Presentation Overview

- UWL Campus Profile
- Campus Overview
- Current Projects
- Future Projects
- Building Performance Strategies
- Facilities Management
UWL Campus Profile 2016-17

- Enrollment: 10,408 (UG: 9,650/GR 758)
- Faculty & Staff: 1,156
- 118 Acres
- 34 Buildings (19 GPR & 15 PR)
- 2.7M GSF (GPR/PR → 56%/44%)
- 3,180 Beds, 10 Residence Halls (Fall ‘15 Occupancy: 3,555 → 112%)
- 2,850 Parking Spaces
Current Projects

• FPM Project List
Cowley Science Labs Building
Phase 1

Start: 2016
Complete: 2018
Cost: $82M
189,490 GSF

Campus Planning for Teaching & Learning
Recreational Eagle Center Addition

Start: 2016
Complete: 2017
Cost: $8.6M
30,000 GSF
Graff Main Hall
Storm Water Improvements

Complete: 2017           Cost: $275,000
Wittich CBA Renovation Project

Start: 2016
Complete: 2020
Cost: $25M
53,770 GSF
Graff Main Hall
Storm Water Improvements

Complete: 2017           Cost: $275,000
CFA Annett Recital Hall

Complete: 2017          Cost: $869,000
La Crosse Street Landscape Improvements

Complete: 2017  Cost: $100,000
Synthetic Surface Soccer Field

Complete: 2017  Cost: $1,551,000
Maintenance & Stores Addition

Complete: 2017          Cost: $2,789,000
Baseball Field Improvement

Complete: 2017  Cost: $400,000
Wimberly Hall Classroom Renovations

Complete: 2017
Cost: $400,000
## GPR Capital Planning

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<tbody>
<tr>
<td>West Campus Chiller</td>
<td>$8.4M</td>
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<tr>
<td>Switchgear</td>
<td>$4.6M</td>
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<td>IT Infrastructure</td>
<td>$2.6M</td>
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<tr>
<td>Science Labs Building-Phase 1</td>
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<td>Science Labs Bldg-Ph. 2</td>
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<td>Graff HVAC</td>
<td>$6.7M</td>
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<td>Mitchell HVAC</td>
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<td>Wimberly HVAC</td>
<td>$4M</td>
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### Project Sequencing Chart
<table>
<thead>
<tr>
<th>Year Range</th>
<th>Project Description</th>
<th>Cost</th>
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<tbody>
<tr>
<td>2013-15</td>
<td>Parking Ramp Add.</td>
<td>$7.6M</td>
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<td>New Student Center</td>
<td>$55M</td>
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<tr>
<td></td>
<td>Maintenance &amp; Storage Addition</td>
<td>$3.3M</td>
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<td>2015-17</td>
<td>REC Center Addition</td>
<td>$8.6M</td>
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<td></td>
<td>Wittich Hall</td>
<td>$24.6M</td>
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<td></td>
<td>Cartwright-Gymnastics</td>
<td>$315,000</td>
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<td></td>
<td>Syn. Soccer Field</td>
<td>$1.5M</td>
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<td>2017-19</td>
<td>New Fieldhouse</td>
<td>$33M</td>
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<td></td>
<td>Low-Rise Res. Hall Renovations</td>
<td>$34M</td>
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<tr>
<td>2019-21</td>
<td>New Residence Hall</td>
<td>$32M</td>
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<td>Whitney Center</td>
<td>$20M</td>
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<td>2021-23</td>
<td>Mitchell Fidhse.</td>
<td>$2M</td>
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<td>2023-25</td>
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Student Fieldhouse

Start: 2016
Complete: 2020
Cost: $34.5M
104,000 GSF
New Residence Hall

Start: 2017               Cost: $32M
Complete: 2020            111,200 GSF
Residence Hall Renovations

- Life Safety (Fire Sprinklers)
- Electrical Upgrade
- Elevator Additions
- Bathroom Renovations
- Room Finishes & Furniture

Start: 2021               Cost: $34M
Complete: 2029           448,982 GSF
La Crosse Medical Health Science Consortium

Health Science Center
2000

- LMHSC Consortium (UWL, WTC, Gundersen, Mayo, Viterbo, La Crosse School District)
- Community Health Collaboration
- 168,555 GSF
- HSC 2020 Initiative
- Facility Assessment
- Building Renovation Plan
Long-Term Capital Planning

