University of Oregon
Erb Memorial Union Expansion & Renovation
User Group Meeting

SERA Architects
Oct 08, 2013
PROJECT OVERVIEW
EMU INTERIOR
USER GROUP DESIGN SESSION

- LOUNGE SPACES
- STUDY SPACES
- COLLABORATIVE SPACES
- EVENT BREAKOUT
- FOOD SERVICE
- QUIET AND ACTIVE SPACES
- ACCESS TO TECHNOLOGY

Layers of Quiet and Buzz

Working Together
EMU INTERIOR

SPACE NEEDS

• FLEXIBLE SPACES
• VARIETY OF SPACES
• LET ARCHITECTURE DRIVE SPACE USE
• SPACES TO SUPPORT EVENTS
• IMPROMPTU CONNECTIONS
• DON’T LIMIT TECHNOLOGY
• LET STUDENTS DETERMINE HOW LONG TO USE SPACE

Flexibility and Longevity

Destinations
Pass Through not Around

NEEDS FOR INTERIOR SPACES
EMU INTERIOR

WHAT DOES THE EMU FEEL LIKE?

- WARM
- WOODY
- SOFT
- COMFORTABLE
- NATURAL LIGHT

DESires FOR INTERIOR SPACES
The following goals were defined by the University prior to the start of this effort as fundamental to the success of the project:

• Promote engagement of campus constituencies; students, faculty, and staff, and to provide a venue to welcome the public into our campus.

• Support educational, social, and recreational initiatives that engage faculty and staff and spark the intellectual curiosity of students.

• Host expanded activity during evenings and weekends, activate the heart of campus, and contribute to the overall residential quality of campus.

• Integrate academic uses into the building. Promote the EMU’s elevated role in recruitment and retention of students and as the home base for student government and student multicultural programs.

• Demonstrate high-quality design and use of materials, and showcase sustainability and technology in support of student scholarly expression.

• Create a university center that announces the EMU as the central hearth for campus and tells the stories of the UO cultures.
PURPOSE:
Discuss updates to the project specific sustainability plan
energy
climate change from global warming pollution
net zero increase in campus energy
sustained energy conservation habits
habitat loss/species extinction
LEED Gold
treat stormwater run-off
people
Precautionary Principle
fund educational/training opportunities to shift occupant behavior
persistent toxic chemicals
global equity
METRICS

ENERGY / HEALTH (+++)
RELATED SUSTAINABLE DESIGN GOALS

- Performance metric around energy use
  - Oregon Model min. (35% better than OR code)
  - 45% better than OR Code (Alternate)
  - Additional 10 to 15% from occupant engagement
- Provide daylighting for most student offices and views for 90% of regularly occupied spaces
- Solar Thermal (Alternate)
- PV Ready (Investigate third party funding of demonstration PV array)

MATERIALS (++)
SUSTAINABLE DESIGN GOALS

- Reuse most of materials from the demolished building in the new student union
- Recycle 90-95% of construction debris
- Prioritize low lifetime embodied energy
- Minimize use of toxic products
- Local, Salvage then FSC certified wood

EQUITY(+)
SUSTAINABLE DESIGN GOALS

- Maintain access for daylighting for surrounding buildings
- Create a universally accessible design
- Incorporate and embrace diversity

WATER (+)
SUSTAINABLE DESIGN GOALS

- Meet Oregon Model for Stormwater mgmt (Treating Stormwater on University)
- 35-40% reduction in water use from fixtures and fittings
- 50-60% reduction in water use

CAMPUS SCALE SYSTEMS(+) SITE RELATED SUSTAINABILITY GOALS

- Support non-automobile transportation
- Repair / reinforce campus connections
- District ready for future incorporation into a larger network
- Provide locations for edible landscape

DESIGN PROCESS (+)
SUSTAINABLE DESIGN GOALS

- A Student Union that inspires its occupants to live their lives in a more sustainable way
EMU AS HUB OF CAMPUS

