

Bgemagen Project

**Energy Efficient Renovation of Historic Building on
Milwaukee Trust Land**



Bgemagen Project

- The Bgemagen (Bug-mah-gen) (“war club”) Building (f/k/a Wunder Hall) is a 34,000 sq ft building located on the former Concordia College campus just west of downtown Milwaukee.
- It was built in 1925 as a dormitory and is listed on the National Register of Historic Places.



Bgemagen Project

➤ **Project Goals**

- Renovate and convert the building from a dormitory to a commercial office building.
- Incorporate the highest level of sustainability.
- Meet National Park Service and State Historic Preservation standards in order to become eligible for historic tax credits.



Bgemagen Project

- Renovation project is funded in part with DOE support and includes the following components...



Bgemagen Project

➤ **Project Components:**

- Building Envelope: Energy efficient windows and doors, upgraded exterior wall and roof insulation, sealing of exterior masonry.
- Building HVAC System: New 94% efficient gas-fired boilers and chillers, upgraded insulation on the distribution systems, and digital control system to optimize efficiency.



Bgemagen Project

➤ **Project Components, cont.:**

- Building Plumbing System: Energy and water saving fixtures throughout the building.
- Building Electrical Infrastructure: Energy-efficient interior and exterior lighting (florescent or LED) and energy-efficient lighting controls including dual-level switching, day-light controls, and automatic shutoff.



Bgemagen Project

➤ Historical Preservation Project Components:

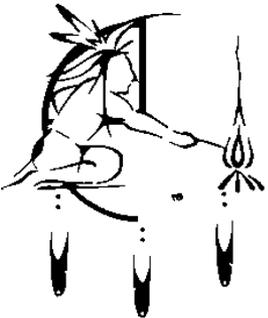
- Rehab the exterior facade to its original design.
- Maintain the interior integrity of the building.
- Balance the rehab with today's operational needs.

- Examples:
- *Lighting*
 - *Quality of the windows*
 - *Floor plan layout*



Bgemagen Project

- Anticipated total energy savings resulting from the implementation of this project are projected to be:
 - Natural Gas: 18,400 therms/yr of 58% of previous energy use.
 - Electricity: 205,000 kwh/yr or 55% of previous energy use.



Bgemagen Project

➤ Lessons Learned:

1. Working with rehabbing existing buildings vs. new construction:
 - a. Application process level of detail required geared toward new buildings vs. rehab.
 - i. Example: Heating/cooling system – The original building was heated in a manner which was not understood until demolition began (wall cavities were found along corridor walls), yet we were unable to take full advantage of this opportunity as we were already tied into a different heating/cooling system in the DOE grant application.



Bgemagen Project

➤ Lessons Learned:

1. Working with rehabbing existing buildings vs. new construction:
 - b. Flexibility in the implementation of the plan would yield higher quality results.
 - i. Example: In rehab projects, having a general scope of work to begin with and then a post-demolition refining of the scope of work, would allow the project to maximize opportunities for increasing sustainable elements within the building.



Bgemagen Project

➤ Lessons Learned, cont.:

2. Balancing Environmental Sustainability with Historic preservation:

a. Streamline requirements for the two approval processes.

- i. Example: The DOE grant anticipated replacing the old windows with high performing aluminum frame windows. These were not allowed by National Park Service (NPS); therefore the project team had to find a compromise solution, which caused project delays and additional costs.



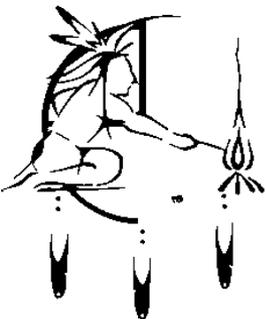
Bgemagen Project

➤ Lessons Learned, cont.:

2. Balancing Environmental Sustainability with Historic preservation:

a. Streamline requirements for the two approval processes.

ii. Example: The DOE grant anticipated furring out the existing interior side of the exterior walls in order to maximize the thermal performance of the exterior walls. This was not allowed by the NPS as it compromised the depth of the original building walls. The two solutions were mutually exclusive; finding a middle ground or compromise will be essential in order to keep these projects on schedule and within budget.



Bgemagen Project

As more and more historic buildings get rehabbed and converted into new uses, following both sustainability guidelines and NPS guidelines will be important. Finding a system which addresses these specific buildings in a partnership between the NPS and DOE will be critical for ensuring that both these worthy goals are met.



Bgemagen Project

➤ Lessons Learned, cont.:

2. Balancing Environmental Sustainability with Historic preservation:

b. Develop a roadmap for balancing sustainability goals with historic preservation goals.

- i. Example: In this particular project, the DOE grant application and the eventual NPS approval process did not occur in a concurrent manner. The DOE application came before the NPS process was started. In the case of DOE grants geared toward historic building, the two processes should be aligned.



Bgemagen Project

Developing clear goals for both sustainability and historic preservation will provide the design and construction team clarity for making implementation decisions.



Bgemagen Project

➤ Lessons Learned, cont.:

3. Working with Tribally owned properties:
 - a. Investigate opportunities to leverage the investment.
 - i. Example: In this particular project, the building owner, the FCPC, was committed to both environmental sustainability and historic preservation. Without the FCPC's commitment to these goals, this project would not have been executed as the project does not meet market financial proforma standards.



Bgemagen Project

If the goal is to support sustainability efforts in the rehab of historic buildings, finding and supporting building owners who are committed to these same goals will be very important.

