U.S. General Services Administration

FEDERAL CENTER SOUTH BUILDING 1202

U.S. Army Corps of Engineers Seattle District Headquarters

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U.S. Army Corps of Engineers Seattle District Headquarters

SIZE: Three-story, 209,000 SF office building

PROJECT COST: $72 million

LOCATION: Seattle, Washington

CONSTRUCTION START DATE: July 2010

COMPLETION DATE: October 2012

TENANT: U.S. Army Corps of Engineers

OWNER: U.S. General Services Administration

GREEN CERTIFICATION: Will achieve LEED Gold at minimum. Project is on track for LEED Platinum certification from the U.S. Green Building Council. Will meet the requirements of the 2030 Challenge and perform 40 percent better than ASHRAE 2007 benchmarks

ENERGY USE INDEX (EUI): 20.3 kBtu/SF/year

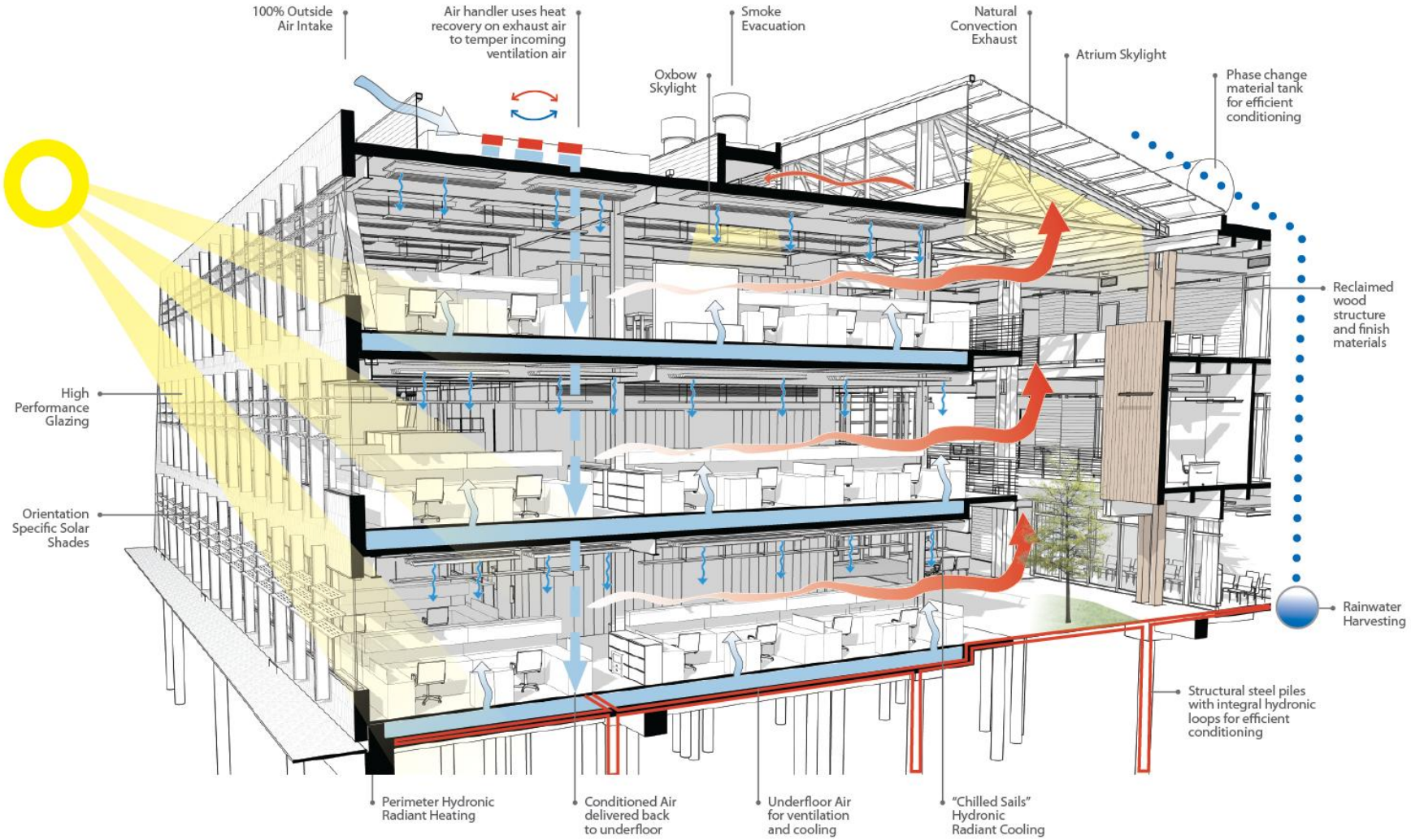
ENERGY STAR SCORE: 100


SUSTAINABLE

High Performance Green Building

- **LEED Gold minimum**
- Employ **integrated approach** to meet sustainability goals
- **30% reduction in energy usage** compared to ASHRAE 90.1-2007
- **Install advanced meters** for electricity, natural gas, and water
- Install **solar thermal hot water system** (integrated approach determined not cost effective)
- Plan for **on-site renewable energy** systems
- Reduce **indoor potable water** use by at least 20%
- Reduce **outdoor potable water** use by at least 50%
- Manage 95th **percentile rain event** onsite through infiltration
- Provide occupancy and **daylight sensors**
- **Pre-occupancy flush-out**
- **Salvage, recycle, or reuse at least 50% of construction and demolition waste**

High Performance Green Building



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3 Story Configuration

Optimizes site available for security setbacks

Maximizes open campus green space

Provides storm water management opportunities

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AESTHETIC

Exterior Elements

- Exposed diagrid structure exemplifies USACE and “Building Strong”
- Stainless steel shingle meets project’s aesthetic, performance and budget requirements
- Exterior shading elements contribute detail and precision
- All design elements are modular and systematic

Interior Atrium “Commons”

- Landscape connects to site
- Workspace open to daylight and views
- Efficient envelope ratio
- Ventilation pathways


PRODUCTIVE
/ HEALTHY

The Collaborative Workplace

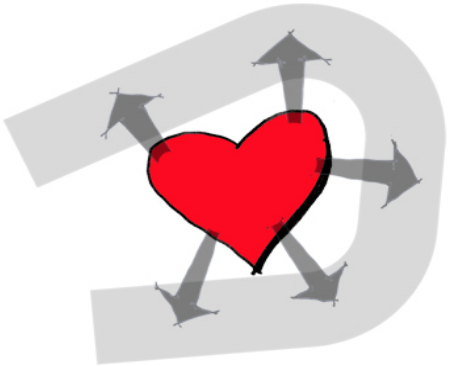
Flexibility. Efficiency. Daylight. Unified. Open.

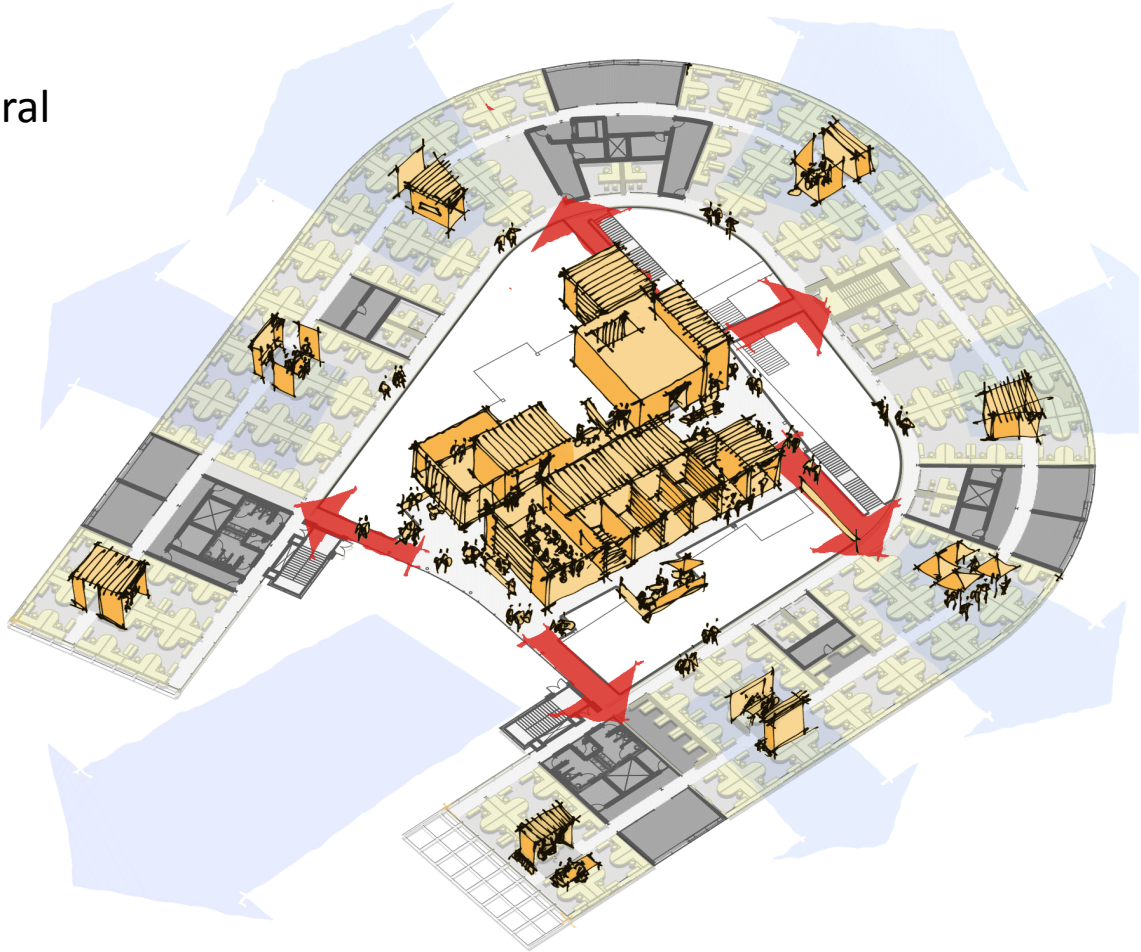
Interaction. Collaboration. Central and convenient.