- Cowley Science Building Phase 2
- Future Land Acquisition
- CFA Performance Hall
- Tennis Courts
- Badger Street & Campus Malls
- Mitchell Hall
- Campus Master Plan Update
Cowley Science Building Phase 2

- 10% Concept Design
- 2015 Classroom Mix & Space Needs Analysis
- Cartwright Center Backfill Space
- $5M Project Savings → Construction Phasing
What Goes Into A Building Design?
Building Performance Strategies

• What are Building Performance Strategies (BPS)?
• Why Use BPS
• Strategies:
  • Accessibility
  • Aesthetics
  • Cost-Effectiveness
  • Functionality
  • Productivity
  • Safety and Security
  • Sustainability
What Are BPS?

• Building Performance Strategies (BPS) are categories of design parameters aimed at optimizing the use and operation of a building.

• Building performance strategies can cover a wide range of topics. Each building performance strategy is significantly important, yet it is just one aspect of what it takes to achieve a successful project.

• A truly successful project is one where project goals are identified early on and where the interdependencies of all building systems are coordinated concurrently from the planning and programming phase.
What Are BPS?

Following the defined building performance strategy can result in:

• 25% less energy
• 19% lower operating costs
• 27% higher occupant satisfaction
• 36% fewer CO2 emissions
How to Build a Green Building

TED Talk
What Are BPS?

Many Resources:

• The USGBC’s **WELL Building Standard®** is a performance-based system for measuring, certifying, and monitoring features of the built environment that impact human health and wellbeing, through air, water, nourishment, light, fitness, comfort, and mind. WELL is managed and administered by the International WELL Building Institute (IWBI), a public benefit corporation whose mission is to improve human health and wellbeing through the built environment.

• Whole Building Design Guide, National Institute of Building Sciences

• EPA Green Building Standards

• IFMA

• State Standards
Why Use BPS?

Improve overall effectiveness, efficiency, and life cycle costing of the facility.

MacLeamy Curve

The MacLeamy Curve is a graph of the cost of decisions mapped along the timeline of a typical construction project. It clearly shows that decisions made early in a project (during design) can be made at lower cost and with greater effectiveness. A reasonable inference to draw from this graph is in fact the idea that projects will benefit by having more diverse expertise (i.e., more interested parties) in the room during design, so that value engineering decisions, especially ones that affect the life cycle costs of the project, can be moved forward in time, when decisions are relatively inexpensive.
Why Use BPS?

* It should be noted that since this graph is based on 2003 data, these values may no longer be accurate due to economic changes since then, however the relative difference between maintenance, operations, energy, emissions, water and construction is what is of interest here.
Accessibility - This should go beyond the minimum as defined under the Americans with Disabilities Act (ADA) to address universal design, equal access and flexibility

• Gender neutral restrooms.
• Adjustable desks – sitting is the new smoking.
• Center for Universal Design @ NCSU - The Center for Universal Design (CUD) is a national information, technical assistance, and research center that evaluates, develops, and promotes accessible and universal design in housing, commercial and public facilities, outdoor environments, and products. Our mission is to improve environments and products through design innovation, research, education and design assistance.

• Universal Design:
  • Principle 1: Equitable Use
  • Principle 2: Flexibility in Use
  • Principle 3: Simple and Intuitive Use
  • Principle 4: Perceptible Information
  • Principle 5: Tolerance for Error
  • Principle 6: Low Physical Effort
  • Principle 7: Size and Space for Approach and Use
Accessibility

The Principles of Universal Design

1. Equitable Use
   The design is useful and marketable to people with diverse abilities.

2. Flexibility in Use
   The design accommodates a wide range of individual preferences and abilities.

3. Simple and Intuitive Use
   Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or education level.

4. Perceptible Information
   The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

5. Tolerance for Error
   The design minimizes hazards and the adverse consequences of accidental or unintended actions.

6. Low Physical Effort
   The design can be used efficiently and comfortably and with a minimum of fatigue.

7. Size and Space for Approach and Use
   Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.
Accessibility

Principle 1: Equitable Use
The design is useful and marketable to people with diverse abilities.

