



ICONICA

Architectural & Engineering Analysis
of the Steensland House
for Bethel Lutheran Church

November 9, 2010

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Executive Summary

ASSIGNMENT

Iconica was retained to assess the functional and financial impact the existing Steensland House located on Bethel Lutheran Church's property has on the church's General Development Plan (GDP) for expansion of facilities and services.

We examined a number of options including leaving the house exactly where it currently sits. That option was rejected because it does not allow the new building to accommodate the required program, forces extremely inefficient and expensive parking, and pushes the project to an undesirable height.

The result was two basic scenarios: The first option keeps the house on the site and in the second option the house is gone. Even with the house moved, tangible expenses include repairs and ongoing maintenance of the house, higher structural cost for the parking, and higher building costs resulting from forced inefficiencies. Intangible expenses include a less efficient plan and reduced flexibility.

CONSIDERATIONS

Parking: Relocating the Steensland House onto the new parking structure adds complexity to the construction and schedule.

Function: All requested spaces/users are able to be accommodated in both scenarios, but some are forced to two levels in the option where the house remains. The program for the daycare outdoor area is unable to be met if the house remains on site.

Flexibility: Saving the house sacrifices plan efficiency and desirability and certainly flexibility for future changes/renovations.

Cost: Keeping the house on the site adds over \$2 million to the overall project. (See Appendix B – Additional Costs.)

Schedule: Keeping the house on the site adds time and difficulty to the construction schedule.

CONCLUSION

Balancing the intended use of the new building and the people it will serve along with the considerations listed above, our recommendation is to remove the house from the redevelopment site.

Condition Analysis

HOUSE STRUCTURE STATUS

- The basement exterior walls are constructed of stone; interior bearing walls are brick.
- Inspection of the basement confirms the size of the 1st floor framing consisting of dimensional 2x12 wood joists 16" on center.
- Comparing the field measured floor-to-floor heights from 1st and 2nd floor to the 1st floor ceiling height indicates 2x12 dimensional floor framing occurs at the second floor. Spacing of the 2nd floor framing is expected to be 16 inches on center matching similar to the 1st floor framing spacing. The actual spacing could not be confirmed on site.
- Comparing the field measured floor-to-floor heights from 2nd to 3rd floor to the second floor ceiling height indicates 2X10 dimensional floor framing occurs at the third floor. Although the actual spacing could not be confirmed on site, the floor joists are anticipated to be spaced at 16" o.c.
- The exterior and interior load bearing walls are framed with 2x4 wood studs at an unknown spacing. The framing is anticipated to be dimensional sizes based on the age of the structure. No issues were found with the wall framing.
- The interior load-bearing wall (adjacent to the 1st floor hallway) extends from the front of the house to the rear of the house. This wall is consistent in location on both the 1st and 2nd floor and is supported by a brick foundation wall in the basement.
- The 1st and 2nd floors appear to be of sufficient size and spacing to support a design live load of 40 pounds per square foot. Occupancies which require live load designs in excess of 40 pounds per square foot will require engineering analysis and reinforcement to the structure.
- The general building structure is suitable for residential and light commercial applications. It is not suitable for the uses outlined in the redevelopment plan.

REQUIRED EXTERIOR REPAIRS

- **Windows:** The windows are in poor condition with the majority having rotten sills. The windows are not insulated and should be replaced.
- **Exterior wood siding and wood trim:** The paint is peeling and requires cleaning and repainting. The paint is likely to be lead-based which will require testing and abatement. Some of the wood is rotten and will need to be replaced. The extent of required repair can be more fully determined once the paint is removed.
- **Roof:** We were unable to confirm the condition of the roof. From the ground, the shingles appear to be in good condition.
- **Porch:** The front porch is in bad condition and requires replacement. The foundation and masonry railing is crumbling and not safe. Some of the ornamental woodwork/trim and columns might be in good enough condition for salvage and reuse.
- **Brick:** The brick is in generally good condition, considering the building the age of the building (100+ years).
 - Some bricks have spalled or are about to spall and should be replaced. Finding a brick to match will likely be a challenge.