No “Silos”.

Optimize Mechanical Systems

Builds Community





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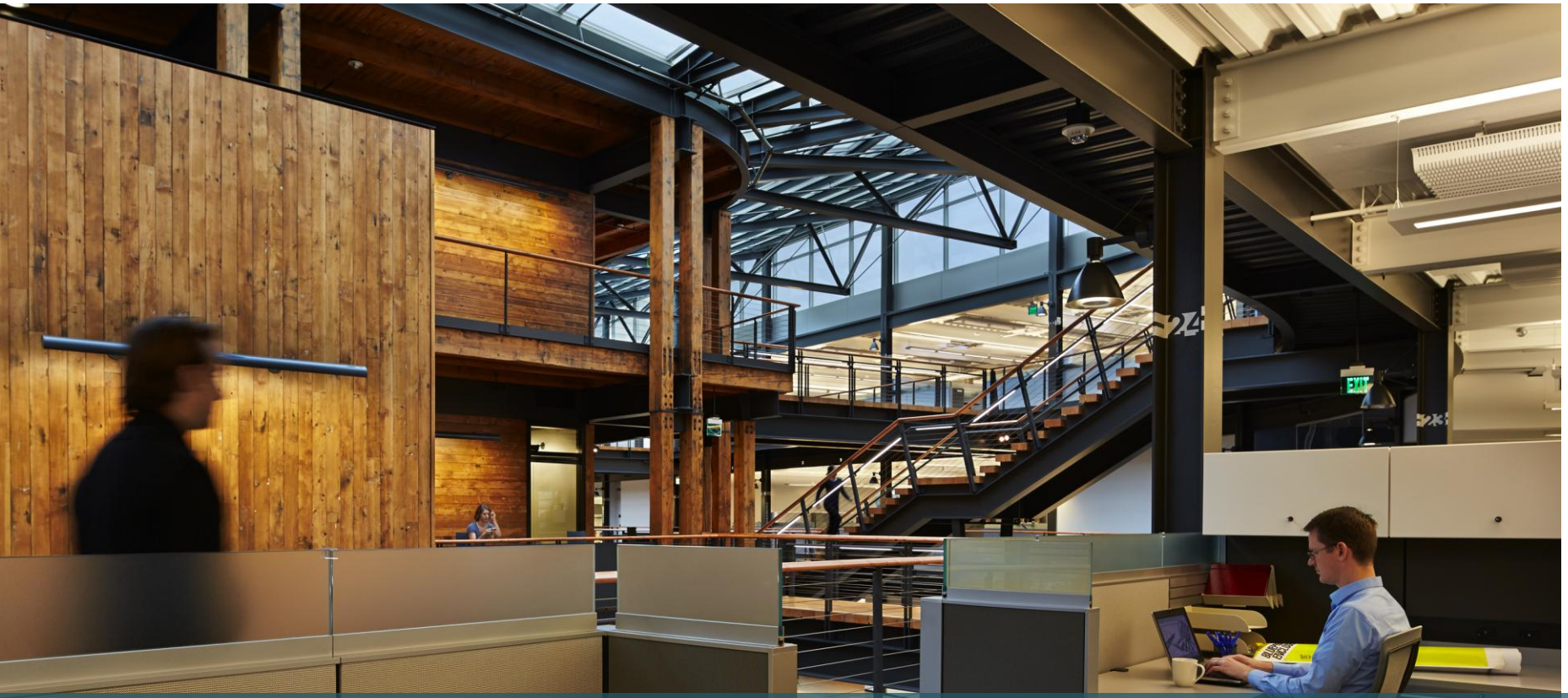
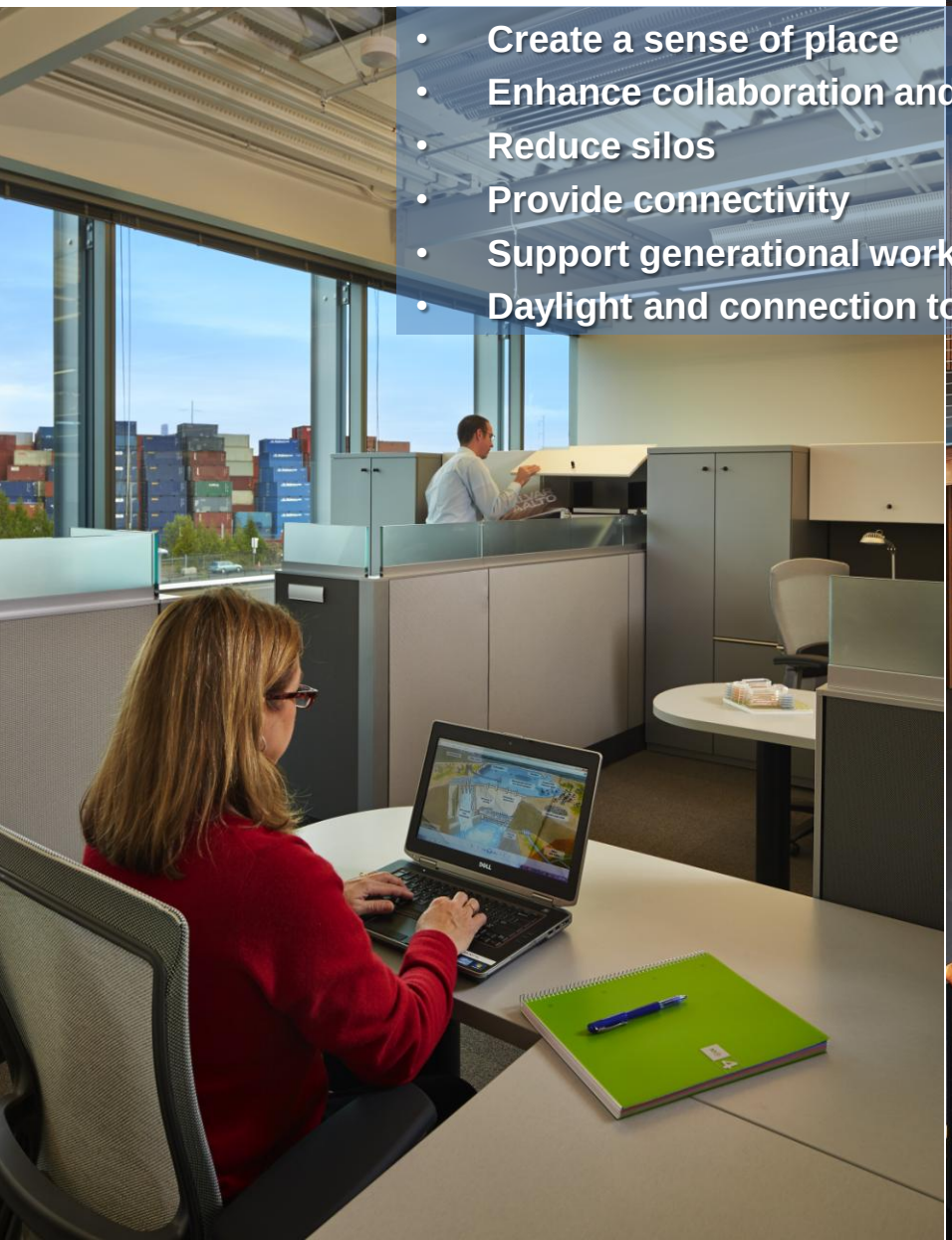
Workplace Amenities

