north and outside the multipurpose room on the east. The remainder is landscape. The courtyard to the south is enclosed by the buildings on three sides. It is open to the east but enclosed by a brick wall that provides security for bike parking within. Along the north side there is a terrace outside the large group study and dining areas.

The main entrance is located on the north side, along 15th Street since it is anticipated that most of the students will come from the main campus. Secondary entrances/exits are also anticipated along the west side to access the ground floor multipurpose room, dining facility and residence towers.

A basement level is provided and will house the mechanical, plumbing and electrical spaces, support spaces for building service and residential storage. The floor elevation is at -15’-0” below grade first level.

The ground floor includes public spaces and residences at the south bar and at the east side of the north courtyard. The mezzanine consists of common spaces and residences while the towers have residences.

The total number of beds is 451 divided as follows: 24 single, 218 double, 60 semi-suites and 149 Jack and Jill.

The exterior design of the building consists of traditional brick veneer with accent areas of stucco. The roof is proposed to be a painted standing seam metal roofing system. The typical windows would be painted aluminum with metal clad wood windows at residence rooms. The exterior walls would be non bearing 8”structural metal studs with R-19 exterior wall insulation. The roof would have R-30 roof insulation.

The overall exterior glazing percentage is approximately 25% of wall area.

The interior finishes for the project will be defined in more detail during the design development phase however a preliminary finish schedule is included in the schematic design documents for review.

Residence rooms will have sealed concrete floors, gypsum board walls (acoustically designed) and exposed concrete ceilings, similar to the Living Learning Center rooms. Residence room corridors will be carpeted. Bathrooms and toilet rooms will have tile floors and walls.

The common areas on the ground floor will have a variety of finishes. Porcelain tile floors for the main circulation and dining areas, cork floor for the multipurpose room and carpet in classroom and study areas are proposed. Ceiling finishes and lighting will be addressed in more detail during the design development phase.

We also anticipate the use of interior wood doors, trim and selected areas of wood paneling.
Alternate Features or Systems

The Schematic Design Documents will include the following alternates for pricing:

- Fifth floor to middle housing bar (Residence Tower C), same plan as floor below.
- Aluminum windows in residence rooms.
- Option for elevator types (both traction and hydraulic elevators are being priced).
- Full temperature control heating/cooling system for residence rooms.
- Building integrated photovoltaic (BIPV) standing seam roofing at the south facing residence towers roofs. The possibility of having it financed by a third party will need to be investigated.
- Perforated aluminum sunscreens at the south facing windows in lieu of the photovoltaic panels.

Sustainability

The following are sustainability features included in the Schematic Design Documents:

- Solar thermal panels to be located at the roof of each residence tower for pre-heating Domestic Hot Water.
- Natural ventilation stacks for each room.
- Heat provided via perimeter hydronic radiator panels at residence room and hydronic ceiling panels in public zones.
- Operable windows with high insulation values in glazing and frames.
- Sunscreens along the south elevations, with integrated solar photovoltaics.
- Storm water and condensate filtration, capture, and reuse for toilet flushing throughout (with a tank to be placed in the south courtyard).
- Dual-flush toilets throughout and pint-flush urinals wherever urinals are specified.
- Native vegetation and climate-sensitive irrigation controls.
- Green roof at the second floor level, 50% of roof area.
- Vegetated flow-through planters for stormwater treatment of rooftop and pedestrian hardscape surfaces.
- Aggressive recycled content for high volume materials: Concrete (25% Class C flyash or blast-furnace slag minimum, and 50% where appropriate structurally), Gypsum (80% flue-gas gypsum minimum), and Steel (80% recovered steel minimum).
- Local/Regionally sourced material where possible to reduce transportation impacts – sources to be confirmed.
- FSC certified wood as specified in the outline specification.
- Designated areas for recycling.
- Secure, locked bike storage.
- Above code minimum thermal insulation at the exterior walls.
Site Design

The site for the ECRH building is an existing University parking lot located on the corner of 15th Avenue and Moss Street. The Museum of Natural and Cultural History is adjacent to the west edge of the parking area. The new East Campus Residence Hall and site development will displace about 300-350 parking spaces.

The University is in process of identifying locations on campus to accommodate the displaced parking.

As part of the building design the ECRH project is required to provide additional open space improvements. The minimum open space required to be developed is 16% of the gross square footage of the building.

The design team has been working with the University open space committee to identify open space needs for the entire block (area surrounded by 15th Ave. to the north, 17th Ave. to the south, Moss Street to the east, and Agate to the west), so the ECRH project will fit into the larger open space goals. The open space identified in the ECRH schematic design documents includes a 60’ wide area between the ECRH and the Museum of Natural and Cultural History and an area south of the building. These areas exceed the 16% requirement and will fit into a larger open space context for the entire block.

The site design will be blended into the larger open space areas and will be shown in more detail in the next phase.

The 60’ setback zone from the existing Museum of Natural and Cultural History will include a combination pedestrian path and fire lane consisting of a 15’ width concrete pavement (6” depth), 4’ turfblock pavers, and a 1’ wide concrete edge strip. The set backs along Moss and 15th Avenue is 15 feet. The sidewalks along these streets will be replaced and widened.

All the proposed and replaced walkways consist of a minimum of 4” concrete, with 6” reinforced concrete at areas that have vehicle traffic.

Where possible the existing trees along 15th and Moss Street will be protected and saved.

The majority of new plantings for the ECRH building are proposed to be native/adaptive landscape plantings. Plant selection will occur in the design development phase. Stormwater infiltration plants and bioswale plant mixes will also be used. A minimum of 12” imported topsoil is required for turf planting and 18” topsoil for all other planting beds.

Site features include concrete walks, stairs, planters, possible seat walls and concrete curbs. The north and south courtyards consist of concrete terraces, concrete paving and assorted plantings. The south courtyard also includes a secured, covered long term bike parking area for 140 bicycles and an underground rainwater/stormwater tank to be used for toilet flushing.

Non covered bike parking will also be located at the building entrances.

Since the residence rooms will look directly down on the portions of the 1st floor roof the schematic design proposes green roof areas over the performance hall and dining/kitchen facilities. The green roof is approximately 50% of this roof area. A tray type planter system is proposed.
Structure
The foundation system consists of spread footings that have approximately 4’ of over excavation and improved fill to limit differential settlements. The slab on grade is typically 5”. The basement walls are 10” thick. The floors of the typical housing units will be constructed of two-way conventionally reinforced concrete flat plate slabs. The floors will be designed to avoid drop panels at the column slab interface. The columns will be spaced at regular intervals to economize on re-use of concrete formwork. In the dining and multipurpose areas, the roof structure will be constructed using composite concrete – steel deck supported by structural steel beams and open web joists. The roof structure of the residence halls will be framed using light wood framing. Seismic loads will be resisted by reinforced concrete shear walls placed throughout the building plan at the concrete levels, and plywood sheathed metal stud shear walls at the uppermost levels of the residence units. Building loads will be transferred to the supporting earth with spread footings that will be over-excavated to minimize building differential settlements.

Mechanical
Heating, Ventilating, and Air Conditioning (HVAC) systems proposed for the facility are being selected to provide reliable and efficient operation while maximizing sustainability, minimizing equipment maintenance, and providing long equipment life. The HVAC systems include a mix of system types to maximize energy efficiency and sustainability. The HVAC elements and configurations include hydronic heating and cooling systems, constant and variable air volume (VAV) central air systems, natural ventilation systems, radiant heating systems, constant volume exhaust systems, and heat-recovery exhaust/makeup air systems. Waste energy from electrical power distribution and kitchen coolers and freezers is also expected to be made available for re-use. Possible Energy Conservation Measures (ECMs) currently being studied include radiant cooling, decoupled ventilation, underfloor air distribution systems, and displacement ventilation systems. Central air handling equipment is located inside basement mechanical rooms as available. Ductwork and piping will be concealed as much as possible within chases, plenums, and other dedicated mechanical spaces. HVAC systems use central campus energy sources including piped steam and chilled water.

