Eddy Hall Renovation
Capital Planning and Project Management-University of Minnesota
192 Pillsbury Drive SE
Minneapolis, MN
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01 Introduction

Key Client Desires

- Exterior Historical Preservation of Eddy Hall
- Strong Identity for Greater Campus/ Sustainable Precedent for other buildings on Campus
- Interior Open Plan with Flexible Gathering Space
- Rainwater Collection/ Greywater Re-use
- Energy Conservation
- Phasing Options for Future Growth

Purpose:
To provide an integrated sustainable interior and exterior environment that acts a welcoming sign and destination for international students and the greater university community

Essence of Project:
For the design to act as an educational tool in both its conception and to inform the greater university of the importance of sustainability

Theory Into Practice

Bioregionalism

- Be mindful of the campus’s history, local environment and community
- Re-create a shared sense of regional identity founded upon renewed critical awareness of history and environment and past cultures
- Respect the integrity of natural ecological communities by reconnecting campus to Mississippi River
- Use knowledge of scale to create interventions at all scales: world, nation, state, bioregion, green district, community and site.

Environmental Justice

- Eddy Hall will be a Welcome Center for new international students, therefore, this site and building should promote “ethical, balanced and responsible uses of land and renewable resources in the interests of a sustainable planet for humans and other living beings.”
- Foster the rights of students to participate as equal partners at every level of decision-making including the needs, assessment, planning and enforcement of decisions.
- The right to a safe, healthy work environment with natural lighting and ventilation.
02 Priorities

Balancing Preservation and Renovation

- Integrate new sustainable technology while being mindful and respectful to the historic nature of Eddy Hall and its symbolic importance to the campus
- Open floor plan of interior to allow for a more cooperative environment and the opportunity for daylighting opportunities
- Employ solar passive design strategies in order to be minimally invasive

Ecological Connection

- Create a strong connection between Eddy Hall and its surrounding context (Green District)
- Incorporate sustainable design elements into the Historic Knoll, while being aware of its historic origins and initial design intentions
- Connect Eddy Hall’s environs with the greater Mississippi River Corridor (phased approach for implementation)

Building as an Educational Tool

- Employ the Renovation and Preservation of Eddy Hall and the design intervention for the Historic Knoll as a place to learn and understand the sustainable design concepts such as energy conservation and water optimization, within the design (through process + implementation)
- Allow for the design to illustrate to the greater campus population the importance the University of Minnesota places on sustainability in this changing world
## STRATEGY MATRIX | EDDY HALL + HISTORIC KNOLL

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### Purposes
- Healthy Living Environments
- Welcoming
- Ecological Connectivity
- Sense of Identity
- Social Equity

### Categories
- Reliable Prosperity, Health + Equity
- Green District
- Water Optimization
- Aesthetics, Form + Function
- Site, Habitat + Food
- Energy Optimization
- Materials Optimization

### Green District
- Promote health
- Access
- Connect
- Gather
- Connect
- Connect

### Site
- Daylighting
- Meeting
- Graywater usage
- U of M values
- Views to outside
- Sustainable

### Building
- Promote health
- Access
- Connect
- Gather
- Connect
- Connect

### Future
- Photovoltaics
- Preserve exterior
- Flexible program

### Historic Campus
- Transparent health
- Promote health
- Access
- Connect
- Gather
- Connect
- Connect

### Future Precedent
- Photovoltaics
- Preserve exterior
- Flexible program
03 Comprehensive Flow Diagram

BUILDING AS AN EDUCATIONAL TOOL

- Greywater Usage
- Photovoltaics
- Passive Solar
- Reusing Windows

BALANCING PRESERVATION AND RENOVATION

- Daylighting

ECOLOGICAL CONNECTIVITY

- Raingardens
- Bioswales Connecting to Mississippi
- Native Plantings
- Preservation of Historical Knoll

EDIBLE LANDSCAPE

- Edible Plantings

Photovoltaics
Reusing Windows
Passive Solar
Greywater Usage
Raingardens
Bioswales Connecting to Mississippi
Native Plantings
Preservation of Historical Knoll
Edible Landscape
04 Master Plan for Proposed Design

1 | Native Plantings in Historic Knoll
2 | Edible Landscape
3 | Preservation of Eddy Hall Exterior - Photovoltaics
4 | Water Management - Greywater Reuse - Rainwater Collection
5 | Ecological Corridor to Mississippi River
04 Balancing Preservation with Renovation
Eddy Hall Building Interior