Destinations
Pass Through not Around

Kitchen – Great Room

Hub of Campus
LAYERS OF QUIET AND BUZZ – ACTIVE HEARTH

Layers of Quiet and Buzz

Security Layers

8am-5pm

24/7

Layers of Quiet and Buzz

LAYERS OF QUIET AND BUZZ – ACTIVE HEARTH
“Linked together by a central anchor point or circulation spine, the main element aids in internal wayfinding and provides visibility/exposure to the multitude of programs within the EMU.”
Materials along the student boulevard wall aid in wayfinding and provide opportunities for student groups to connect and invite participation.
Quiet spaces are insulated from the most public and high traffic areas and are accessed through transitional zones such as lounges.
LAYERS OF QUIET AND BUZZ – ACTIVE HEARTH
Destinations

Pass

Through

not

Around

Flexibility and Longevity

Layers of quiet and buzz

Many front doors
Longevity and flexibility

Working together
Longevity and flexibility

Through not
around

Layers of quiet and buzz
Working together

Digital layers

Destinations
Pass Through not Around
## DECISION CRITERIA

**SPACE TYPE**
- Public Space
- Food Seating
- Office/Conference
- Restrooms
- Service/Back of House

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<table>
<thead>
<tr>
<th>DECISION CRITERIA</th>
<th>Furniture</th>
<th>Floors</th>
<th>Walls</th>
<th>Ceiling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment (Recycled, FSC, Reuse, etc.)</td>
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<tr>
<td>Student Health (IEQ, Low-VOC, Non-UF, HPD, etc.)</td>
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<td>Social Responsibility (Just, Fair Trade, Local, etc.)</td>
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<td>Durability</td>
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<tr>
<td>Identity &amp; Inspiration</td>
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**Materials Framework - Interior**
MATERIALS FRAMEWORK - INTERIOR

walls
1. identity & inspiration
2. durability
3. environment
- allows expression of student activity
- durable details in high use areas, replaceability, glass
- reuse of 1970's glulams and ceiling clouds

floors
1. durability
2. maintenance
3. identity & inspiration
- concrete, precast
- use existing expertise

furniture
1. identity & inspiration
2. durability
3. environment
- set tone for space
- warranties, load ratings, cleanable
- % recycled, low voc

ceilings
1. identity & inspiration
2. environment
- coordinated, exposed structure
- acoustics
- local

$ non-toxic

MATERIALS FRAMEWORK - INTERIOR
STUDENT STREET – LEVEL 1 BRIDGE
inspiring
material is warm & welcoming

elegantly functional
exposed ceiling maximizes daylighting & eliminates redundant finishes

showcases sustainable choices
deconstructable, repairable and biodegradable

responsible material harvest
sustainable, non-toxic, renewable

support local economy & strengths
uses local resources, builds identity of place

do more with less
smaller columns maximize & enhance flexibility of space

do more with less
lighter structure results in 1/3 the embodied carbon of concrete

SUSTAINABILITY AND PROJECT GOALS REINFORCED BY STRUCTURAL SYSTEM SELECTION
STUDENT STREET – LEVEL 1 BRIDGE
NEW FACADE

- admit daylight & control glare
- connect / views to exterior
STUDENT STREET

- provide identity / showcase student activities
- wayfinding
- acoustic control
- allow daylight into offices / views out
HISTORIC FACADE

- highlight character of historic facade
SUPPORT HISTORIC

• support historic façade structurally and architecturally
• define edge of new gathering / social space
VERT. CONNECTIONS

- connect main gathering / social spaces (hearth, student street, O lounge) with other levels
HEARTH – FROM BREEZEWAY

- Invitation to student programs
- Students learning together layers of quiet and buzz
- Incorporation of select materials to denote entry
- A few front doors pass through not around
- Celebration of exposed structure highlights sustainability by limiting layers of finish
- Sustainable center kitchen/great room
- Connection to exterior lawn through screened hearth wall
- Light attracts use sustainable center
- 1st layer of seating - public, quick groupwork
- Kitchen/great room students learning together
HEARTH – FROM NORTH ENTRY

- Connect hearth to craft center and lounge spaces. Pass through not around.
- Define seating with flooring: sustainable center kitchen/great room.
- Protect historic details: hub of campus sustainable center.
- First layer of seating: seating stair. Kitchen/great room students learning together.
- Concrete wraps existing below original grade. Pass through not around.
HEARTH – FROM NORTH ENTRY
LOBBY DIAGRAM