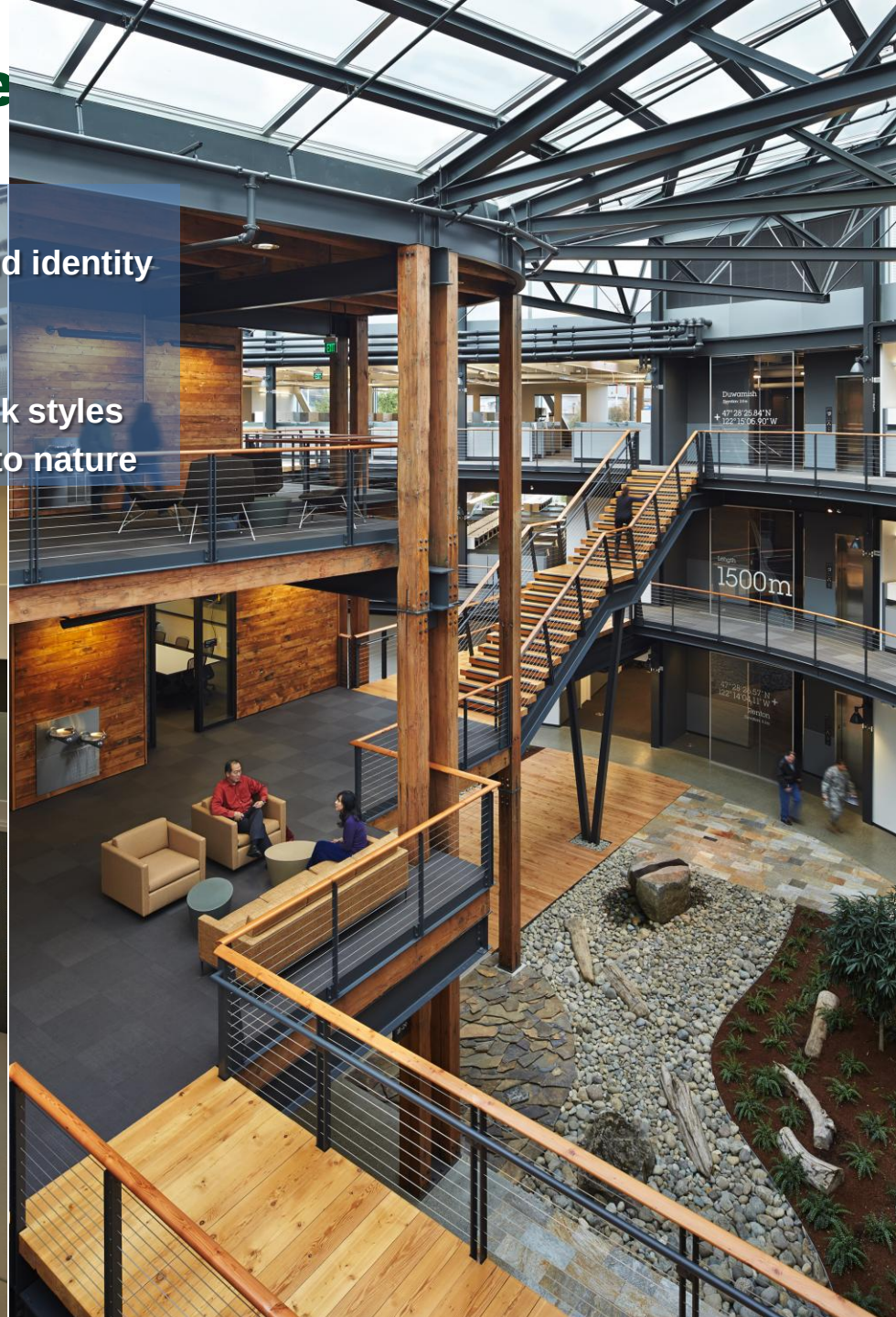


- Continuous horizontal windows for views
- Exposed structure allows maximum daylight and access to views
- Overhead skylight at atrium and at level 3
- 100% outdoor air filtered to assure air quality
- Underfloor air distribution for displacement ventilation
- Passive chilled sails provide thermal comfort

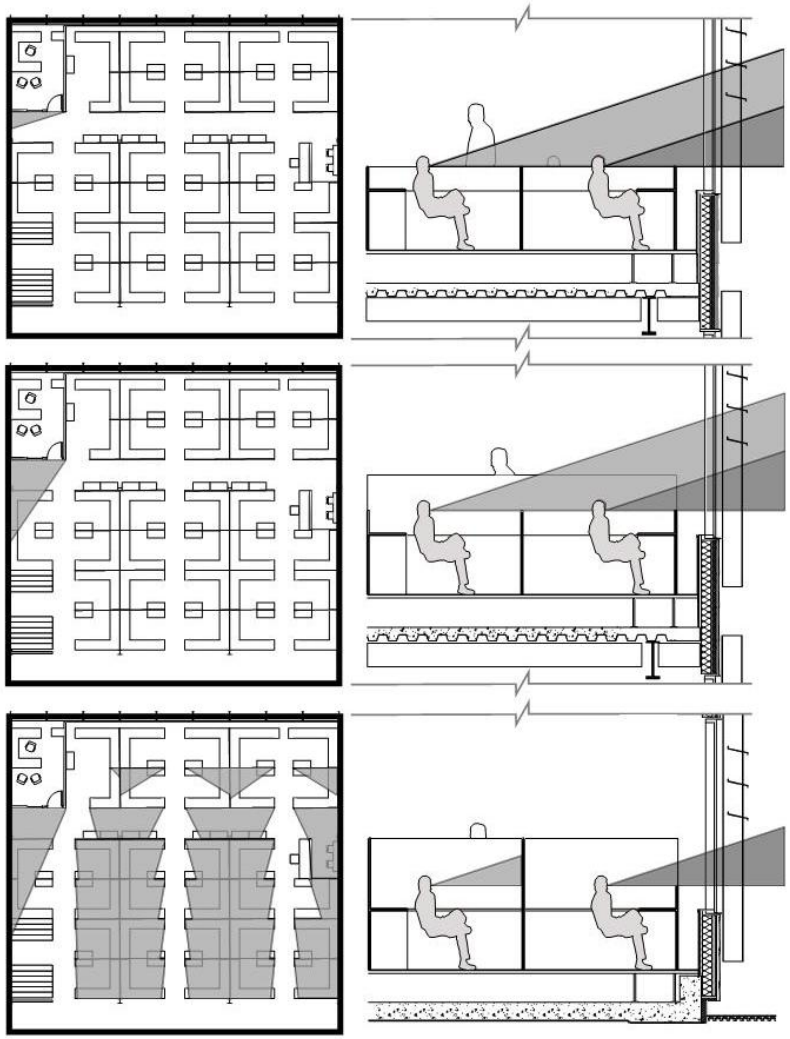
21st Century Workplace

- Create a sense of place
- Enhance collaboration and identity
- Reduce silos
- Provide connectivity
- Support generational work styles
- Daylight and connection to nature