PRESERVATION
Materials Optimization

RENOVATION
Aesthetics, Form and Function

RELIABLE PROSPERITY, HEALTH + EQUITY

Preservation of Eddy Hall

Re-Using Existing Operable Windows

Passive Solar

Indoor Air Quality

More Interaction with coworkers

Interior Perspective

RELIABLE PROSPERITY, HEALTH + EQUITY

Open Floor Plan

More Interaction with coworkers
04 Balancing Preservation with Renovation
Eddy Hall Interior: Open Floorplan with Improved Daylighting

CURRENT CONDITIONS

- summer sun 68.5 degrees
- winter sun 21.5 degrees

AFTER RENOVATIONS + OPENING UP THE FLOOR PLAN

- summer breezes
- back door to the Knoll, “Eddy Hall’s Backyard”
- new main entrance
- full height of the building
- handicap accessible
- views to the river

- private
- dark
- closed off
- limited views
- compartmentalized
- rigid program spaces

- auditorium
- flexible office space
- elevators
- restrooms
- lobby
05 Ecological Connectivity
A Phased Approach

Inviting Environments to learn and play
- texture
- color
- smell
- sun
- sound

Native Landscape Requires less
- fertilizer
- pesticides
- irrigation
- mowing
05 Ecological Connectivity
Connecting to the Historic Knoll

PHASE ONE:
Historic Knoll

PHASE TWO:
Bioswale Connections

PHASE THREE:
River connection

Interventions on the Historic Knoll

Non-traditional edible landscape

Traditional plantings

Historic Postcard

Edible Landscape

Pleasant St SE
Historic Knoll
Pillsbury Ave

River Connection

Paths + Lighting

Strategic thinning of trees to create visual access to river.

Canoe access
05 Ecological Connectivity
Connection to the Mississippi River

Bioswales Connect to the River

- Shows use of green technology in landscape.
- Incorporates native flora and fauna.
- Mediates stormwater runoff.
- Visually connects historic district to river.
- The start of an ecological corridor.
Rain Garden

Benefits:
- filter runoff pollution
- recharge local groundwater
- conserve water + improve quality
- removes standing water
- reduces mosquito breeding

Rainwater Harvesting

- increase beneficial insects that eliminate pest insects
- create habitat for birds + butterflies
- survive drought seasons
- reduce garden maintenance
- increase garden enjoyment
06 Building as an Educational Tool
Photovoltaic Options

40 kW Commercial System

- Installed by Able Energy Co. $160,000
- 30% Federal tax credit* -$48,000
- Xcel Energy Solar Rewards** -$90,000
- Final out-of-pocket $22,000
- First year energy production (0.09) $5,020

** Equity payback (8% utility inflation) 4.1 years
*** Property value increase 100,400

Estimated Payback - 30 Year Energy Production

FREE POWER
INVERTER REPLACEMENT
07 Conclusion
Key Design Priorities Revisited

1. Balancing Preservation and Renovation
   - Preserve the Historic Nature of Eddy Hall’s building exterior
   - Renovate the interior of Eddy Hall, allowing for the development of an open plan and the incorporation of daylighting opportunities
   - Develop the Historic Knoll, while being mindful of its historic importance, with the inclusion of native plantings and edible landscapes
   - Phased opportunity to create an ecological connection from Eddy Hall and the Knoll to the Mississippi River
   - Opportunities to utilize sustainable technologies that are appropriate for the site such as photovoltaic panels placed on the roof and in the landscape, as well as a living machine for greywater reuse
   - Allow for the building to act as a sustainable educational tool through its design development and after its construction for the greater University of Minnesota campus

2. Ecological Connection

3. Building as an Educational Tool

Key Components of Design Proposal
08 Appendix
Connectivity Diagram: Balancing Preservation with Renovation

01 Purpose + Essence
- Social Equity
- Building as an Educational Tool
- Healthy Living Environments
- Ecological Connectivity
- Balancing Preservation and Renovation
- Sense of Identity
- Welcoming

01 Categories 02-08
- Reliable Prosperity, Health + Equity
- Green District
- Site, Habitat + Food
- Aesthetics, Form + Function
- Energy Optimization
- Water Optimization
- Materials Optimization
- Design as a Precedent for Future UMN Buildings
- Personal Safety
- People Using Space
- Efficiency of Program Space
- Preservation of Original Character
- People Using Nearby Transit