For the heating, campus steam is supplied to a heat exchanger to provide heating water, which will be pumped to centralized and distributed heating coils.

For the cooling system, campus chilled water is centrally pumped to air handling units and distributed cooling coils to provide space cooling and ventilation air cooling.

About the application of HVAC equipment to individual spaces, at the basement a central variable air volume (VAV) air handling unit is provided with filtered ventilation, heating, and cooling. Distribution ductwork overhead in the ceiling space transports HVAC air to variable volume air terminal units with hydronic heating coils in individual temperature control zones. The air handling units’ outside air dampers and the terminal units are controlled as Demand Control Ventilation (DCV) systems. At the ground floor, the food service kitchen is served by constant volume exhaust fans mounted in the ceiling space. Makeup air is provided by constant volume air handling units located in the basement. The commons spaces, assembly and performance spaces, offices, meeting rooms, storage rooms, and corridors, are served by variable volume air handling units located in the basement. At the residence towers residence rooms ventilation is provided by natural ventilation. Natural ventilation “stack effect” airways is provided using manually operated windows, building chases, and insulated automatic dampers. The natural ventilation openings are interlocked with window switches and finned tube radiation to minimize energy usage. Heating is provided
by hydronic heating coils (radiator). At the Toilet Rooms and janitor’s closets the ventilation, exhaust, and makeup air are provided by energy recovery ventilators. Hydronic heating coils and chilled water cooling coils are provided for final conditioning of makeup air. The makeup air passes through the opposite side of the heat recovery module while being kept separate from the exhaust air stream. The system is sized to provide 10 air changes per hour in the toilet rooms and janitor’s closets, and is balanced to maintain a slight negative pressure in these spaces relative to the rest of the building for odor control. Stairs at the residence towers are provided with hydronic heat. In the base design, finned tubes or fan coil units are located at the bottom level of unventilated stairs to provide freeze protection, assuming the stairs are outside the building insulation envelope. At the Electric rooms and telephone rooms the base cooling system for these rooms uses chilled water fan-coil units. An ECM is being studied to replace the fan coils with high-efficiency Variable Refrigerant Volume (VRV) split system air conditioners with multiple ductless indoor units piped to fewer (ganged) outdoor condensing units.

**Electrical**

The building is connected to the University’s 12KV distribution system that ties to the central plant. The feeder is intended to extend from the new Arena and run down Moss Street. The feeder is installed in a utility tunnel along with other systems. This feeder is extended to a 12KV / 480V 1,500KVA oil filled transformer. The transformer is located in the basement. The transformer room is provided with personnel access doors. A below grade areaway, with a grated opening to the outside, is provided to allow for removal of the transformer. We anticipate the main switchboard for the new building to be a 480/277 volt, 2,000-amps. The switchboard is located in the main electrical room in the basement. We anticipate one electrical room for each residential floor. Each electrical room for the residential floors has one 480 volt panel, and three or four 208 volt panels. Dry type transformers are located on every other floor. A metering system for each residence floor is provided for measurement and verification of energy use and savings. The metering system must be compatible with the Alerton DDD system for HVAC controls.

Electrical receptacles, in the residence rooms, shall be provided per NEC 210.60 and NEC 210.52(A) through 210.52(D). The typical single resident room has two duplex and two double duplex electrical receptacles fed from two circuits. The typical double resident room has four duplex and two double duplex electrical receptacles fed from three circuits.

Double duplex receptacles are provided for all carpeted areas for maintenance purposes. These receptacles shall be fed from two circuits. Receptacles shall be spaced to accommodate carpet cleaning equipment. Regarding the Emergency/Standby Power Systems, the building is tied to the University’s 12KV Standby system.

The use of solar water heating panels and photovoltaic arrays will be used for this project. The solar panels are located at the south facing roof of the Residence Tower C (middle tower). PV panels occur as sunshades at the south facing residence room windows.

The interior lighting approach addresses the functional and aesthetic requirements of the individual space types. Surface mounted, durable fixtures are used throughout in the resident rooms and hallways. Higher quality light fixtures, to address the functional and aesthetic requirements of the individual spaces, are used on the ground floor. Additional emphasis will be placed on owner acceptance, system maintainability, and initial and long term operating costs. High performance linear fluorescent lamps in conjunction with program start electronic ballasts are the predominant electric light source/ballast technology used throughout the
facility. Additional light source types are utilized as required. Supplemental lighting and task lighting augment the base systems where appropriate. Lighting controls shall be simple while allowing the owner the greatest flexibility for all of the varied spaces. Occupancy sensors are used throughout in classrooms, offices, support spaces and other similar rooms. Variable level illumination schemes will be reviewed with the owner to ensure that the system(s) addresses their needs.

Communications
Voice and Data systems are provided per the U of O Voice & Data Campus Infrastructure Standards. Fiber optic and copper backbone cable is brought into the building from the utility vault adjacent to the Museum of Natural Cultural and History to the main telecommunications service equipment room located in the basement. The ground floor has three telecommunication rooms. There will be one communications room for each residential floor. An open cable tray is provided on the ground floor, above an accessible ceiling, and run the length of the building. In the residence corridors a cable tray is provided for routing of all communication cables. The typical single resident room has one communication outlet with two cat5e cables and one RG6 TV cable. The typical double resident room has two communication outlets with two cat5e cables and one RG6 TV cable in each outlet. Conduits are provided from each outlet to a cable tray. In addition to hard wired access the University is considering wireless access throughout the building. Wireless access points are located throughout the building at strategic locations.

Plumbing
Plumbing systems proposed for the various facilities were selected to provide reliable and efficient operation and with consideration for sustainability. Domestic water piping are Type L copper, a six inch riser with backflow prevention located in the north east corner of the basement. Reclaimed water is identified with purple pipe wrap. Storm, vent, and sanitary waste piping are cast iron no-hub. Waste piping exits west from the building toward the main which is relocated from inside the building footprint as part of this project. A duplex grinder sump pump is required to lift waste water from the basement floor level to a central waste main. Storm water from most roof areas is collected for re-use. The rest will be sent to treatment swales located in areas adjacent to the building. Natural gas in black steel pipe is fed from the south, primarily to serve the kitchen. Piping systems and accessories will be designed with emphasis on access and ease of maintenance.

High quality low flow / low flush plumbing fixtures have been selected for reliable and efficient operation, sustainability, long life, and low maintenance. Water closets and urinals are wall mounted. Counter mounted sinks for hand washing are vitreous china with 0.5 GPM manual or hard-wired sensor controlled faucets. Showers are traditional tile with thermostatic- and pressure-balancing mixing valves and 1.6 GPM shower heads. Janitor’s sinks will be floor mounted terrazzo with piping for chemical mixing stations. Handicapped accessibility will be provided for throughout in accordance with the requirements of the Americans with Disabilities Act.

Primary water heating will use semi-instantaneous steam-to-water “converters” (heat exchangers) with hot water storage and solar preheat. Thirty six solar panels, each 40 square feet in area are expected to be
mounted on the central tower with a sixty gallon drain-back tank on the top floor (to minimize pumping energy) and two 2,500 gallon storage tanks in the basement. Preheated water to be used for space heating is brought to final temperature by a single generator, while potable hot water is generated by three separate units. High temperature hot water for the kitchen is produced by a dedicated booster heater (probably electric), specified by the Kitchen Designer. The top floor of the north tower requires its own separate electric water heater supplied by the domestic booster pump serving that area.

Kitchen services are piped up from the basement to fixture groups and distributed horizontally as practical and appropriate overhead along the walls. Approximately 350,000 Btu/h low pressure natural gas service are located in the courtyard and piped directly to kitchen equipment with local shut-offs. An independent greasy waste collection system flows to the interceptor in the courtyard to the east and then returns to join the regular sanitary waste and exit to the west.