View Obstruction Analysis



As Designed
42” Perpendicular, 42” Parallel
0.5% Obscured Outdoor View

Hybrid
42” Perpendicular, 60” Parallel
2.5% Obscured Outdoor View

Past Practice
66” Perpendicular, 66” Parallel
43.6% Obscured Outdoor View

INTEGRATED DESIGN

Integrated Building Performance

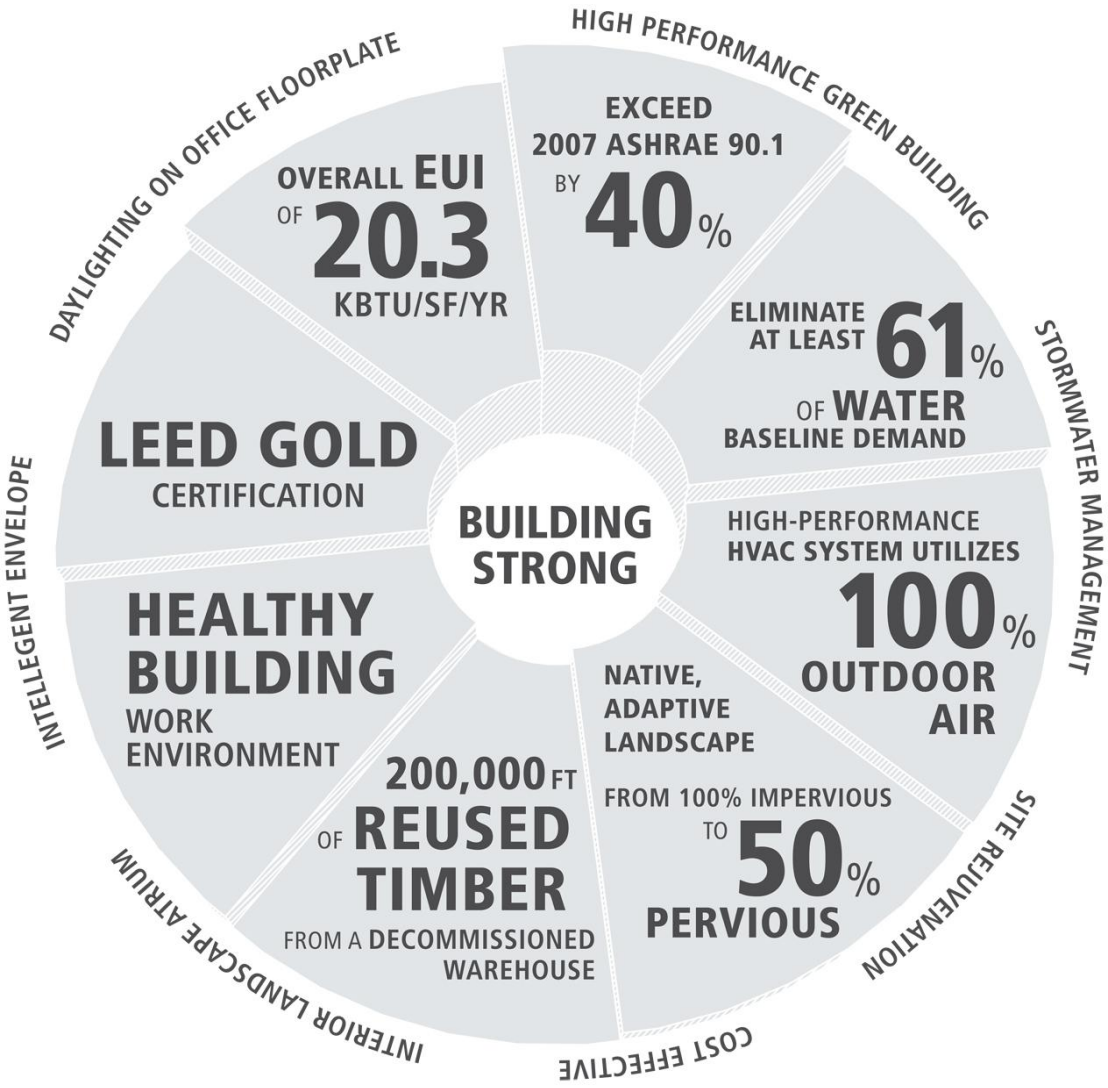
Conservation first

Reduce loads

Passive systems

Efficient active systems

Geothermal



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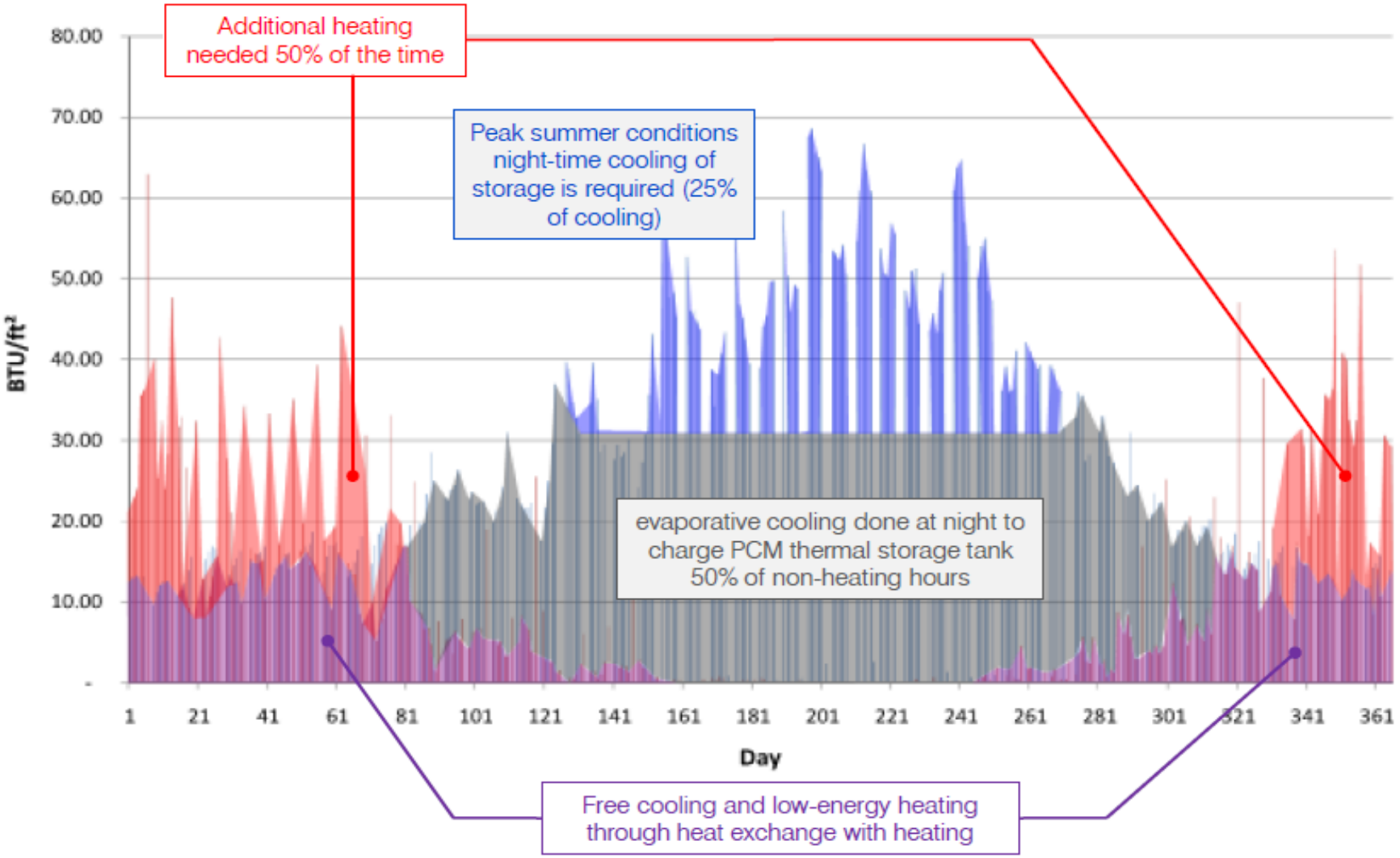
Energy Use of Federal Center South Design



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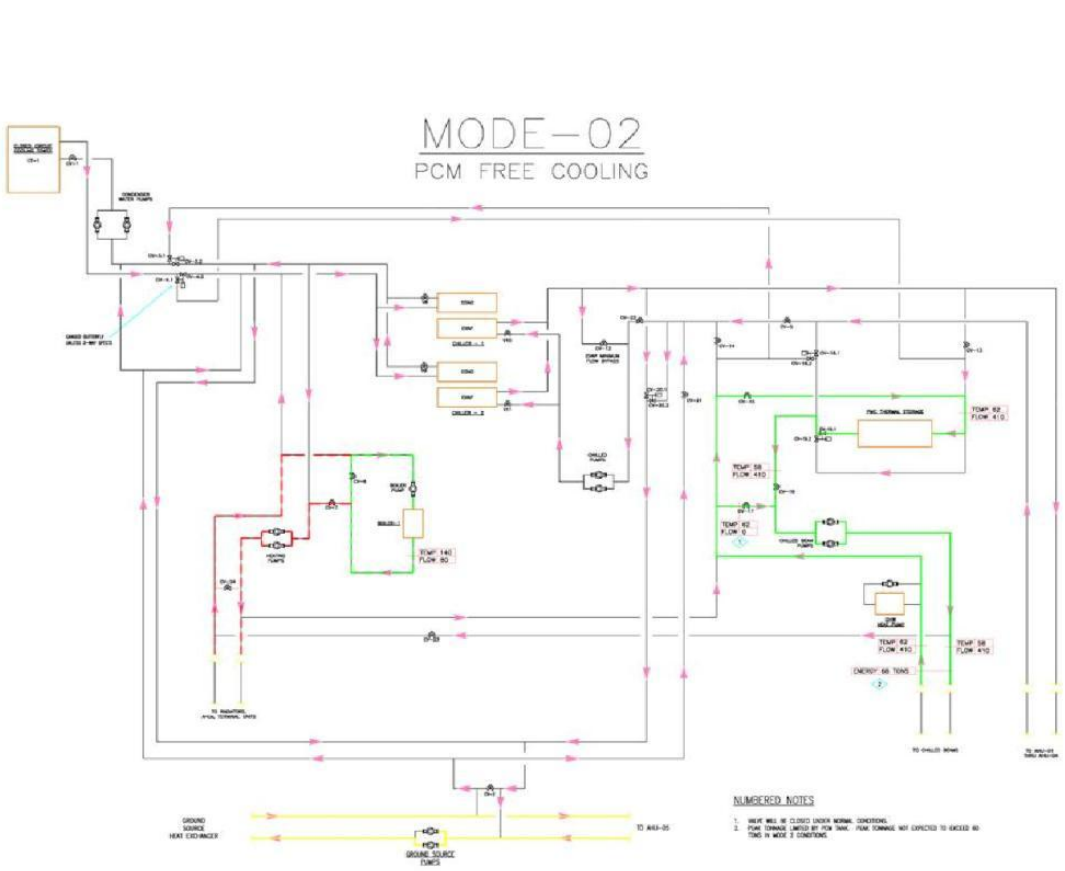
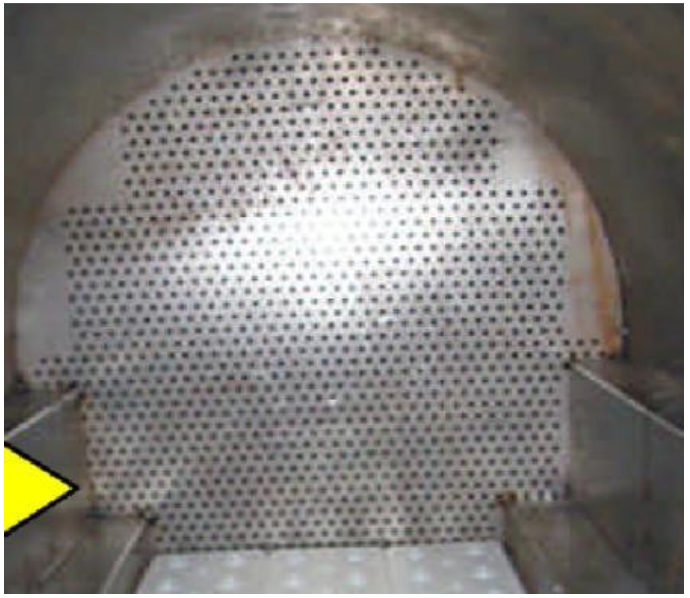
Thermal Storage: Phase Change Material