Longevity and flexibility

Layers of quiet and buzz

Digital layers

Through not around

A few front doors

Layers of quiet and buzz

Digital layers
ACCESS TO DAYLIGHT – NORTH WING PROGRAM SUITES

INDIRECT NORTH LIGHT

DIRECT SOUTH LIGHT

Light Attracts Use
VISUAL CONNECTION TO PUBLIC SPACES
WOMEN’S CENTER PROGRAM SUITE – VIEW TOWARDS STUDENT BOULEVARD
CRAFT CENTER – PUBLIC SPACE ELEVATIONS
BREAK
INTEGRATED DESIGN
# Decision Criteria

<table>
<thead>
<tr>
<th></th>
<th>SOLID WALL</th>
<th>GLAZED WALL</th>
<th>CANOPY</th>
<th>OUTDOOR ENCLOSURE</th>
<th>SITE/ LANDSCAPE</th>
</tr>
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<tbody>
<tr>
<td><strong>ENVIRONMENT</strong> (RECYCLED, FSC, REUSE, ETC.)</td>
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<td><strong>HIGHER</strong></td>
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MATERIALS FRAMEWORK - EXTERIOR
• DURABLE
• RELATES TO EXISTING BUILDINGS ON CAMPUS
• SIMILAR TO EXISTING EMU

Hub of Campus
SOLID WALL
• OPTIMIZE THE AMOUNT OF LIGHT THAT ENTERS
• VISUAL CONNECTION TO LANDSCAPE
• MATERIAL DENOTES ENTRANCE
• AMOUNT DENOTES PRIMARY AND SECONDARY ENTRANCES

Destinations
Pass Through not Around
• TRANSITION TO EXISTING BUILDING
• ENCLOSE MECHANICAL PENTHOUSE
• ADD ADDITIONAL PERFORMANCE TO CURTAIN WALL
• TIE TOGETHER ALL THE ELEVATIONS WITH A SIMILAR MATERIAL

SUPPORTING MATERIAL
• PHYSICAL AND MATERIAL CONNECTION TO LANDSCAPE

Sustainable Center

ACCENT MATERIAL
PROJECT SPECIFIC SUSTAINABILITY MEASURES
ENERGY / HEALTH
RELATED SUSTAINABLE DESIGN GOALS

• Performance metric around energy use
  • Oregon Model min. (35% better than OR code)
  • 45% better than OR Code (Analyze Specific Measures)
  • Additional 10 to 15% from occupant engagement

• Provide daylighting for most student offices and views for 75% of regularly occupied spaces

• Solar Thermal (Analyze Specific Measures)

• PV Ready (investigate third party funding of demonstration PV array)
ENERGY EFFICIENT ENVLP.
INSULATION

TARGET: AS MUCH INSULATION AS PAYS BACK USING LCCA
ANTICIPATED SAVINGS 1% - 3%

STRATEGIES:

Currently Modeling:
• R-40 roof insulation
• R-19 wall insulation
• R-10 floor slab insulation
ENERGY EFFICIENT ENVLP.

WINDOWS

TARGET: 31% 30% WINDOWS WITH NO IMPACT TO DAYLIGHTING

ANTICIPATED SAVINGS INCLUDED IN PREVIOUS SLIDE

STRATEGIES:

Currently Modeling:
- U = 0.29 0.33
- Thermally broken frames
- High performance low-e coating (e=0.05)
- Tinted / reflective coatings tuned per elevation and floor level
OPTIMIZE DAYLIGHTING

TARGET: LIGHTS OFF 50% OF DAYLIGHT HOURS FOR 75% 90% OF SPACES

ANTICIPATED SAVINGS 5% - 8%

STRATEGIES:

• Use light colors on walls and ceilings
• Locate windows high in space – not below 30”
• Locate closed offices away from windows
• Balance brightness to minimize contrast
• Separate circuits for zoning flexibility in daylit zones
LIGHTING SYSTEM

EFFICIENT LUMINAIRES

TARGET: LIGHTING POWER DENSITY 35% LESS THAN CODE

ANTICIPATED SAVINGS INCLUDED IN PREVIOUS SLIDE

STRATEGIES:

• Efficient fixture selection
• Optimize ballast selection
• Efficient lamp selection
• LED technology for exits signs and other applications
LIGHTING SYSTEM
SENSORS AND CONTROLS

TARGET: EXCEED CODE AND USE VACANCY SENSORS
ANTICIPATED SAVINGS INCLUDED IN PREVIOUS SLIDE

STRATEGIES:

• Vacancy sensors
• Selective switching
• Egress lighting scheduled off during unoccupied periods
• Exterior lighting controls (lights extinguished after occupied period)
• Exterior LED lighting – different light levels for different times
MECHANICAL SYSTEM

RADIANT PANELS / CHILLED SAILS — SEE MECH. MATRIX

TARGET: MAXIMIZE ENERGY SAVINGS + IMPROVED COMFORT

ANTICIPATED SAVINGS 10% - 20%

STRATEGIES:

• Radiant heating in all new spaces and many retrofit areas
• Minimized mechanical system air leaks and static pressure losses
• Airflow / temperature setback in unoccupied spaces through occupancy sensors / schedules
• Separate make-up air units for high ventilation areas
• Variable ventilation based on CO2 control
• Night-flush cooling cycle
HEAT RECOVERY &  
EFFICIENT SYSTEMS

ANTICIPATED SAVINGS 5% - 10%

STRATEGIES:
Currently being priced as Alternates.

- Kitchen Refrigeration Systems
- Heat Pump Hot Water
- Heat Recovery on Dishwashing
- Craft Center Makeup Air
- Variable Flow on Kitchen Makeup Air
- Water Cooled Refrigeration
- Exhaust Hoods
  - Minimize exhaust hood airflow and run time
  - Separate make-up air unit set at lower temperature
ALT. SYSTEMS TO EXPLORE

NATURAL VENTILATION

STRETCH GOAL: EXPLORE ELIMINATION OF COOLING IN ATRIUM
ALT. SYSTEMS TO EXPLORE
SOLAR HOT WATER

STRETCH GOAL: EXPLORE IMPLEMENTATION OF SOLAR HOT WATER
ANTICIPATED SAVINGS 2% - 4%

STRATEGIES:

• Preheat water for kitchen equipment
MATERIALS

SUSTAINABLE DESIGN GOALS REVISITED

• Reuse most of materials from the demolished building in the new student union
• Recycle 90-95% 75-80% of construction debris
• Prioritize sourcing products locally
• Minimize use of toxic products
• Local, Salvaged, then FSC certified wood
• Filter all materials decisions through a lens of Cost & Student Health
• Prioritize Identity & Inspiration
• Prioritize Durability
CONSTRUCTION WASTE
DIVERSION FROM LANDFILL

TARGET: 75% 90% ON SITE CONSTRUCTION WASTE DIVERSION

STRATEGIES:

- Streamline material palette to reduce complexity within the waste stream
- Reuse/repurpose/recycle waste created on site to the greatest extent possible
EMBODIED ENERGY

MATERIAL REUSE

TARGET: REUSE / REPURPOSE 5% OF EXISTING BUILDING’S MATERIALS

STRATEGIES:

• Consider the material lifecycle loop from Cradle to Cradle
• Design for efficiency of material use to reduce on-site construction waste
• Design for future disassembly and reconstruction / reuse
• Design for reduced maintenance / replacement costs over the life of the building
• Stretch goal of 10% reuse
HEALTHY INTERIORS
ENHANCE OCCUPANT HEALTH AND PRODUCTIVITY

TARGET: 0% VOC CONTENT AND LESS THAN 100 µg/m³ VOC EMISSIONS

STRATEGIES:

• Choose all interior on-site applied products and materials that are third party certified for compliance with indoor environmental quality standards.

• Choose all interior products and materials with:
  • zero VOC content
  • VOC emissions less than the permissible limits as per the CDPH version 01350 standard
HEALTHY INTERIORS
ENHANCE OCCUPANT HEALTH AND PRODUCTIVITY

TARGET: ELIMINATE THE FOLLOWING CHEMICALS FROM THE PROJECT

CHEMICALS OF CONCERN:

- Asbestos
- Cadmium
- Formaldehyde (added)
- Hydrochlorofluorocarbons (HCFCs)
- Lead (added)
- Petrochemical Fertilizers and Pesticides
- Wood treatments containing Creosote, Arsenic or Pentachlorophenol
MATERIALS SOURCING
REDUCING IMPACT BY

TARGET:

- **75%** of heavy / dense materials from: Zone 1 (500 km)
- **50%** of medium weight / density materials from: Zone 2 (1000 km)
- **25%** of light / low density materials from: Zone 3 (2000 km)

STRATEGIES:

- Materials will be sourced from within designated zones based on weight/density
- Products and materials from third party certified sources
- Products and materials from salvaged and reclaimed sources
EQUITY
SUSTAINABLE DESIGN GOALS
EQUITY RELATIED STRATEGIES

STRATEGIES:

- Provide daylighting for most student offices
- Minimize the building’s negative impacts on neighboring buildings
EQUITY RELATED STRATEGIES

STRATEGIES:

• Use building form to create positive impacts on surrounding spaces to create sunny, wind protected outdoor spaces for students
• Create a fully accessible building
• Use shared spaces to promote cross pollination of ideas / shared identity
• Reduce societal impact of materials source
WATER

SUSTAINABLE DESIGN GOALS

- Meet Oregon Model for Stormwater mgmt (Treating Stormwater on University) and fittings (with .125 urinals)
- 50-60% reduction in water use
- 35-40% reduction in water use from fixtures
- 35-40% reduction in water use from fixtures
STORMWATER TREATMENT

STRATEGIES:

• Treat University Street stormwater
• Treat loading dock stormwater
• Treat parking lot stormwater
WATER USE REDUCTION

TARGET: 35-40% REDUCTION IN WATER USE FROM FIXTURES & FITTINGS

STRATEGIES:

• Waterless urinals vs. 1 pint
• Dual flush toilets vs. Low flow vs. Composting
• Automatic lavatories
• Low-flow standards for showers
• Drinking fountains with water dispenser function
LEED SCORECARD
LEED CREDITS
CURRENTLY PURSUED

- SUSTAINABLE SITES: 22 of 26 pts
- WATER EFFICIENCY: 6 of 10 pts (+2)
- ENERGY & ATMOSPHERE: 28 of 35 pts (+15)
- MATERIALS & RESOURCES: 6 of 14 pts
- INDOOR ENVIRONMENTAL QUALITY: 11 of 15 pts (+1)
- INNOVATION IN DESIGN: 6 of 6 pts
- REGIONAL PRIORITY: 0 of 4 pts

TOTAL: 79 pts
LEED GOLD
CURRENTLY TRACKING
MECHANICAL SYSTEMS SELECTION CRITERIA

FILTER 1

FIRST COST RELATIVE TO BUDGET

FILTER 2: SYSTEM ATTRIBUTES

CRITERIA TO BE WEIGHED ACCORDING TO IMPORTANCE TO UO

ENERGY
(ENERGY REDUCTION, OPERATING COST)

AIR QUALITY
(POLLUTANT CONTROL, CO2 LEVELS)

COMFORT
(THERMAL COMFORT, AIR MOVEMENT, SURFACE TEMPERATURES)

FLEXIBILITY
(COST AND EASE OF RECONFIGURATION)

ACOUSTICS
(SPEECH PRIVACY, NOISE LEVELS, SOUND TRANSMISSION)

AESTHETICS
(INTEGRATION WITH ARCHITECTURE)

EASE OF MAINTENANCE
(SYSTEM SIMPLICITY, “SET IT, FORGET IT!”)

CONTROLLABILITY
(DEGREE OF INDIVIDUAL CONTROL, GRANULARITY OF CONTROLS)
# Mechanical Systems Selection

<table>
<thead>
<tr>
<th></th>
<th>North Wing Addition</th>
<th>Hearth &amp; Student St.</th>
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<tbody>
<tr>
<td><strong>System</strong></td>
<td>Best: Hydronic Radiant Ceiling Panel Heating &amp; Cooling</td>
<td>Best: In Floor Radiant Heating and Cooling</td>
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<td></td>
<td>Better: Hydronic Heating w/ Convector &amp; Supply Air, Hydronic Chilled Beams</td>
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<td>Good: All Air Heating &amp; Cooling</td>
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<td><strong>Aesthetics</strong></td>
<td>Integrated Ceiling System</td>
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OUTDOOR CRAFT CENTER
PASS THROUGH NOT AROUND
PRIMARY ENTRANCES: A FEW FRONT DOORS
TREE GRATES & TRENCH DRAIN
CUSTOM BENCH AND GREEN WALL

[INSERT DETAIL & IMAGE OF GREEN WALL]
NORTH COURT PERSPECTIVE 1: IN PROGRESS
AMPHITHEATER ENTRANCE
TREE REMOVAL AND PRESERVATION
THANK YOU!