Rainwater from roof areas will be stored underground in a 30,000 gallon tank located below the east courtyard, and processed for use in flush fixtures.

As a consequence of the Eugene Water and Electric Board’s recent interpretation of the Oregon Administrative Rules regulations regarding backflow prevention and its application to reclaimed and rainwater harvesting systems, a reduced pressure principle backflow assembly (RPBP or RP) is required. This is located in the basement and requires a high flow sump pump below it (650 GPM at 25 feet of head) and a 6” pumped sanitary waste pipe to carry water to the sanitary waste pipe west of the building should a significant backflow event ever occur. In addition, a duplex domestic water pump system with pressure tank is required to serve the top floor of the north bar to offset the added pressure drop associated with the more restrictive backflow device.

Site Utilities

The existing water system consists of a 16-inch public water main along the north side of East 15th Avenue and an 8-inch public water main on the west side of Moss Street. Two public fire hydrants exist along East 15th Avenue, one at the corner of Moss Street and East 15th Avenue and the other roughly 430 feet west. The proposed fire protection system includes a new tap to the existing 8-inch public water main in Moss Street. A Double Check Detector Backflow Preventer (BFP) is installed just downstream from the connection to the public water main. From the BFP the fire protection line continues to connect to the building sprinkler system near the northeast corner of the building. A fire department connection (FDC) is also required on the fire protection line. One additional fire hydrant needs to be installed along the south side of the site on Moss Street in order to comply with Oregon Fire Code. The proposed domestic water system consists of a new tap to the existing 8-inch public water main in Moss Street. Downstream from the tap a new EWEB water meter needs to be installed along with a domestic reduced pressure BFP. The reduced pressure BFP is to be located in the building’s basement. All trash enclosures have sanitary drains with trap primers. Water service for trap primers will be provided.

The existing sanitary sewage system is a 10-inch private sanitary sewer line that runs south to north through the middle of the site, providing service to the existing buildings located south of the site. Regarding the proposed sanitary sewer system, the existing 10-inch sanitary sewer system needs to be rerouted around
the west side of the proposed building in order to provide the shortest reroute and to avoid conflicts with the Moss Street right-of-way and proposed storm drain features on the east side of the site. All sanitary building connections are collected and routed to the rerouted private sanitary line. Therefore, all sanitary sewer building connections are located either on the south or west sides of the building. In addition, all trash enclosures have sanitary drains draining to the rerouted sanitary sewer system. Sanitary manholes and cleanouts are provided as required to meet building code.

An existing 12-inch public storm drain exists along the south side of East 15th Avenue, while a 10-inch private storm drain exists along the west side of the site. Stormwater from both the 10 and 12-inch storm drains flow west to Agate Street where the stormwater is then routed north to discharge to the Millrace Channel. The proposed drainage system maintains the current drainage pattern by draining approximately one third of the site to the 12-inch public storm drain in East 15th Avenue and draining the remainder of the site to the private storm drain system along the west side of the site. If the current drainage pattern is maintained then detention of stormwater should not be required since the site is currently fully developed with impervious surfaces. However, some stormwater storage is desired in order to provide reuse for toilet flushing. Any stormwater storage is provided via an underground storage tank. Civil provides storm drain piping to and from the stormwater tank. However, the design of the storage tank and pump system is provided by the Mechanical Engineer. Catch basins are used to collect runoff from vehicular areas, while area drains will be used to collect runoff from landscaped areas and deck drains for collecting runoff from pedestrian hardscaped areas. Trench drains may also be used for collecting runoff from both vehicular and pedestrian hardscaped areas. It is anticipated that the inlets are connected to two new private storm systems to convey stormwater to the 12-inch public and 10-inch private storm drains. Storm drain manholes and cleanouts are provided as required to meet building code. Regarding the treatment, the City of Eugene requires all new or replaced impervious surfaces to be treated. The City also allows mitigation offsets for new impervious surfaces by providing treatment for existing impervious surfaces, and for new impervious surfaces adjacent to new or existing large trees. Therefore, if an isolated area cannot be treated then the treatment requirement for that area may be offset by an onsite tree credit or by treating an area of existing impervious surface equal in size. At a minimum, the City of Eugene treatment requirements must be met. Although this project is currently not pursuing LEED certification, it may later be pursued as the project progresses. Both LEED and the City of Eugene allow stormwater treatment via vegetated or manufactured means. The preferred option for stormwater treatment is via vegetated methods including filtration planters, swales, and ecoroofs for treating roof runoff and swales and/or vegetated filter strips for treating runoff from vehicular and pedestrian pavements. However, grading constraints and limited open space often force the use of manufactured treatment units.

The existing natural gas system consists of a 2-inch natural gas main on the south side of 15th Avenue and a 1-inch natural gas main on the east side of Moss Street. The proposed natural gas system is to enter the ECRH near the southeast corner of the building. Therefore, natural gas needs to be extended from the natural gas main in Moss Street to the ECRH. Northwest Natural is responsible for installing the gas meter and constructing the new gas service from the main in Moss Street to the new gas meter.
East Campus Residence Hall – Overall Site Plan
East Campus Residence Hall – Ground Floor Plan
East Campus Residence Hall – Mezzanine Floor Plan
East Campus Residence Hall – Second & Fourth Floor Plan
East Campus Residence Hall – Third Floor Plan
East Campus Residence Hall – Fifth Floor Plan
East Campus Residence Hall – North Elevation
East Campus Residence Hall – East Elevation
East Campus Residence Hall – South Elevation
East Campus Residence Hall – West Elevation
East Campus Residence Hall – South Elevation @ Building–A
East Campus Residence Hall – Longitudinal Section
East Campus Residence Hall – East Elevation/Section @ Performance and Dining Space
East Campus Residence Hall – North Elevation/Section @ Building-D
East Campus Residence Hall – South Elevation/Section @ Building–C
East Campus Residence Hall – North Elevation/Section @ Building–C
East Campus Residence Hall – West Elevation/Section @ Building-B
East Campus Residence Hall – Northwest View
East Campus Residence Hall – Southwest View
Campus Plan and Project Specific Patterns

The East Campus Residence Hall process has considered both Campus-Wide and Project Specific patterns developed by the University of Oregon. They are statements about the built environment that describe and analyze design issues and suggest possible ways to resolve them. They suggest ways of looking at major design issues and are intended to guide the design process. They may also elicit further input from the user group or stimulate thinking by the design team. Articulating long-lasting, shared traditions and understandings that adapt well to development needs, patterns enable user groups to respond quickly to opportunities for facilities improvements as they emerge and, at the same time, emphasize long-range planning and continuity of development decisions over times.

The development of the East Campus Residence Hall triggers the requirement to extend the Campus Plan Open Space Framework, and supporting major pathways, to the East Campus, with a focus on the “superblock” between 15th and 17th Avenues and Agate and Moss Streets. Therefore, the consideration of development patterns is inclusive as the combined projects- the East Campus Open Space Framework and the East Campus Residence Hall- cover a broad range of scales, campus activities and landscapes all adjacent to a variety of existing buildings, some with identified development potential.

Some university development patterns, such as Sustainable Development, are broad policy initiatives supported by a range of specific patterns. The East Campus Residence Hall project is pursuing a range of sustainable development strategies. These are guided by the SEED program and include additional concepts developed during a Sustainability Workshop early in the Schematic Design. These strategies are included in this report, in the section titled Outline of Sustainability Plan.