Indicators + Measures from Categories 02-08
- Use of Original Materials
- Accessibility
- Opening up Floor Plans
- Daylighting Opportunities
- Stormwater Infiltration
- Land Disturbed by Renovation
- Passive Solar Design
- Indoor Air Quality
08 Appendix
Connectivity Diagram: Ecological Connectivity

01 Purpose + Essence
- Social Equity
- Building as an Educational Tool
- Healthy Living Environments
- Ecological Connectivity
  - Balancing Preservation and Renovation
  - Sense of Identity
  - Welcoming
- Connecting to the Mississippi
  - Use of Original Materials
  - Stormwater Infiltration
  - Graywater Usage
- Bioswales used in Landscape
  - Raingardens on Surrounding Site
- Accessibility

01 Categories 02-08
- 02 Reliable Prosperity, Health + Equity
- 03 Green District
- 04 Site, Habitat + Food
- 05 Aesthetics, Form + Function
- 06 Energy Optimization
- 07 Water Optimization
- 08 Materials Optimization

Design as a Precedent for Future UMN Buildings

Phasing Intervention
- Use of Regional or Recycled Materials
- Preservation of Historic Knoll
- Water Collection
- Opening up Floor Plans

Indicators + Measures from Categories 02-08
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Connectivity Diagram: Building as an Educational Tool

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- Design as a Precedent for Future UMN Buildings

02 Connecting to the Mississippi
- Use of Original Materials
- Stormwater Infiltration
- Bioswales used in Landscape
- Raingardens on Surrounding Site

03 Preservation of Historic Knoll
- Water Collection
- Opening up Floor Plans

Indicators + Measures from Categories 02-08
- Accessibility
- Edible Landscape
- Accessible
- Water Collection
- Energy Optimization
- Water Collection
Eddy Hall and Historic Knoll
275,000 SF of Water Use

Annual Current Landscape Water Demand:
2,643,716 gallons of water

July: 276,150 gallons
Aug: 276,150 gallons
Sept: 200,000 gallons

Annual Rainfall: 22.87"

Annual Current Building Water Demand:
20,160 gallons of water

STRAATEGIES
- rainwater harvesting + storage
- reuse of grey water
- treat black water on site
- low flow toilets
- low flow showers / sinks
- permeable pavers
- bioretention systems
- biodetention systems
- bioswales
- wetland channel
Water Optimization: Fixtures + Strategies

- **Low flow fixtures**: 15,000 gallons/year
- **Bioretention/detention systems**: 650,000 gallons/year
- **Native plantings**: 650,000 gallons/year

Equals a 50% reduction in water consumption on site.

- **Grey water collection**: 15,000 gallons/year
- **Low flow fixtures**: 12,960 gallons/year
- **Permeable pavers**: saves 300,000 gallons/year
- **Bioretention/detention systems**: 650,000 gallons/year
- **Bioswales**: saves 1 million gallons/year
- **Grey water collection**: 1.3 million gallons/year
- **Grey water collection**: 13,000 gallons/year
- **Bioswales**: saves 1 million gallons/year
- **Native plantings**: 80% native plantings

Equals a 100% reduction in water consumption on site.
08 Appendix
Developmental Flow Diagrams

Architectural and Natural Preservation
- Rain Garden
- Reflecting Pond

Natural Preservation
- Green District
- Water Optimization
- Original Materials
- Exterior Form

Architectural Preservation
- Energy Optimization
- Historic Preservation
- Aesthetics, Form + Function
- Sustainable Material Choices

Welcome to the Community
- Education Through Research
- Water Optimization
- Landscape Water Use

Sustainability
- Human Health
- Ecological Health

Health + Well-being

Ecological Connection

Access to Nature
- Water Infiltration
- Grey Water Reuse
- Passive Solar Design
- Energy Efficiency
- Ecological Relationship with Nature

Outdoor Space Opportunities
- Connection to the Community
- Native Plants
- Rainwater Harvesting
- Recycled Material

Aesthetic Sensation Design
- Daylighting Opportunities
- Sustainable Design
- Grey Water Reuse
- Energy Efficiency
09 Bibliography

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Bioregionalism, http://biocongress.org
Google Maps, http://maps.google.com
Living Building Challenge, https://ilbi.org
Minnesota Department of Natural Resources, http://www.dnr.state.mn.us
Reliable Prosperity, http://www.reliableprosperity.net
U of M Parking and Transportation Services, http://www1.umn.edu

Photos
Photos taken by team members of Eddy Hall
All Others taken off the internet at the following sites:
www.epa.gov
www.arb.ca.gov
www.mpg ranch.com
www.urbanreview.blogspot.com