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Energy Piles: A Realized Opportunity

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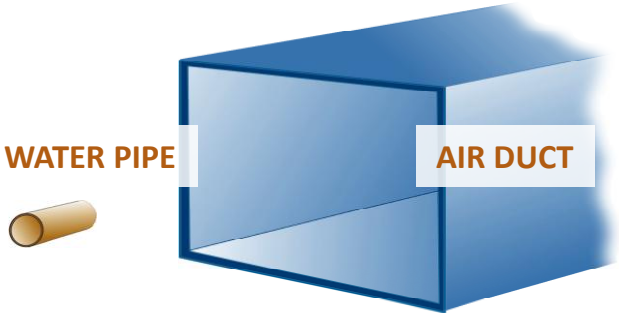
Passive Chilled Sails Prototype



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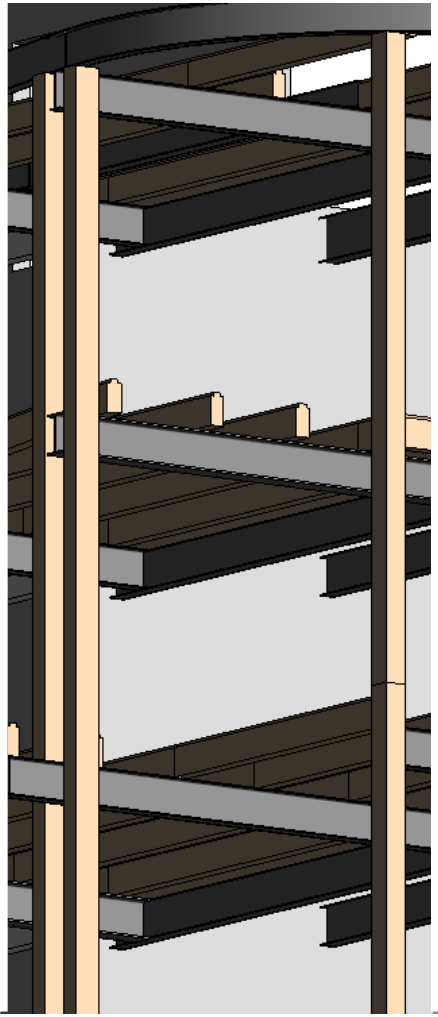
INNOVATION

Materials Timber Reuse

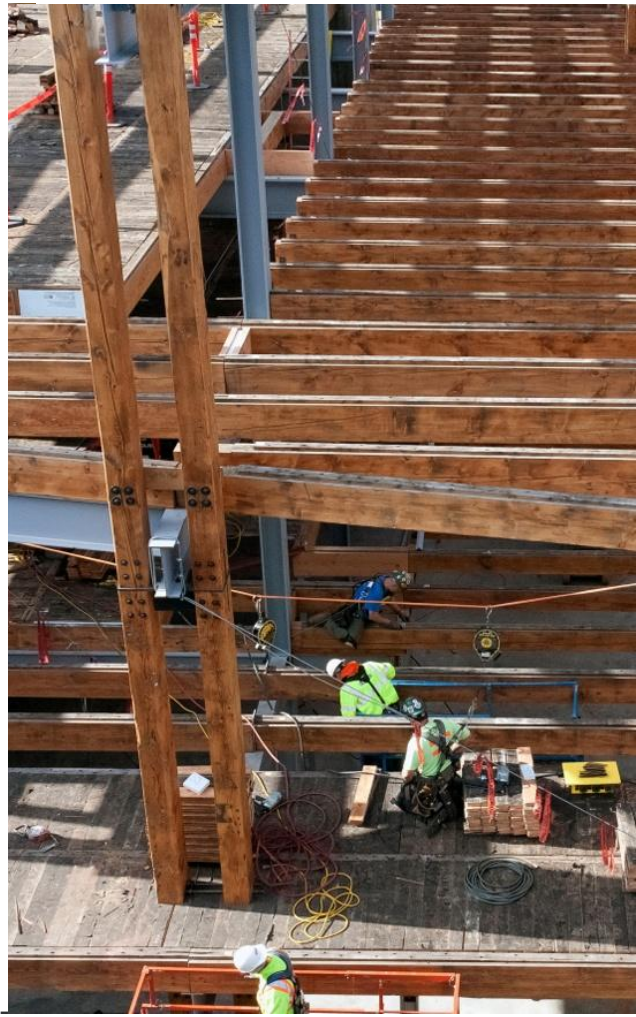
Warehouse

Modeling



Mock-up

Under Construction



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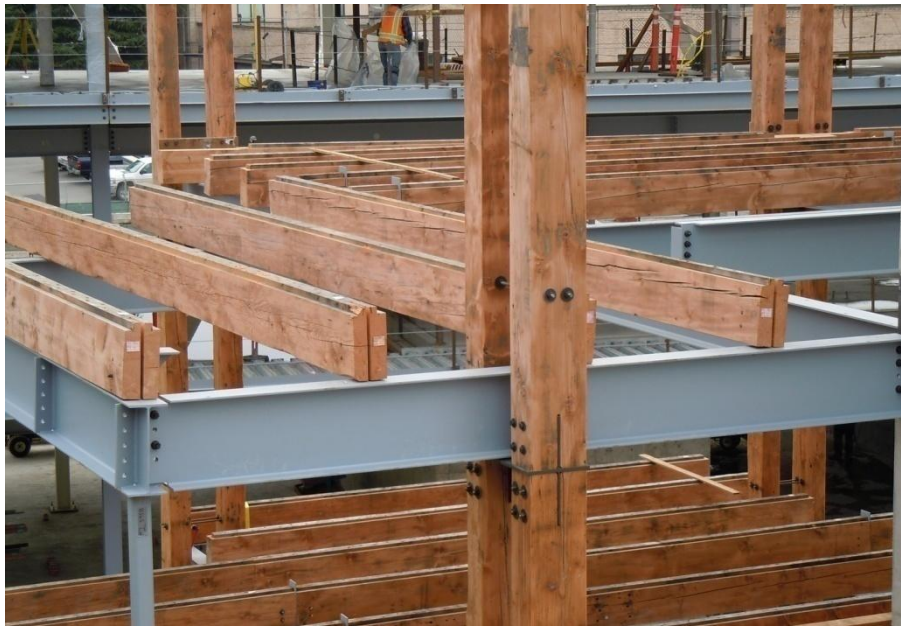
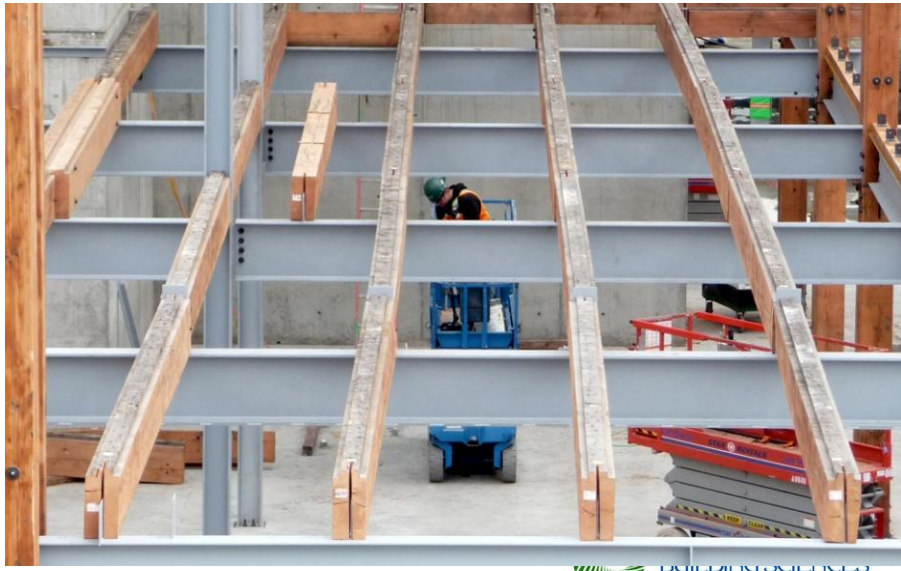
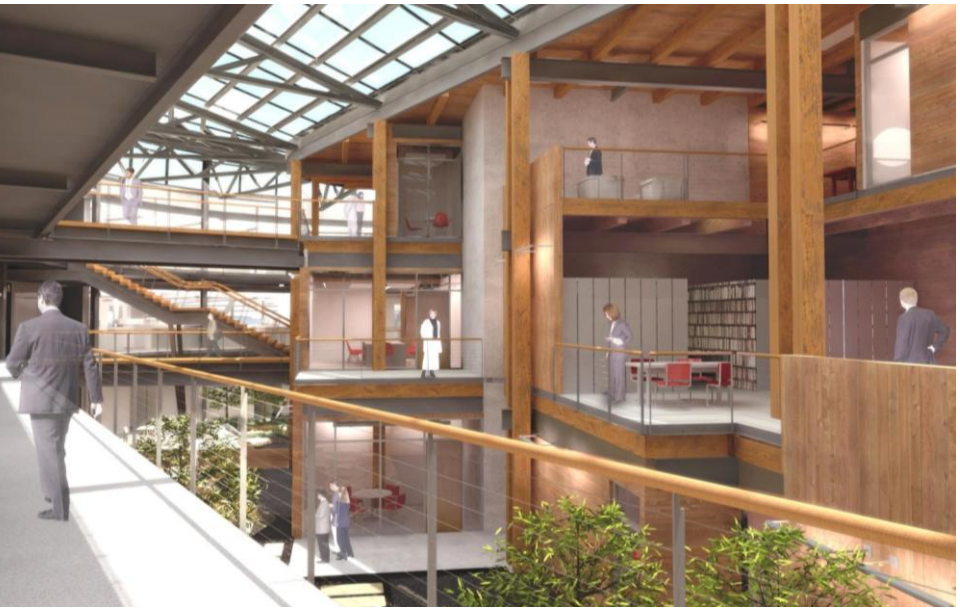
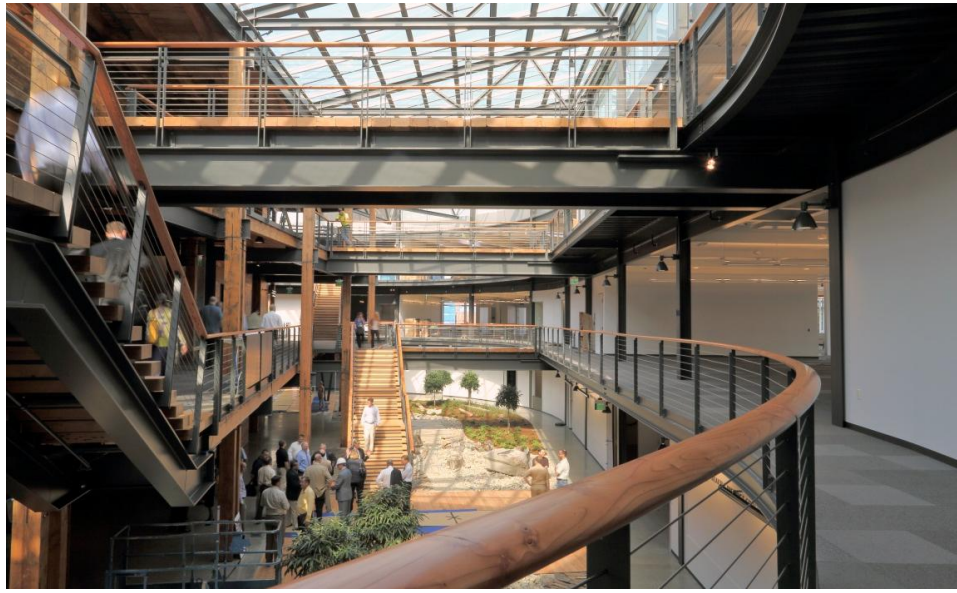
Twist, Crook, and Bow





