University of Oregon
Erb Memorial Union Expansion & Renovation

User Group Meeting

SERA Architects
Oct 09, 2013
PROJECT OVERVIEW
EMU INTERIOR
**EMU PROJECT PATTERNS**

**Layers of Quiet and Buzz**

How much distraction is good?

Provide a range of distractions.

**Light Attracts Use**

Direct sun and daylight attract people.

Use daylight functionally to replace electric lighting and architecturally to attract a variety of people and uses.

**Hub of Campus**

The EMU is in the center of campus but isn’t always the campus center.

Create a university center, a connecting, welcoming hub that reaches out to campus and community.

**Working Together**

Collaborative work can happen in various environments.

Provide three broad types of informal gathering spaces.

**Destinations**

Pass Through not Around

A large building can be a barrier to passage and lose potential for energy.

Ensure the ability to arrive from many directions and connect indoors with the outdoors.

**Kitchen – Great Room**

The kitchen is always the room in the family home where people naturally gravitate to.

Create a kitchen/great room, the heart within the Heart, hub within the Hub.

**PROJECT GOALS AND PATTERNS**
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

KITCHEN  LIVING ROOM  PORCH
EMU INTERIOR

SPACE NEEDS

• FLEXIBLE SPACES
• VARIETY OF SPACES
• LET ARCHITECTURE DRIVE SPACE USE
• SPACES TO SUPPORT EVENTS
• IMPROMPTU CONNECTIONS
• UNLIMITED ACCESS TO TECHNOLOGY
• LET STUDENTS DETERMINE HOW LONG TO USE SPACE
EMU INTERIOR

WHAT DOES THE EMU FEEL LIKE?

• WARM
• WOODY
• SOFT
• NATURAL MATERIALS
• NATURAL LIGHT

Light Attracts Use

South Facing Outdoors
SUSTAINABILITY PLAN UPDATE

PURPOSE:
Discuss updates to the project specific sustainability plan
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 (Anchorage 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 (Anchorage Specific Measures)
- PV Ready (investigate third party funding of demonstration PV array)

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, Recycled and Wood
- Filter all materials decisions through a lens of
  Cost & Student Health
- Prioritize Identity & Inspiration
- Prioritize Durability

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 (with .125 urinals)
- 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 INTERIOR CONCEPTS
Destinations
Pass Through not Around

Kitchen – Great Room

Hub of Campus
LAYERS OF QUIET AND BUZZ

Layers of Quiet and Buzz

8am-5pm

24/7

Security Layers
“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 participate.
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

Many front doors
Longevity and flexibility

Working together
Longevity and flexibility

Through not around

Layers of quiet and buzz
Working together

Digital layers

Flexibility and Longevity

Destinations
Pass Through not Around
EMU INTERIOR DESIGN
STUDENT STREET – LEVEL 1 BRIDGE

visual connections to activities, invitation to participants
layers of quiet and buzz

writable surfaces for collaborative & impromptu interactions
working together
layers of quiet and buzz

visually soft areas provide transition between boulevard and student programs
layers of quiet and buzz

repetition of materials creates rhythm and provides identity for student programs
light attracts use

2nd layer of seating, more private, protected
layers of quiet and buzz
working together
SUSTAINABILITY AND PROJECT GOALS REINFORCED BY STRUCTURAL SYSTEM SELECTION
STUDENT STREET - LEVEL 1 WALKWAY
HEARTH – FROM BREEZEWAY
HEARTH – FROM NORTH ENTRY
our one “O”
HEARTH – FROM NORTH ENTRY
Longevity and flexibility

A few front doors

Layers of quiet and buzz

Through not around

Digital layers

LOBBY DIAGRAM
EMU LOBBY

- Emphasize historic details
- Hub of campus sustainable center
- Screen offices from public lobby
- Layers of quiet and buzz
- Create clear communication lines
- The hub of campus
- Mediate connection with conference program
- Layers of quiet and buzz
- Connect entry to food
- Kitchen/living room
I have a dream that my four little children will one day live in a nation where they will not be judged by the color of their skin but by the content of their character. I have a dream..."
ACCESS TO DAYLIGHT – NORTH WING PROGRAM SUITES
VISUAL CONNECTION TO PUBLIC SPACES
WOMEN’S CENTER PROGRAM SUITE – VIEW TOWARDS STUDENT BLVD
STUDENT ACTIVITIES & RESOURCE CENTER SUITE
FINISH PLAN – NORTH WING GROUND FLOOR