The Campus-Wide, Large Scale Campus, patterns, are addressed by the East Campus Open Space Framework as they address how the campus is formed at the greatest scale and puts the East Campus Development in the context of the entire campus plan. These patterns are identified in both the Campus Plan and the 2003 Development Policy for the East Campus Area. The six diagrams of the East Campus Open Space Framework shown here address the following patterns: Open Space Framework, Connected, Smaller Scaled Designated Open spaces, Pedestrian Pathways, Street Grid.
Existing Designated Open Space and Pathways

Open Space Framework

- Area of Study for East Campus Area Open Space Framework Plan
- Existing Designated Open Space (Per Campus Plan)
- Existing Primary Pathways (Per Campus Plan)
Proposed Designated Open Space and Pathways

Open Space Framework

- **Area of Study for East Campus Area Open Space Framework Plan**
- **Proposed Designated Open Space**
- **Proposed Primary Pathways**
East Campus Existing Designated Open Space and Pathways

Open Space Framework

- **Brown**: Area of Study for East Campus Area Open Space Framework Plan
- **Green**: Existing Designated Open Space (Per Campus Plan)
- **Red**: Existing Primary Pathways (Per Campus Plan)
East Campus Proposed Designated Open Space and Pathways

Open Space Framework

- Area of Study for East Campus Area Open Space Framework Plan
- Proposed Designated Open Space
- Proposed Primary Pathways
Areas of Possible Expansion of Existing Buildings

Open Space Framework

Area of Study: 565,732 GSF
Designated Open Space Requirement @ 25% of Site: 141,443 GSF
Proposed Designated Open Space: 153,240 GSF
27% of Site
Proposed Designated Open Space and Pathways

Open Space Framework

Area of Study
Proposed Designated Open Space
Proposed Primary Paths
Just as there are Campus –Wide Patterns there are Site and Building Specific Patterns. There are also broad development patterns, specific to building design, that reinforce the quality, visual continuity and image of the campus as a whole. Architectural Style is fundamental to the creation of a coherent campus. The East Campus Residence Hall responds to this pattern first, by using brick as the primary building material, consistent with the historic core of the campus and many subsequent buildings ,second by using stucco as a secondary material and, third, by using a simple, clear gabled building form found in many variations on the existing campus.

The following diagrams illustrate the project response to issues raised by the some of the patterns: Wings of Light, South Facing Outdoor, Building Complex, Quite Backs, Public Outdoor Room Family of Entrances, Main entrance, Connected Buildings, Transparency and Approachability, Nerve Center, One Room/Many Uses, Participation in Sustainable Living, A Place for Quiet, Operable Windows, Wholeness of Project, Organizational Clarity, Dining and Conversation, Resident social Hearths, Group Study Alcoves, Visible Laundry and Enough Storage.
Main Building Entrance, Quiet Backs, Public Outdoor Room, and Family of Entrances

First Floor Plan
First Floor Plan
Campus Plan and Project Specific Patterns

Schematic Design

East Campus Residence Hall
University of Oregon, Eugene

First Floor Plan

One Room-Many Uses, Sustainable Living, South Facing Outdoors, A Place for Quiet, Dining and Conversation
Visible Laundry, Social Hearth, and Group Study Alcoves

Second & Fourth Floor Plan
Organizational Clarity

Basement Floor Plan

SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene
Transparency – Approachability, Operable Windows and Main Building Entrance

Connected Buildings
Storage

Basement Floor Plan
SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene
Schematic Design
East Campus Residence Hall
University of Oregon, Eugene

Building Code Analysis
Building Code Analysis


The occupancy group classification is a mixed use occupancy composed of the following: Group R-2 Dormitory, A Assembly, B Business & Classrooms, F-1 Factory, Incidental Use, and S-1 Storage.

Regarding the occupancy separation requirements, we are considering the ground floor occupancy separation as unlimited area (IBC Table 302.3.2 Automatic Sprinkler Exception).

The fire suppression system consists of the automatic sprinkler system per NFPA 13.

The type of construction classification is intended to be Type I-A, Basement, Ground Floor, Mezzanine, and Type V-A, Level 2 to 5.

The allowable height is five stories, 75 feet (includes one story and 20 foot height increase for automatic fire sprinkler system per IBC section 504.2). The actual building height is five stories and 70 feet at the Residence Tower A, one story plus one mezzanine and 20 feet at Residence Tower B, four stories and 60 feet at Residence Tower C & D.

The fire Resistive Requirements (per IBC Table 601) are: 3-hour at floor construction between the first and second floors; 2-hour at exit enclosures connecting more than four stories and shaft enclosures connecting more than four stories; 1-hour at structural frame, exterior bearing walls, exterior nonbearing walls, interior bearing walls, roof construction, demising walls between sleeping rooms, 1/2 hour at corridor.

Fire separation between corridor and at typical glass wall areas, hearth, study, laundry and stair vestibule at the residence tower will be achieved by water curtain sprinkler system for 2 hour fire rating.

The exit access travel distance is at 250 feet at A and R occupancy and 300 feet at B occupancy.

For the fire door and fire shutter fire protection ratings, the project includes 1-1/2 hour fire doors at shaft and exit enclosures that have 2-hour fire barrier assemblies, and 1/3 hour fire door at ½ hour fire partition.

The fixture count is provided according to occupancy and complies with Code. The one provided for A-2 and A-3 consists of five WC and four urinals for men, ten WC for women, eight lavatories for men, eight lavatories for women, four unisex bathrooms located at ground floor, one unisex bathroom located at the basement, and one unisex bathroom located at the mezzanine. The fixture count provided for R-2 at each typical Residence Tower floor includes three WC for men, three WC for women, three lavatories for men, three lavatories for women, three showers for men, three showers for women. At each Jack & Jill unit and each semi-suite unit with less than six beds there are one WC, one shower and two lavatories. Each semi-suite with six beds includes one WC, two showers and two lavatories. There are also two drinking fountains at the ground floor.
FLS LEGEND:

- **Room Name**
- **Occ. Class**
- **Gross Square Footage**
- **Occupant Load**
- **Total Occupancy**
- **2 Hour Fire Partition**
- **1 Hour Fire Partition**
- **30 Minute Fire Partition**
- **Building Exit**
- **30 Minute Fire-Rated Corridor**

**GENERAL NOTES:**
- No dual occupancy considered at dining / seating and server.
- No dual occupancy considered at typical residence tower floor plan.

Life Safety Plan – Basement Level

Life Safety Plan – Ground Level
SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene

Life Safety Plan – Mezzanine Level

FLS LEGEND:

- Room Name
- Occ. Class
- Gross Square Footage
- Occ. Class
- Total Occupancy

- 2 Hour Fire Partition
- 1 Hour Fire Partition
- 30 Minute Fire Partition
- Building Exit
- 30 Minute Fire-Rated Corridor

General Notes:
- No dual occupancy considered at Dining / Seating and Servery.
- No dual occupancy considered at typical residence tower floor plan.
Life Safety Plan – Second & Forth Level

Life Safety Plan – Third Level
FLS LEGEND:

- Room Name
- Occ. Class
- GROSS SQUARE FOOTAGE
- OCCUPANT LOAD
- TOTAL OCCUPANCY
- 2 HOUR FIRE PARTITION
- 1 HOUR FIRE PARTITION
- 30 MINUTE FIRE PARTITION
- BUILDING EXIT
- 30 MINUTE FIRE-RATED CORRIDOR

GENERAL NOTES:
- NO DUAL OCCUPANCY CONSIDERED AT DINING / SEATING AND SERVERY.
- NO DUAL OCCUPANCY CONSIDERED AT TYPICAL RESIDENCE TOWER FLOOR PLAN.
SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene

Project Schedule

March
April
May
June
July
August
September
October
November
December

SCHEMATIC DESIGN
East Campus Residence Hall
University of Oregon, Eugene
Cost Estimate Summary

To follow
Approval/Signature

Project User Group
Gregg Lobisser, Chair
Cathy Soutar
Fred Tepfer
George Bleekman
Martina Bill
Virginia Cartwright
Tom Driscoll
Jon Erlandson
Allen Gidley
Sean Landry
Susan Lesyk
Sandra Schoonover
Aly Stanton
Ryan Wagner
Brad Black
Adrian Ho

East Campus Open Space Advisory Group
Gregg Lobisser, Chair
Cathy Soutar
Fred Tepfer
George Bleekman
Martina Bill
Virginia Cartwright
Jon Erlandson
Allen Gidley
Susan Lesyk
Carole Daly
Don Corner
Christine Thompson
Anana Willey

Approval/Signature
Gregg Lobisser
Assistant to the VPSA for Capital Construction Planning and Director of Student Activities; Project Chair
Robin Holmes
Vice President for Student Affairs; Project Sponsor
SUSTAINABILITY

PLAN
Outline of Sustainability Plan

SUMMARY OF ECO-CHARETTE

Policy Summary
The University of Oregon’s long-standing commitment to sustainable development and campus planning has created a significant body of policy in support of sustainable design principles, woven throughout the breadth of departments.