Vision to Reality





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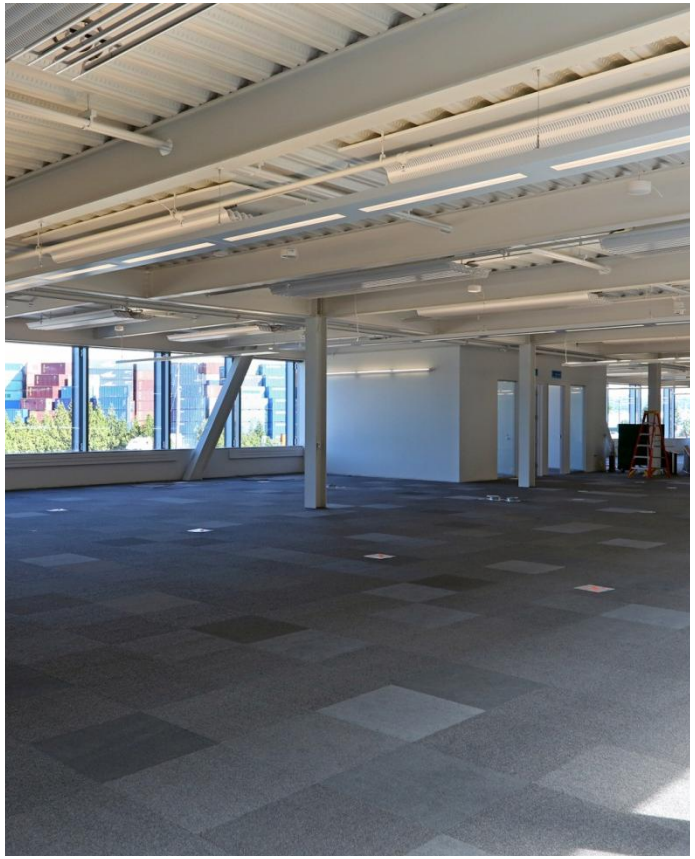
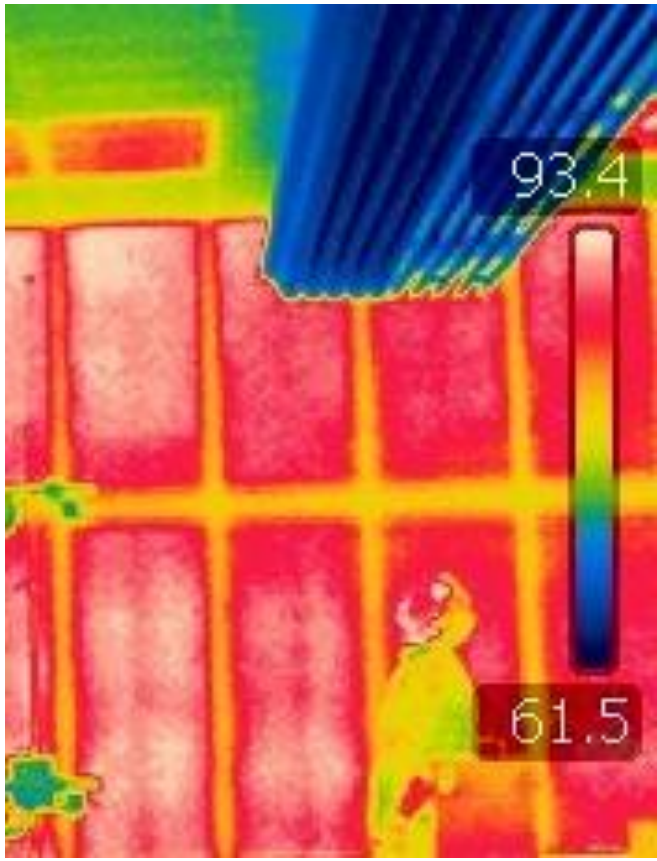
Create and Test New Products

Through collaborative efforts, the team created and tested three new sustainable products utilized in the building and ready for the market.





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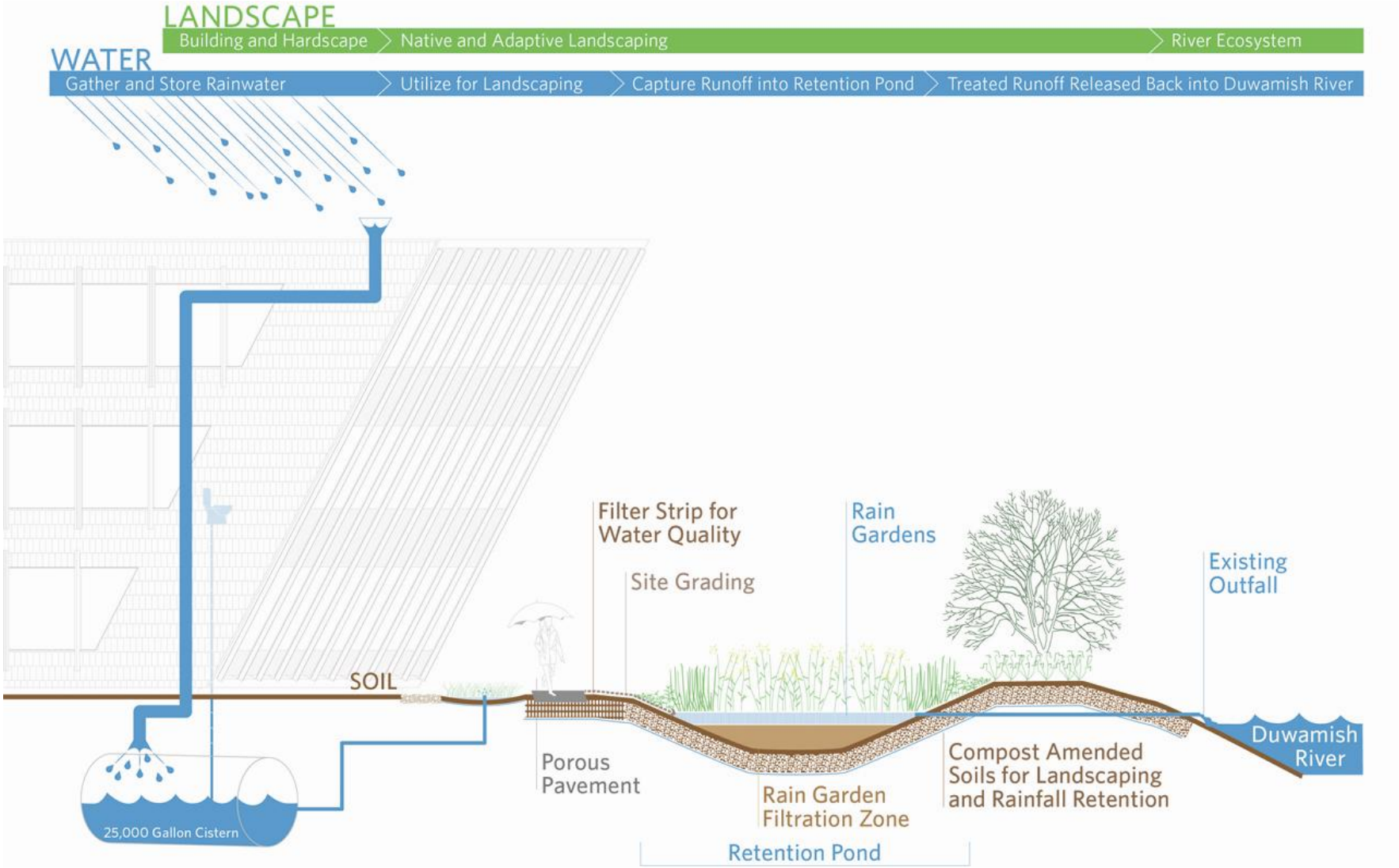
Composite Beam Testing/Lag Screws and Conduit in Slab