- Polished Concrete
- Walk Off Carpet
- Carpet 1
- Carpet 2
- Tile
- Resilient Flooring
CHILLED BEAMS
BREAK
PROJECT SPECIFIC SUSTAINABILITY MEASURES
ENERGY / HEALTH
RELATED SUSTAINABLE DESIGN GOALS

- Performance metric around energy use
  - Oregon Model min. (35% better than OR code)
    Currently estimating 21-30%
  - With Added Solar Thermal 25-36%
  - With Steam Tunnel Heat Recovery 29-42%
  - Together 30-44%

- Provide daylighting for most student offices and views for 75% of regularly occupied spaces
- 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 3-5% 1%-3%

STRATEGIES:

Currently Modeling:
- R-40 roof insulation
- R-15 wall insulation
- R-10 floor slab insulation
ENERGY EFFICIENT ENVLP.

WINDOWS

TARGET: 32% 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
WINDOWS

31.7% GLAZING
NEW ADDITION

36% GLAZING
EAST FACADE

30% GLAZING
NORTH FACADE

32% GLAZING
SOUTH FACADE

12% GLAZING
WEST FACADE

UPDATED FACADES
OPTIMIZE DAYLIGHTING

TARGET: LIGHTS OFF 50% OF DAYLIGHT HOURS FOR 75% 90% OF SPACES
ANTICIPATED SAVINGS 6 - 9% 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 12-16% 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

STRATEGIES:
Currently being priced as Alternates.
Kitchen Refrigeration Systems
Heat Pump Hot Water
Steam Tunnel Reheat
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

NOT INCLUDED in BASE
MECHANICAL SYSTEMS SELECTION CRITERIA

**STEP 1:**
Review first cost relative to budget

**STEP 2:**
Rank importance of attributes according to importance to user

1. **ENERGY**
   (Energy reduction, operating cost)
2. **AIR QUALITY**
   (Pollutant control, CO2 levels)
3. **COMFORT**
   (Thermal comfort, air movement, surface temperatures)
4. **FLEXIBILITY**
   (Cost and ease of reconfiguration)
5. **ACOUSTICS**
   (Speech privacy, noise levels, sound transmission)
6. **AESTHETICS**
   (Integration with architecture)
7. **EASE OF MAINTENANCE**
   (System simplicity, "set it, forget it.")
8. **CONTROLLABILITY**
   (Degree of individual control, granularity of controls)
### MECHANICAL SYSTEMS SELECTION CRITERIA

**NORTH WING ADDITION**

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**STEP 3:**
EVALUATE CHOICES – CHOOSING BY ADVANTAGES FRAMEWORK

**STEP 4:**
BRING SELECTION TO UO
ALT. SYSTEMS TO EXPLORE

DISPLACEMENT VENTILATION

GOAL: SAVE ENERGY by TRACKING A LARGER TEMP. SWING (68-78 F)

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 4 - 6% 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
• Use to provide Identity & Inspiration
• Prioritize Durability, then Local / Reuse
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 1-2% 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
EQUITY
SUSTAINABLE DESIGN GOALS

• Maintain access for daylighting for surrounding buildings
• Create a universally accessible design
• Incorporate and embrace diversity
EQUITY RELATED 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)

35-40% reduction in water use from fixtures and fittings (with automatic faucets)

50-60% reduction in water use
WATER
STORMWATER TREATMENT

TARGET: MEET OREGON MODEL FOR STORMWATER MANAGEMENT

STRATEGIES:

- Treat 13th Street stormwater
- Treat loading dock stormwater
- Treat parking lot stormwater
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
CURRENTLY TRACKING LEED GOLD
SITE DESIGN
CRAFT CENTER OUTDOOR OPTIONS

OPTION 1

EVENT POWER AND DATA
CUSTOM BENCH
CRAFT CENTER COURTYARD IMPROVEMENTS Completed in Package #1
CUSTOM BENCH
STAIRS

OPTION 2

EVENT POWER AND DATA
CUSTOM BENCH
CRAFT CENTER COURTYARD IMPROVEMENTS Completed in Package #1
CUSTOM BENCH
APPROACH FROM EAST
APPROACH FROM SOUTH
VISCO STANDARD LIGHT - CAMPUS STANDARD

BENCH - CAMPUS STANDARD

CAMPUS STANDARD
CUSTOM BENCH AND GREEN WALL