In addition, there are State mandated procedures that also influence project process and performance. Both of these sources of foundational aspirations - both institutional and regulatory - for this project have been outlined below.

Broad Policies and Commitments
- Comprehensive Environmental Policy Statement ('97)
- Campus Plan (2005)
- Sustainable Development Plan (2005)
- Sustainability Assessment Indicators
- ECRH Project Description
- American College and University Presidents Climate Commitment (ACUPCC)
- Eugene and Oregon Code,
- OR Governor’s Executive Order

Focused Issue Policies:
- Recycled Paper Policy
- Wood Products Purchasing Policy
- Bike Plan
- Campus Tree Plan
- Campus Transportation Plan
- Integrated Pest Management

The various policies related to sustainable development impact issues that fall within the following categories, further detailed in the following pages:

- Academics and Culture
- Development – Planning and Design
- Planning and Design Process
- Patterns
- Materials – Resource and Waste Management
- Greenhouse Gas Emissions
- Energy
- Land Use/Transportation
- Water
- Site/Landscape
Academics and Culture
Research focus on sustainability
Sustainability-related curriculum
ASUO-funded student sustainability programs
Student publications dedicated to sustainability
Sustainability service and outreach

Development Planning and Design
“The physical environment of the university - its landscape and buildings - must also support and enhance the excellence of our academic programs. Therefore: develop, redevelop, and remodel in ways that incorporate sustainable design principles.”

Planning And Design Process
Project Management and Integration
Performance Standards – SEED and LEED
Living Design – encourage sustainable behavior
Connection to the Environment – connect occupants with university’s cultural and environmental features

Patterns
Wings of Light
South Facing Outdoors
Pedestrian Pathways
Sustainable Form
Academic Linkages
Accommodate Change
One Room, Many Uses
Participate in Sustainable Living

Greenhouse Gas Emissions
Commitment to reduce emissions immediately
Commitment to action plan to achieve climate neutrality as soon as possible
3% minimum green power purchase
Measure, track, and report all greenhouse gas emissions
Energy
“Top Priority” to save energy
Maximize use of passive systems and synergistic strategies
Commitment to increase onsite production of renewable power
Design to meet occupancy patterns and provide for operability for indoor environmental quality

Materials – Resource and Waste Management
Environmentally Preferable Purchasing
Life Cycle Impacts – maximize longevity, reduce material use, reuse, and recycle
Facilitate recycling by occupants through the design of convenient recycling facilities
Purchasing and waste guidelines to minimize toxic and hazardous materials
Reuse or compost food waste

Land Use/Transportation
Use wisely what we have - maintain existing building stock and open space where feasible
Bike storage convenience and quantity
Provision of free bus passes for entire university population

Water
Water to be protected - as one of OR’s most precious resources
Augmentation of natural drainage and treatment of stormwater runoff onsite
City of Eugene requirement to connect to sewer if within 300 feet
Trend – UO summer water use significantly higher due to irrigation

Site/Landscape
Stormwater management policy
Need to collect and pipe stormwater to public storm system
Must provide stormwater treatment for all new and replaced impervious surfaces
Site and orient new construction for synergy with environmental and campus context
Protect existing ecosystems
Native/adaptive vegetation
Integrated Pest Management program
Minimize noise and light pollution
Continue to enhance the campus forest
**Workshop Process**

**Opportunities and challenges**

This process enables the EcoCharrette participants to discuss and understand the factors that will shape the project’s success.

By understanding influences that contribute towards or complicate various sustainable strategies, we can focus our efforts strategically towards designing and constructing a building that lives up to the highest standards of sustainability at the University. Finally, combining strengths with threats suggests that we may need contingency planning (and possibly some diversification of goals) for the project if some of the threats materialize.

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong commitments/policies – regulatory context</td>
<td>Budget limitation</td>
</tr>
<tr>
<td>Opportunity to reach, shape values</td>
<td>ACUPCC performance bar is set high – challenge to reach</td>
</tr>
<tr>
<td>Good examples to review - +/-</td>
<td>Changing nature of leading edge</td>
</tr>
<tr>
<td>Residents “own” their space – responsibility</td>
<td>– How to stay relevant as a teaching tool – stay exciting?</td>
</tr>
<tr>
<td>Heating, cooling, lighting are lasting needs and building issues - always an opportunity</td>
<td>– Need for great flexibility and durability</td>
</tr>
<tr>
<td>Sustainable features may help neighbor perception</td>
<td>Complacency – pushing limits of our achievements, culture, and behavior</td>
</tr>
<tr>
<td>– envelope, landscape, water</td>
<td>Balance of maintenance issues with sustainability measures</td>
</tr>
<tr>
<td>Make public through marketing the commitment and investment for this facility and campus</td>
<td>Need to be aware of occupancy pattern, and need to find synergies with other buildings</td>
</tr>
<tr>
<td>– transparent design process is educational</td>
<td>Lack of thermal comfort in summer drives away conference users</td>
</tr>
<tr>
<td>Student culture of green – haven’t studied cultural acceptance of active participation – this is potential pilot project</td>
<td>Minimizing programmatic impacts to site: recreation, parking</td>
</tr>
<tr>
<td>ECRH – opportunity to test systems as pilot for other buildings</td>
<td>Size of building will impact neighbors to east – represent campus visibly</td>
</tr>
<tr>
<td></td>
<td>Need to provide active, recreational spaces</td>
</tr>
<tr>
<td></td>
<td>– lawn is predominant approach to that, which drives large water use</td>
</tr>
<tr>
<td></td>
<td>– Redefining recreational space or</td>
</tr>
<tr>
<td></td>
<td>– Meeting that need in a new/creative way</td>
</tr>
</tbody>
</table>
Vision for the East Campus Residence Hall

Energy Star labels
Recycling and composting fully integrated
Dining not separate from rest of ground floor
24/7 life cycle encompassed here and blurred/integrated spaces breakdown compartmentalization
Welcoming - Magnet to East Campus – Active
Serves more than just the students
Waste cooking oil = $ for equipment and chemistry faculty lined up to manage converting to fuel
Allow variety of options of engagement (prospect and refuge) – variable commitment spaces
Doors serve new role of entry into spaces
No longer the edge of campus – has it’s own center
Outdoors would integrate water demonstrably – story of water
Cool, polished concrete surfaces
Open, light, airy
Flow from inside to outside
Solar energy captured
Technology – interactive displays very prominent
Immediate impact of energy performance
  - Intuitive, tangible display and actions
  - Make the abstract understandable

Building as new example of energy efficiency –
model for others beyond the UO
Web interface for each room to monitor performance and guide behavior
  - Dashboard
  - Residence Hall
  - Floor/hearth
  - Room
  - Website as part of University Dashboard
Select a few actions to guide to operate spaces –
without requiring seeking it out: light–indicators, thermostats, small LCDs
Farmer’s Market – bring in neighbors
Eliminate disposables
Noise from occupants, not building systems
**Targets for Envisioned Performance**

**Energy**
Minimum 30% better than OR code (BTUs/SF, OCC/SF, BTUs/OCC)
Target space heating for efficiency energy and GHG problem
Capture waste heat – exhaust air – 50-75%; refrigeration later on – 50-75%
Thermal storage – net positive/peak zone;
29% opening
Balance heat loss/gain
2000 W Society living as experiment

**Education**
Central - to educate visitors and guest with broader, general information about the building that can remain static
Dispersed - to inform residents as to how to be comfortable, and how to contribute
Immediate and personal impact
Real-time data
Interpretive – Styrofoam cup example “never decomposes”
Staff fully informed and educated, capable of guiding residents

**Water**
Express stormwater management

**Sustainable Living + Waste Management**
Farmers Market
Bike storage, recycling/compost, education
Recycling and composting easy and integrated
Make disposables compostable – reusable plates (baskets)
Biofuel creation – waste cooking oil
Recycling is easy and incorporated

**Indoor Environment**
Fresh air
Cool, light, airy, open to outdoors
Notes from Three Focused Discussions – Defining Design Parameters

1 – Building Systems

Public Spaces will require some degree of automation to make work (controls and relays to ensure efficient)

Need to define ownership of systems that require operation

Student rooms are a great space to rely on occupant action

Competition between dorms led to 15% savings through behavior

Students want their doors open when they’re home. Need to design for that.