Guidelines:
1a. Provide the same means of use for all users: identical whenever possible; equivalent when not.
1b. Avoid segregating or stigmatizing any users.
1c. Provisions for privacy, security, and safety should be equally available to all users.
1d. Make the design appealing to all users.
Principle 2: Flexibility in Use
The design accommodates a wide range of individual preferences and abilities.

Guidelines:
2a. Provide choice in methods of use.
2b. Accommodate right- or left-handed access and use.
2c. Facilitate the user's accuracy and precision.
2d. Provide adaptability to the user's pace.
Accessibility

**Principle 3: Simple and Intuitive Use**

3a. Eliminate unnecessary complexity.
3b. Be consistent with user expectations and intuition.
3c. Accommodate a wide range of literacy and language skills.
3d. Arrange information consistent with its importance.
3e. Provide effective prompting and feedback during and after task completion.
Accessibility

Principle 4: Perceptible Information
The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Guidelines:

4a. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
4b. Provide adequate contrast between essential information and its surroundings.
4c. Maximize "legibility" of essential information.
4d. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
4e. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.
Accessibility

Principle 5: Tolerance for Error
The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Guidelines:
5a. Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
5b. Provide warnings of hazards and errors.
5c. Provide fail safe features.
5d. Discourage unconscious action in tasks that require vigilance.
Accessibility

Principle 6: Low Physical Effort
The design can be used efficiently and comfortably and with a minimum of fatigue.

Guidelines:
6a. Allow user to maintain a neutral body position.
6b. Use reasonable operating forces.
6c. Minimize repetitive actions.
6d. Minimize sustained physical effort.
Accessibility

Principle 7: Size and Space for Approach and Use
Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Guidelines:
7a. Provide a clear line of sight to important elements for any seated or standing user.
7b. Make reach to all components comfortable for any seated or standing user.
7c. Accommodate variations in hand and grip size.
7d. Provide adequate space for the use of assistive devices or personal assistance.
BPS - Aesthetics

The building aesthetic needs consider design elements that fit into the community, campus, and represent the desired architectural style.

- Form vs Function
- Duck vs. Decorated Shed (Venturi & Brown)
- Aesthetics can help in student, employee, and customer recruitment.
- The act of creating architecture is indeed a wonderful opportunity to create memorable places. It is more than meeting the functional, technical, and financial criteria established at the outset. There is a more nuanced aspect to architecture that deals with aesthetics and symbolism. In every project, opportunities exist to consider aesthetic issues. Internal to the design process are countless opportunities to make aesthetic decisions, from the selection of window types to the choice of trim color.
- In higher education, a recent Carnegie Institute study shows that high school seniors make their decision to attend a university in the first 15 minutes on campus. This is related to the aesthetic.
Aesthetics

FORM
Walt Disney Concert Hall, Los Angeles, CA
Frank Gehry

FUNCTION
United Nations, New York, NY
Le Corbusier
Aesthetics

Longaberger Company, Foreclosed 2016
Aesthetics

Which is more sustainable?
BPS – Cost Effectiveness

Cost effectiveness will set the building materials, utilize life cycle costing and consider non-monetary benefits such as aesthetic, historic preservation, safety, security, flexibility, resiliency, and sustainability.

- Are you building a 20 year facility or a 75 year facility.
- Some retail developers – 7 years
- Are you energy neutral, or carbon neutral.
- Total operating costs need to be considered, not just construction costs.
- Maintainability.
BPS – Cost Effectiveness

- Long term maintenance costs
  - Rule of thumb – 10% of replacement cost on maintenance
- Utilities are extremely variable, even if you build a LEED Certified building, you must control user behaviors
- Corrective, Preventive, Predictive Maintenance
  - 80/20 Rule
- Building cost effective zero energy buildings:
  - National Renewable Energy Laboratory = High Performance Design and Construction on a Budget
  - [http://www.nrel.gov/docs/fy14osti/62752.pdf](http://www.nrel.gov/docs/fy14osti/62752.pdf)
Functionality needs to account for the functional needs of the **owner**, ensure appropriate product and systems integration and meet the performance objectives.
BPS - Productivity

Productivity needs to integrate technology, audio/visual systems, promote health and wellbeing of the occupants, provide comfortable environments for the intended tasks, and assure reliable systems and spaces.