- Reduced structural material needs by 20-30%
- First use of composite wood beams in the United States

Systems Integration Mock-up – R&D Lab


ENERGY &
ENVIRONMENTAL
CONSIDERATIONS

Water Flow



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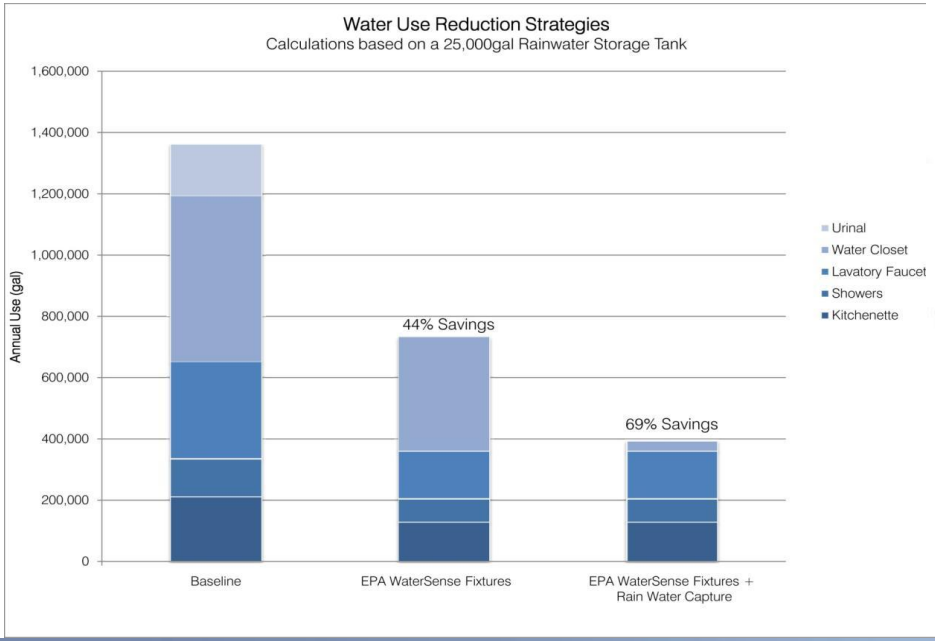
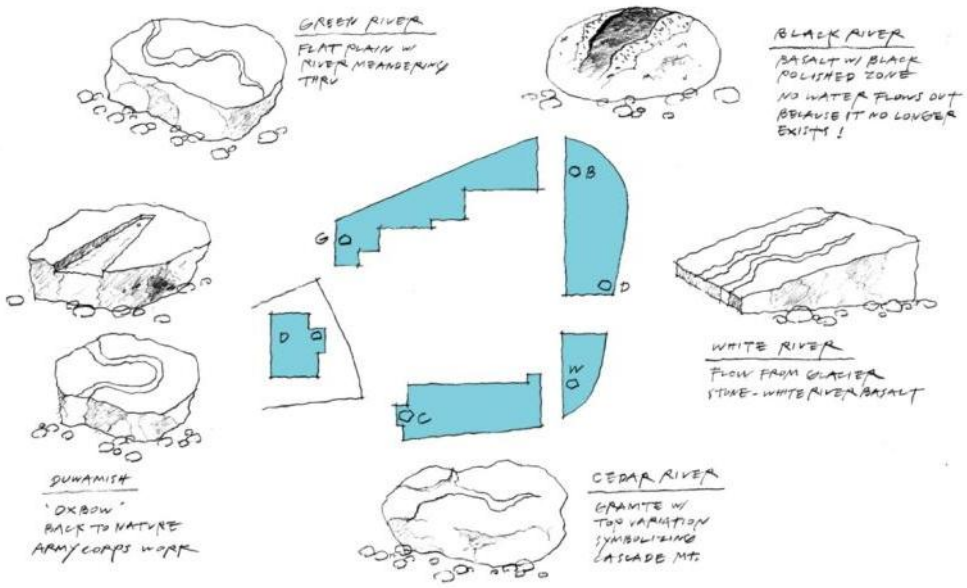
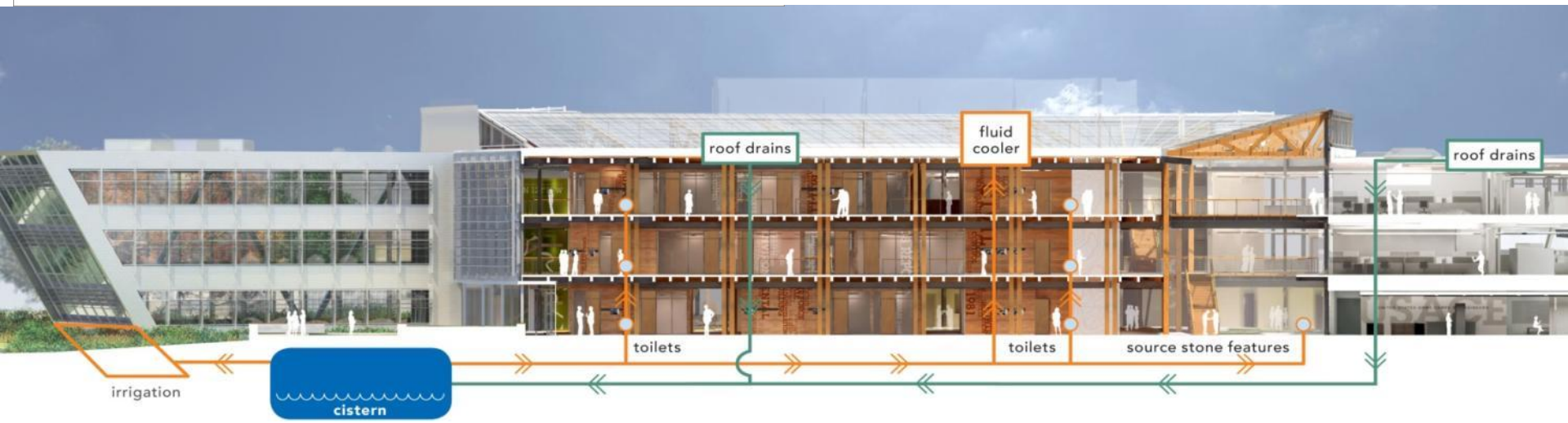
Water Harvesting







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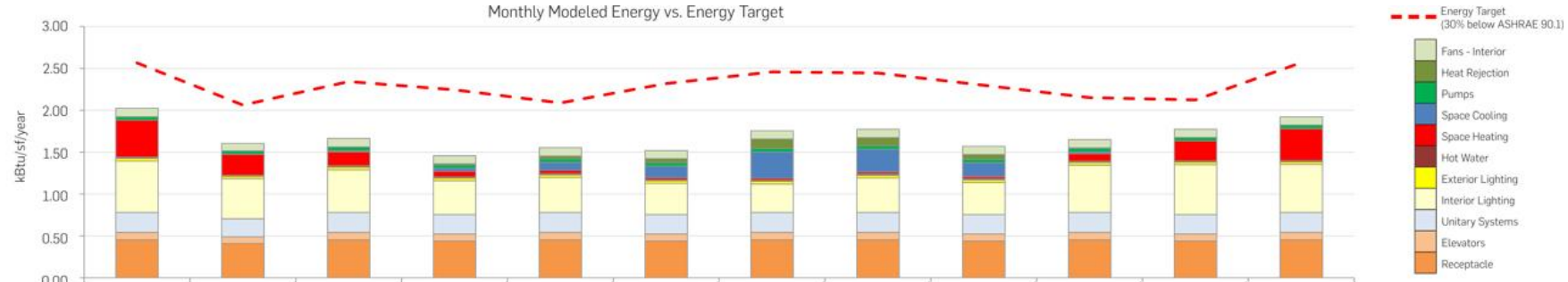
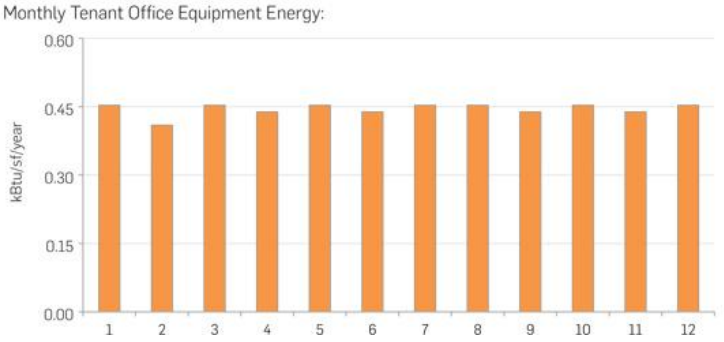
M + V Tracking Tool