Certain rooms/room types could be passive, others active – students select

Shoulder seasons when heating is needed at north and cooling at south zone by exposure

Partial summer occupancy?

Utilize north side only?

Occupancy patterns – need detail

Intensive use through August 1st

August has lowest occupancy

Maintenance prior to the year

Lull in academic activity at end of summer: August 1 through Labor Day

When groups come through – large group up to 300 people for two weeks; larger groups only 4-5 days;

varying down to as small as 30 people

Usually no longer than 15 days

Introduction – 1 or 2 day stays – not likely to learn complex operations during that short stay

August 1-15 worst weather - 5, 6, 7 especially

Energy Use (from highest to lowest proportion of annual energy use)

1. Heat
2. Light
3. Hot water
4. Fans, pumps
5. Plug loads
6. Cooling

Conductivity of glazing systems

- Aluminum conductivity
- Wood windows insulative

Air quality and noise pollution from kitchen and loading dock

- Relocating exhaust fans from kitchens
- Covering loading dock and ensuring exhaust vented well
- Grease exhaust duct – expense of moving air to tower roof?
- Alternate is ducted air to residence rooms or venting exhaust out side wall

Allergens – some with severe allergies require window units

Next Steps

1. Commence Energy Analysis to establish baseline for SEED and LEED models.
2. Hold a meeting to determine Energy Conservation Measures (ECMs) for modeling.
3. Complete preliminary model of ECMs and initial life cycle costing for SEED.
4. Define zones for automation versus interactivity, level of responsibility.
5. Outline metering and relay systems necessary to meet needs.
2 – Teaching Opportunities
The teaching opportunities discussed tended to fall into three categories: teaching about the building, teaching sustainable living, and connecting to the sustainability efforts of the University at large.

Teaching about the building:
Sustainability Center – place to educate guests/visitors
3-Dimensional model (or physical) showing sustainability elements plus signage throughout
Distributed signage throughout the building – calling out features
Let the building speak for itself
“Green Features” element of Campus Dashboard
Needs to be reinforced with static signage “commemorating” effort re: sustainable design

Teaching Sustainable Living:
Educational programs will need ongoing staff or organizational support. Put out call to campus community – who wants to dedicate to this?
Programs supporting student and intention
Training with incentives
Growth in Environmental responsibility in rooms and private zones – at fingertips
Provide real-time feedback - “my actions cause this reaction”
Demonstrate how to live communally in a way that contributes globally and is meaningful individually

Connecting to Campus Sustainability - Scholarship and Action
Displaying scholarship – Learning Commons could show student work relating to sustainability
Place to communicate research results relative to sustainability

Dynamic education – requires dedicated ownership
Changing displays
Programs to influence residents’ behavior
Staff
Student organizations
Academic department

Home for sustainable efforts across all residence halls
Gateway for residents to access sustainable programs on campus – introduce existing opportunities such as Survival Center, ESBL, CASL, campus green buildings

Next Steps
1. University Dashboard integration meeting: Identify points of input, data format and streams, review possible website configuration for ECRH.
2. Meet with Student representatives to brainstorm best means of interfacing with residents. What format and where signs, indicators, screens should be located.
3. Seek partners within the campus community interested in dedicating staff and programs to the teaching effort around sustainable living.
Schematic Design

East Campus Residence Hall
University of Oregon, Eugene

3 – Site And Water Cycle

Factors to be considered: Maintenance requirements, water demands, energy impacts

Maintenance preferences
- Less finicky landscapes – natives better
- Stormwater planters relatively low-maintenance – removing silts and sediments is about all that is required

Treat parking/street runoff separately
- Celebrating stormwater as an artistic display
- Storage – one large, one small to show/demonstrate – or view to the larger
- Sculptural element that moves with runoff
- Exposing runoff in open channels
- Run on chains, runnells, walls

Approximate end uses:
1.8 mil gallon flushing; 500k -750K gal irrigation

Green roofs – some failures on campus
- Some resulting skepticism
- Irrigation required – provides cooling
- Need a diversity of plants – climate responsive – 4 zone
- If columns there supporting concrete roof structure, could put larger planters to support trees* (code restrictions)
- Ensure occupants can’t get out to roof through operable windows

Kitchen roof will need some area dedicated for equipment – may require screening

Green walls
- Trays or trellises
- Great loading dock screening
- PK Park will have them

Language immersion – label plants in various languages

Approximately 1800 SF of infiltration planter would be needed for runoff - this needs to be studied in further detail for filtration versus infiltration, as well as planting types.

Next Steps
1. Quantify stormwater rate and flow reduction and filtration requirements.
2. Size vegetated flow-through planters and swales to meet LEED and Eugene requirements.
3. Identify direction of flow from all site and roof areas to filtration, storage, and storm drains.
4. Identify best location, size, and type of water storage cisterns and pump equipment.
5. Discuss fixture selection with maintenance to identify solutions meet conservation and functional performance expectations.
### LEED-NC Version 2.2 Project Checklist

#### University of Oregon East Campus Residence Hall

#### Preliminary LEED Assessment

<table>
<thead>
<tr>
<th>Sustainable Sites</th>
<th>14 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YES</strong></td>
<td>9</td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prerequisite</th>
<th>Credit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. **Construction Activity Pollution Prevention**

2. **Site Selection**

3. **Development Density & Community Connectivity**

4. **Brownfield Redevelopment**

5. **Site Selection**

6. **Construction Activity Pollution Prevention**

7. **Alternative Transportation, Public Transportation Access**

8. **Alternative Transportation, Bicycle Storage & Changing Rooms**

9. **Alternative Transportation, Low-Emitting and Fuel-Efficient Vehicles**

10. **Alternative Transportation, Parking Capacity**

11. **Site Selection**

12. **Protect of Restore Habitat**

13. **Maximize Open Space**

14. **Stormwater Design, Quantity Control**

15. **Stormwater Design, Quality Control**

16. **Heat Island Effect, Non-Roof**

17. **Heat Island Effect, Roof**

18. **Light Pollution Reduction**

<table>
<thead>
<tr>
<th>Water Efficiency</th>
<th>5 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YES</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Credit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Water Efficient Landscaping, Reduce by 50%</td>
</tr>
<tr>
<td>1.2</td>
<td>Water Efficient Landscaping, No Potable Use or No Irrigation</td>
</tr>
<tr>
<td>2</td>
<td>Innovative Wastewater Technologies</td>
</tr>
<tr>
<td>3.1</td>
<td>Water Use Reduction, 20% Reduction</td>
</tr>
<tr>
<td>3.2</td>
<td>Water Use Reduction, 30% Reduction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Energy &amp; Atmosphere</th>
<th>17 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YES</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prerequisite</th>
<th>Credit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. **Fundamental Commissioning of the Building Energy Systems**