*Human Productivity Improvements Linked to Daylighting*

*A 1% productivity savings can nearly offset a company’s entire annual energy cost.*

- Rent 14%
- Maintenance 1%
- Energy 1%
- Salaries 84%

COMMERICAL BUILDINGS COST / S.F.

*Based on two field studies – one in schools and one in retail. H.M.G. 1999*
BPS - Productivity

Productivity:

- Flexibility
- Advanced Technology
- Collaboration
- Docking Spaces
- Remote working trends
- Amenities
- Productive spaces are specific to use, active learning vs. lecture, collaborative vs. individual work spaces.
BPS - Productivity

Traditional

Active Learning
Safety and security needs to address fire safety, indoor air quality, natural hazard mitigation, disaster preparedness, active shooter, and security for the occupants and assets.

- Have a safety and security review by local authorities
- There needs to be a balance achieved through a risk assessment, the function and location of the building will dictate the risk level
- Crime Prevention Through Environmental Design (CPTED) - Today’s cosmopolitan centers have become vital areas where civil society is evolving and our global economy developing. Considering the importance modern urban centers play economically, socially, and politically, it is critical leaders for both the public and private sectors meaningfully invest in the advancement and promotion of public safety and security.
Large windows promote casual supervision of sidewalk.

Porches and sidewalk encourage interaction between neighbors.

Paving and architectural treatments define public and private zones.

Good pedestrian-scaled lighting on street.

Low landscaping and fences define property lines without creating hiding places.
Finally, and most importantly, the strategy of sustainability needs to optimize energy use, conserve water, optimize the site potential, control long term maintenance costs, and reduce the impact on the environment through sustainable building materials. This can all be achieved through the use of USGBC’s Leadership in Energy and Environmental Design (LEED) standards.

- [Green Building Quiz](#)
Sustainability

Energy Use

• LED
• VFD’s
• Motion Sensors
• Alternative Energy
• Benchmark energy density against known resources
  Energy Star, USGBC, AEE
Sustainability

Conserve water

• Low flow fixtures
• Gray water systems
• Recycle rain water
• Bottle water fill stations

Optimize Site Potential

• Provide alternative vehicle parking
• Provide access to mass transit
• Partner with community & other organizations for shared spaces
• Preserve green space & natural landscapes
Gray Water System
Sustainability

Control long term maintenance costs
  • Considered in design, equipment & system selection
  • Low maintenance products such as concrete flooring

Sustainable building materials
  • Locally sourced
  • Recycled content building materials
Recycled Content Building Materials

- Carpet
- Cellulose Insulation
- Ceiling Tile
- Ceramic/Porcelain Tile
- Concrete Masonry Units
- Countertop
- Dock Bumpers
- Ductwork
- Exterior Sheathing
- Fences/Posts
- Fiberboard
- Fiberglass Insulation
Recycled Content Building Materials

- Floor Joists
- Floor Mats
- Flooring
- Lumber
- Paint
- Pilings
- Plastic Lumber
- Recycling Containers
- Roofing
- Structural Steel
- Underlayment Wallboard
Recycled Content Site Materials

- Asphalt
- Base Coarse
- Compost and Soil Amendments
- Concrete
- Drainage or Backfill aggregate
- Fill Material
- Ground colored glass pipe
- Bedding
- Glassphalt
- Parking Stops
BPS - Summary

Building Performance Strategies

- Accessibility
- Aesthetics
- Cost-Effectiveness
- Functionality
- Productivity
- Safety and Security
- Sustainability

Resources

- http://www.usgbc.org/buildingperformance
- http://www.usgbc.org/articles/what-well
- https://network.aia.org/tdbp/home
- https://www.epa.gov/smartgrowth/comparison-green-building-standards
- https://www.ifma.org/know-base/browse/sustainability/standards-and-reporting/page/4
- http://www.creativebloq.com/design/design-offices-912828
Facilities Management

- Work Orders – TMA, 1200 per month
- PM/CM – Graph
Days to Close
Facilities Management

- Budget - $1.3M plus $4.5M in salaries and $2.5M in fringe, total $7M
- Sales Credits - $100,000/month
- Utility Bills - $3.4M annually
- Sustainability
- Custodial $120,000 Annually
- Custodial Operations – 2.25 on APPA Scale of 1-5