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Target	2.57	2.06	2.34	2.24	2.09	2.32	2.46	2.44	2.30	2.15	2.12	2.20	27.7
Model	2.02	1.61	1.66	1.46	1.55	1.52	1.76	1.77	1.57	1.65	1.77	1.92	20.3
Actual													
Equipment	0.45	0.41	0.45	0.44	0.45	0.44	0.45	0.45	0.44	0.45	0.44	0.45	5.34
Bank													

Tenant Energy Allocation - Office Equipment	W/sf kBtu/sf/yr
Computers and Monitors (all energy star qualified) 75% of staff with laptop [40W] + 17" monitor [20W] 25% with desktop [110W] + 17" monitor [20W]	0.43 W/sf 3.05 kBtu/sf/yr
Non PC Equipment (all energy star qualified when applicable) Refrigerators [540kWh/yr]: 1/coffee room, 2/kitchen microwaves, coffee machines, water coolers [80kWh/yr]: 1/coffee room, 1/kitchen vending machines [30kWh/yr]: 2/kitchen copiers [250kWh/yr]: 2/copy room plotters [1,000kWh/yr]: 1/plot room server room [30,000kWh/yr]: estimated as 50W/sf for a 70sf server room	0.32 W/sf 2.28 kBtu/sf/yr



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PROJECT TEAM

General Contractor:
SELLEN CONSTRUCTION COMPANY

Architect:
ZGF ARCHITECTS LLP

Sustainability Lead:
SELLEN SUSTAINABILITY

Design Consultants:
KPFF CONSULTING ENGINEERS, INC.
WSP FLACK + KURTZ/BUILT ECOLOGY
SITE WORKSHOP LLC
STUDIO SC
LERCH BATES
ROLF JENSEN & ASSOCIATES, INC.
HINMAN CONSULTING ENGINEERS, INC.
THE GREENBUSCH GROUP, INC.
TUAZON ENGINEERING
HART CROWSER & ASSOCIATES, INC.
LANE COBURN & ASSOCIATES, LLC
MCKINNEY ASSOCIATES
OTTO ROSENAU & ASSOCIATES, INC.

Key Subcontractors:
THE G.R. PLUME COMPANY
UNIVERSITY MECHANICAL CONTRACTORS
SEQUOYAH ELECTRIC, LLC
PATRIOT FIRE PROTECTION
MILLENNIUM TILES, LLC
NORTH SHORE SHEET METAL
WALTERS & WOLF
SESSLER
R.W. RHINE, INC.
BARCOL-AIR
LUTRON
LITECONTROL
DEAMOR GLASS SKYLIGHTS

AN Integrated Team
ACHIEVES
Performance +
Time + Cost + Quality

Design-Build Team Collaboration

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Why Design Build

Accelerated Schedule

Optimized handoffs between designers and contractors eliminates waste

Leverage team to optimize the building systems

Continuous improvement from start to finish

Increased value delivered

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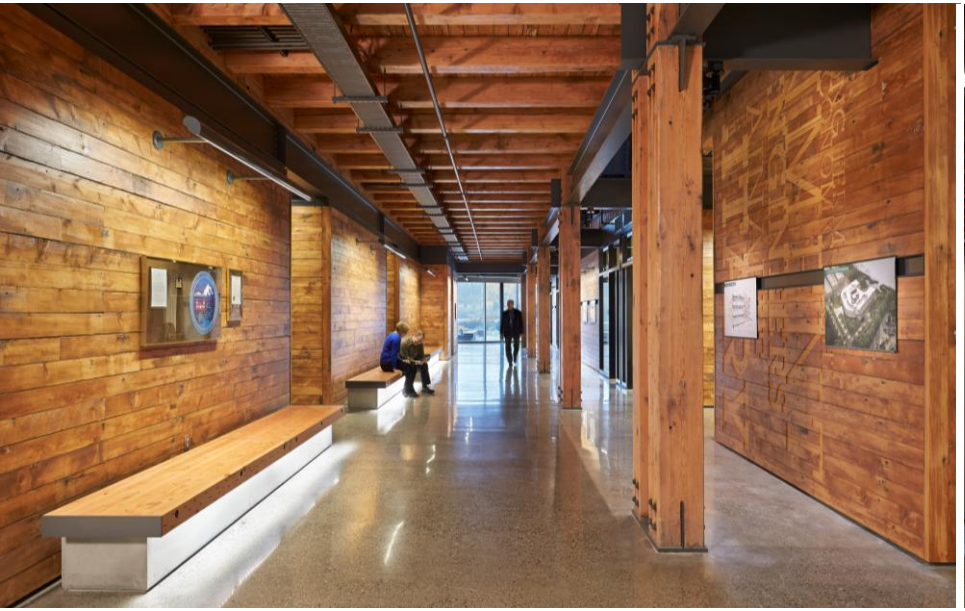

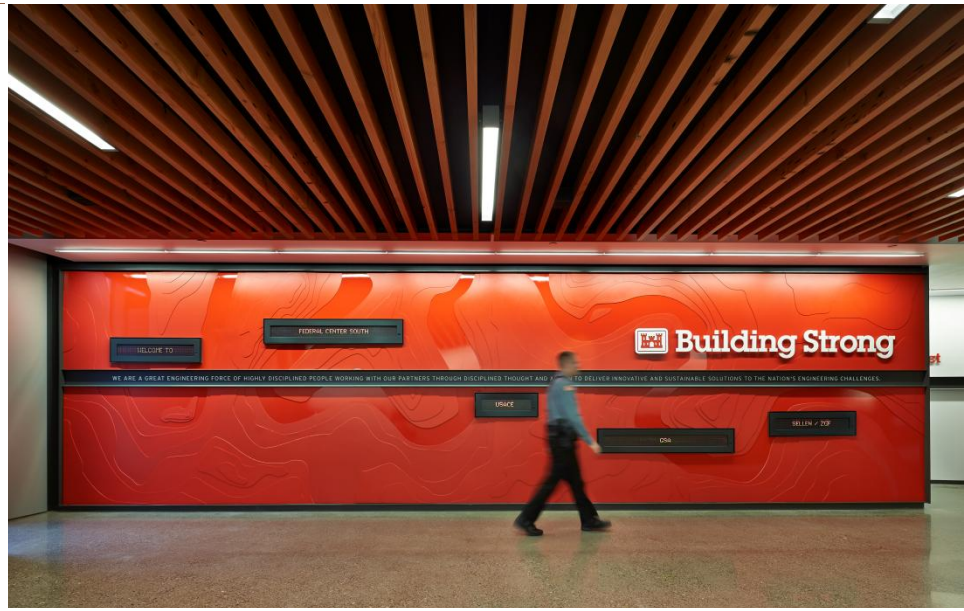

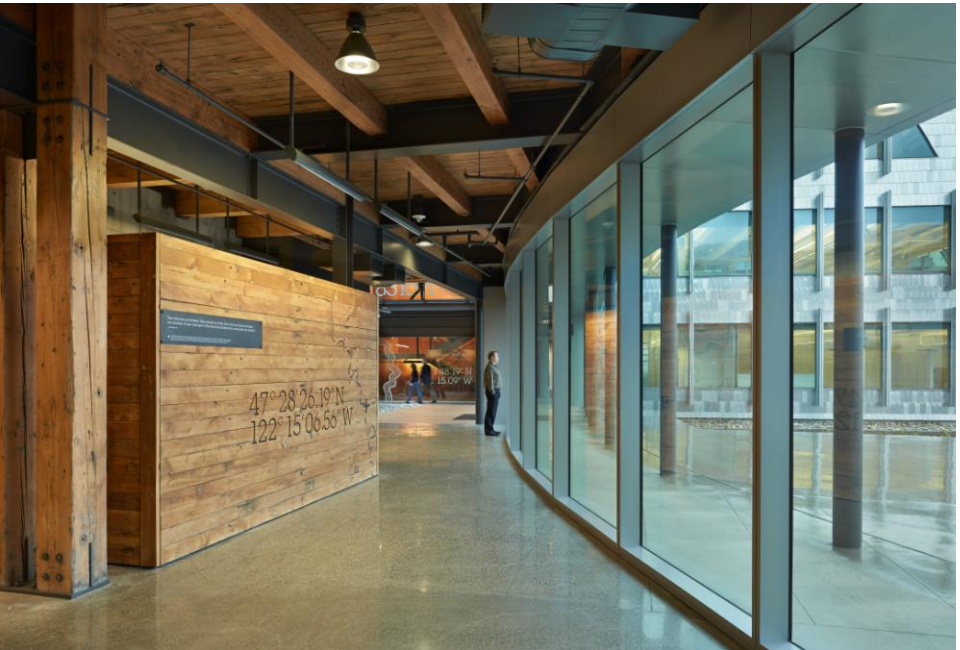

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