2. **Minimum Energy Performance**

3. **Fundamental Refrigerant Management**

4. **Optimize Energy Performance**

5. **On-Site Renewable Energy**

6. **Enhanced Commissioning**

7. **Enhanced Refrigerant Management**

8. **Measurement & Verification**

9. **Green Power**

<table>
<thead>
<tr>
<th>Materials &amp; Resources</th>
<th>13 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YES</strong></td>
<td>6</td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prerequisite</th>
<th>Credit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. **Storage & Collection of Recyclables**

2. **Building Reuse, Maintain 75% of Existing Walls, Floors & Roof**

3. **Building Reuse, Maintain 100% of Existing Walls, Floors & Roof**

4. **Building Reuse, Maintain 50% of Interior Non-Structural Elements**
<table>
<thead>
<tr>
<th>Credit</th>
<th>Description</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Construction Waste Management, Divert 50% from Disposal</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Construction Waste Management, Divert 75% from Disposal</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Materials Reuse, 5%</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Materials Reuse, 10%</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Recycled Content, 10% (post-consumer + ½ pre-consumer)</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Recycled Content, 20% (post-consumer + ½ pre-consumer)</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Regional Materials, 10% Extracted, Processed &amp; Manufactured Regionally</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Regional Materials, 20% Extracted, Processed &amp; Manufactured Regionally</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Rapidly Renewable Materials</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Certified Wood</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Indoor Air Delivery Monitoring</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Increased Ventilation</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Construction IAQ Management Plan, During Construction</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Construction IAQ Management Plan, Before Occupancy</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Low-Emitting Materials, Adhesives &amp; Sealants</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Low-Emitting Materials, Paints &amp; Coatings</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Low-Emitting Materials, Carpet Systems</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Low-Emitting Materials, Composite Wood &amp; Agrifiber Products</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Indoor Chemical &amp; Pollutant Source Control</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Controllability of Systems, Lighting</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Controllability of Systems, Thermal Comfort</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Thermal Comfort, Design</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Thermal Comfort, Verification</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Daylight &amp; Views, Daylight 75% of Spaces</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Daylight &amp; Views, Views for 90% of Spaces</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Innovation in Design: Education</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Innovation in Design: Provide Specific Title</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Innovation in Design: Provide Specific Title</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>LEED® Accredited Professional</td>
<td>1</td>
</tr>
<tr>
<td>28</td>
<td>Project Totals (pre-certification estimates)</td>
<td>69</td>
</tr>
</tbody>
</table>

**SCHEMATIC DESIGN**

East Campus Residence Hall  
University of Oregon, Eugene
## LEED 2009 BD+C Project Checklist

### University of Oregon East Campus Residence Hall

**Preliminary LEED Assessment**

### SUSTAINABLE SITES

<table>
<thead>
<tr>
<th>Y</th>
<th>N</th>
<th>SUSTAINABLE SITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>1</td>
<td><strong>PREREQ 1</strong> CONSTRUCTION ACTIVITY POLLUTION PREVENTION REQUIRED</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td><strong>CREDIT 2</strong> DEVELOPMENT DENSITY &amp; COMMUNITY CONNECTIVITY</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td><strong>CREDIT 3</strong> BROWNFIELD REDEVELOPMENT</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td><strong>CREDIT 4.1</strong> ALTERNATIVE TRANSPORTATION: PUBLIC TRANSPORTATION ACCESS</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td><strong>CREDIT 4.2</strong> ALTERNATIVE TRANSPORTATION: BICYCLE STORAGE &amp; CHANGING</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td><strong>CREDIT 4.3</strong> ALTERNATIVE TRANSPORTATION: LOW-EMITTING AND FUEL-EFFICIENT</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td><strong>CREDIT 4.4</strong> ALTERNATIVE TRANSPORTATION: PARKING CAPACITY</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td><strong>CREDIT 5.1</strong> SITE DEVELOPMENT: PROTECT OR RESTORE HABITAT</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td><strong>CREDIT 5.2</strong> SITE DEVELOPMENT: MAXIMIZE OPEN SPACE</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td><strong>CREDIT 6.1</strong> STORMWATER DESIGN: QUANTITY CONTROL</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td><strong>CREDIT 6.2</strong> STORMWATER DESIGN: QUALITY CONTROL</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td><strong>CREDIT 7.1</strong> HEAT ISLAND EFFECT: NON-ROOF</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td><strong>CREDIT 7.2</strong> HEAT ISLAND EFFECT: ROOF</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td><strong>CREDIT 8</strong> LIGHT POLLUTION REDUCTION</td>
</tr>
</tbody>
</table>

**POSSIBLE POINTS**: 26

### WATER EFFICIENCY REQUIRED

<table>
<thead>
<tr>
<th>Y</th>
<th>N</th>
<th>WATER EFFICIENCY REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>2</td>
<td><strong>PREREQ 1</strong> WATER USE REDUCTION, 20% REDUCTION</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td><strong>CREDIT 1.1</strong> WATER EFFICIENT LANDSCAPING: REDUCE BY 50%</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td><strong>CREDIT 1.2</strong> WATER EFFICIENT LANDSCAPING: NO POTABLE WATER USE OR NO</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td><strong>CREDIT 2</strong> INNOVATIVE WASTEWATER TECHNOLOGY</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td><strong>CREDIT 3</strong> WATER USE REDUCTION: 30, 35, OR 40% REDUCTION</td>
</tr>
</tbody>
</table>

**POSSIBLE POINTS**: 10

### ENERGY & ATMOSPHERE

<table>
<thead>
<tr>
<th>Y</th>
<th>N</th>
<th>ENERGY &amp; ATMOSPHERE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>12</td>
<td><strong>PREREQ 1</strong> FUNDAMENTAL COMMISSIONING OF THE BUILDING ENERGY SYSTEMS REQUIRED</td>
</tr>
<tr>
<td>Y</td>
<td>7</td>
<td><strong>PREREQ 2</strong> MINIMUM ENERGY PERFORMANCE REQUIRED</td>
</tr>
<tr>
<td>Y</td>
<td>12</td>
<td><strong>PREREQ 3</strong> FUNDAMENTAL REFRIGERANT MANAGEMENT</td>
</tr>
<tr>
<td>12</td>
<td>7</td>
<td><strong>CREDIT 1</strong> OPTIMIZE ENERGY PERFORMANCE 1 TO 19</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td><strong>CREDIT 2</strong> ON-SITE RENEWABLE ENERGY 1 TO 7</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td><strong>CREDIT 3</strong> ENHANCED COMMISSIONING</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td><strong>CREDIT 4</strong> ENHANCED REFRIGERANT MANAGEMENT</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td><strong>CREDIT 5</strong> MEASUREMENT &amp; VERIFICATION</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td><strong>CREDIT 6</strong> GREEN POWER</td>
</tr>
</tbody>
</table>

**POSSIBLE POINTS**: 35

**PROJECT TOTALS (PRE-CERTIFICATION ESTIMATES)**: 108

Certified 40-49 points, Silver 50-59 points, Gold 60-79 points, Platinum +80 points
### Materials & Resources

<table>
<thead>
<tr>
<th>Y</th>
<th>Possible Points</th>
<th>N</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>2</td>
<td>PREREQ 1</td>
<td>STORAGE AND COLLECTION OF RECYCLABLES</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>CREDIT 1.1</td>
<td>BUILDING REUSE: MAINTAIN 75% OF EXISTING WALLS, FLOORS, &amp; ROOF</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 1.2</td>
<td>BUILDING REUSE: MAINTAIN 95% OF EXISTING WALLS, FLOORS, &amp; ROOF</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 1.3</td>
<td>BUILDING REUSE: MAINTAIN 50% OF INTERIOR NON-STRUCTURAL</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 2.1</td>
<td>CONSTRUCTION WASTE MANAGEMENT: DIVERT 50% FROM DISPOSAL</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 2.2</td>
<td>CONSTRUCTION WASTE MANAGEMENT: DIVERT 75% FROM DISPOSAL</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 3.1</td>
<td>MATERIAL REUSE: 5%</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 3.2</td>
<td>MATERIAL REUSE: 10%</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 4.1</td>
<td>RECYCLED CONTENT: 10% (POST-CONSUMER + 1/2 PRE-CONSUMER)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 4.2</td>
<td>RECYCLED CONTENT: 20% (POST-CONSUMER + 1/2 PRE-CONSUMER)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 5.1</td>
<td>REGIONAL MATERIALS: 10% EXTRACTED, PROCESSED, AND</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 5.2</td>
<td>REGIONAL MATERIALS: 20% EXTRACTED, PROCESSED, AND</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 6</td>
<td>RAPIDLY RENEWABLE MATERIALS</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 7</td>
<td>CERTIFIED WOOD</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td>POSSIBLE POINTS</td>
</tr>
</tbody>
</table>

### Indoor Environmental Quality

<table>
<thead>
<tr>
<th>Y</th>
<th>Possible Points</th>
<th>N</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>1</td>
<td>PREREQ 1</td>
<td>MINIMUM IAQ PERFORMANCE</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>PREREQ 1</td>
<td>ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 1</td>
<td>OUTDOOR AIR DELIVERY MONITORING</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 2</td>
<td>INCREASED VENTILATION</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 3.1</td>
<td>CONSTRUCTION IAQ MANAGEMENT PLAN: DURING CONSTRUCTION</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 3.2</td>
<td>CONSTRUCTION IAQ MANAGEMENT PLAN: BEFORE OCCUPANCY</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 4.1</td>
<td>LOW-EMITTING MATERIALS: ADHESIVES &amp; SEALANTS</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 4.2</td>
<td>LOW-EMITTING MATERIALS: PAINTS &amp; COATINGS</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 4.3</td>
<td>LOW-EMITTING MATERIALS: CARPET SYSTEMS</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 4.4</td>
<td>LOW-EMITTING MATERIALS: COMPOSITE WOOD &amp; AGRIBFIBER</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 5</td>
<td>INDOOR CHEMICAL &amp; POLLUTANT SOURCE CONTROL</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 6.1</td>
<td>CONTROLLABILITY OF SYSTEMS: LIGHTING</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 6.2</td>
<td>CONTROLLABILITY OF SYSTEMS: THERMAL COMFORT</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 7.1</td>
<td>THERMAL COMFORT: DESIGN</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 7.2</td>
<td>THERMAL COMFORT: VERIFICATION</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 8.1</td>
<td>DAYLIGHT AND VIEWS: DAYLIGHT 75% OF SPACES</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>CREDIT 8.2</td>
<td>DAYLIGHT AND VIEWS: VIEWS FOR 90% OF SPACES</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td>POSSIBLE POINTS</td>
</tr>
</tbody>
</table>

*SCHEMATIC DESIGN*
East Campus Residence Hall
University of Oregon, Eugene
## Sustainability Plan

### Innovation in Design

<table>
<thead>
<tr>
<th>Credit</th>
<th>Description</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>Innovation in Design: Green Building Education</td>
<td>1</td>
</tr>
<tr>
<td>Y</td>
<td>Innovation in Design: Operational Practices</td>
<td>1</td>
</tr>
<tr>
<td>Y</td>
<td>Innovation in Design: Provide Specific Title</td>
<td>1</td>
</tr>
<tr>
<td>Y</td>
<td>Innovation in Design: Provide Specific Title</td>
<td>1</td>
</tr>
<tr>
<td>Y</td>
<td>LEED Accredited Professional</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Possible Points:** 6

### Regional Priority Credits

<table>
<thead>
<tr>
<th>Credit</th>
<th>Description</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regional Priority Credit: SSC5.1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Regional Priority Credit: WEC2</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Regional Priority Credit: MRC1.1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Regional Priority Credit: MRC7</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Possible Points:** 4
SUMMARY OF ENERGY CONSERVATION MEASURES

Energy Conservation Measures for Analysis
The University’s Energy Analyst will produce an energy model, testing Energy Conservation Measures against the baseline building. For SEED, the baseline is the design as proposed; whereas for code and ASHRAE compliance, the baseline is code minimum performance. The outline below lists Baseline design attributes and ECM's to be modeled. The Energy Analyst contracted to the University will provide a narrative and energy model report, included in the Appendix for reference.

I. HVAC:
   a. Baseline:
      i. The baseline model will assume no cooling provided, with cooling modeled as an alternate. Heat is to be delivered through a hydronic radiant system.
   b. Energy Conservation Measures:
      i. Several means of heating and cooling delivery were discussed:
         ii. Radiant – floors, wall-mounted radiators, ceiling panels, and capillary mats
         iii. 4-pipe perimeter system
         iv. Night ventilation of mass through corridors – requires upsizing of the systems servicing the corridors, plus some dampers/terminal devices to control air flow
   c. Proposed natural ventilation approach effectiveness to be studied using CFD for estimated resulting thermal comfort factors in various zones of the building.
   d. Zones will be modeled to understand the impact of controls allowing optimized/independent control

II. ENVELOPE:
   a. Windows
      i. Baseline:
         1. Aluminum clad wood is the assumed baseline for residence room windows
         2. North glazing – optimized for U-value and high light transmission (.5-.3 SHGC)
         3. South glazing – optimized for balance between heat and light, considering the impact of shading devices with integrated photovoltaics – test the balance between shading of high light transmission for daylight with shading for summer direct heat gain
         4. West and East glazing – Solarban 80 or equivalent (.15-.12 SHGC)
      ii. Energy Conservation Measures:
         1. Test fiberglass frames
         2. Test thermally-broken aluminum frames
   b. Shading:
      i. Baseline:
         1. Horizontal shading at 109 south-facing windows, with Photovoltaics incorporated (20KW system total)
         2. Some vertical shading accomplished through the recession of the windows
      ii. Energy Conservation Measures:
         1. Self-shading from wall thickness increases if insulation value is increased due to insulation ECM in II.c.ii below.
c. Wall Insulation:
   i. Baseline:
      1. R-19 walls
   ii. Energy Conservation Measures:
       1. Rigid board insulation outside the studs, with rainscreen envelope.
       2. Test doubling up board insulation and batt insulation with precautions against moisture in wall
       3. Other means for increasing insulation value significantly

d. Roof insulation:
   i. Baseline:
      1. R-30 roof, R-11 roof below grade
   ii. Energy Conservation Measures:
       1. Test the relative energy impact of locating roof insulation at the attic roof or at ceiling between
          top floor and attic space

e. Skylights:
   i. Baseline:
      1. Skylights for 4% maximum podium roof area. The SHGC will need to be around .1 to reduce heat
         gain in summer months.
   ii. Energy Conservation Measures:
      1. Test impact of skylights on the balance of thermal and lighting energy consumption. The results
         will be used in conjunction with the qualitative value of daylight to the podium areas.

III. DOMESTIC HOT WATER

a. Baseline
   i. 36, solar thermal panels (40sf apiece) at rooftop, with two 2500 gallon storage tanks in the
      basement.

b. Energy Conservation Measures:
   i. Expand solar thermal system to store waste heat, including a heat pump.
      – Kitchen refrigeration units including a heat exchanger with coolant on one side and water on the
        other – with two refrigerant loops: One loop for the freezer and the other for the case goods and
        the coolers.

IV. STAIRWELLS

a. Baseline
   i. The egress stairs are currently designed to be semi-conditioned, heated with electric heat to
      eliminate risk of freezing.

b. Energy Conservation Measures:
   i. Glass with greater visible transmittance coupled with daylight sensors to reduce lighting load
      resulting from egress lighting energy consumption.
   ii. Leave the space unconditioned, allowing the top and bottom to be open to allow for stack
      ventilation, including the resulting freeze-proof hose bibs.
   iii. Model the fire-rated stairwell interior wall as the exterior wall.
Appendix