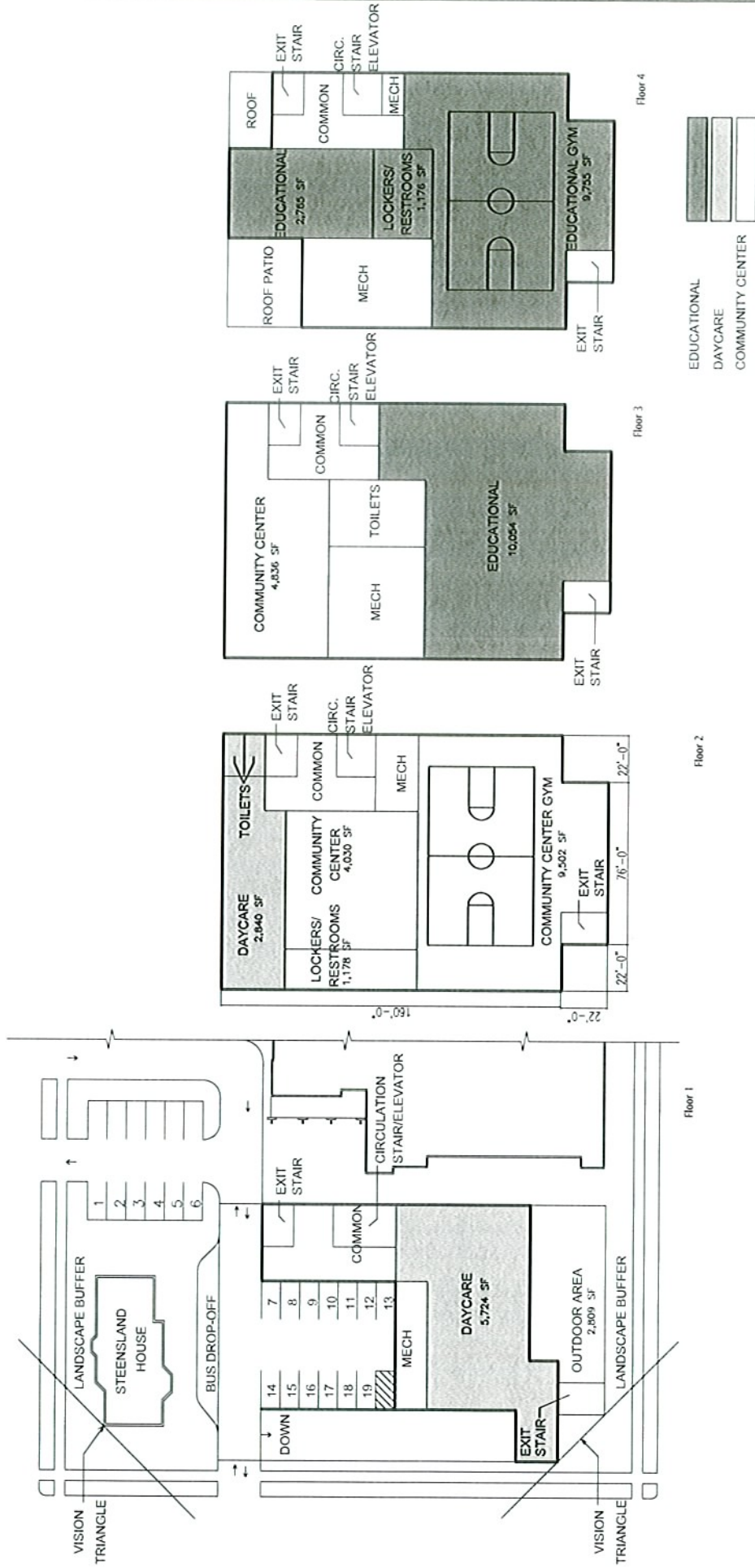
- The brick is discolored in several areas, likely due to water infiltration. Substantial discoloration occurs on the brick above the porch, likely due to excess roof water coming down the roof valley above and spilling over the gutters. This area may also have ice issues during winter months. The building should be cleaned and tuckpointed by a restoration company.
- Some decorative brick ledges are missing and in need of replacement.
- **Drainage:** Grades around the foundation should be adjusted to promote better drainage away from the building.
- **Foundation:** The foundation has a white coating on it that is delaminating; some of the foundation blocks are deteriorated to the point of needing replacement. Waterproofing is advisable.

INTERIOR MECHANICAL SYSTEMS

- All heating, cooling, ventilation, electrical, and plumbing systems should be updated with new systems designed for the appropriate use.

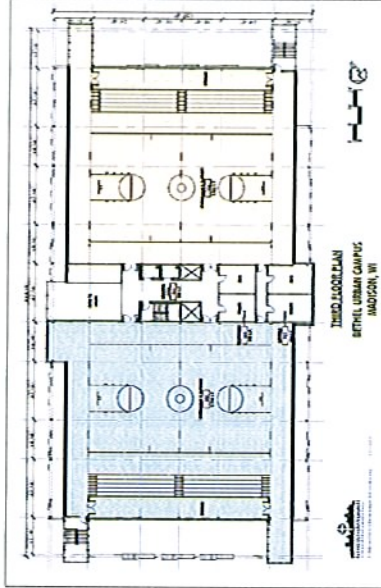
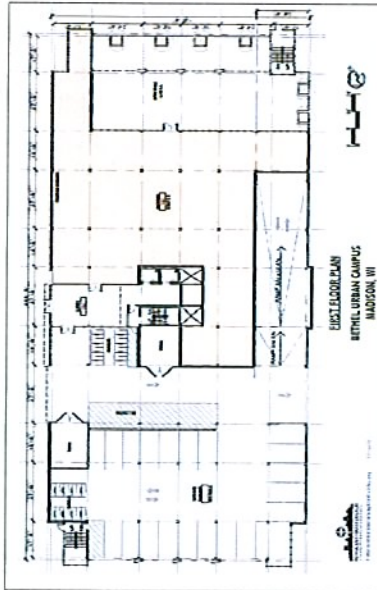
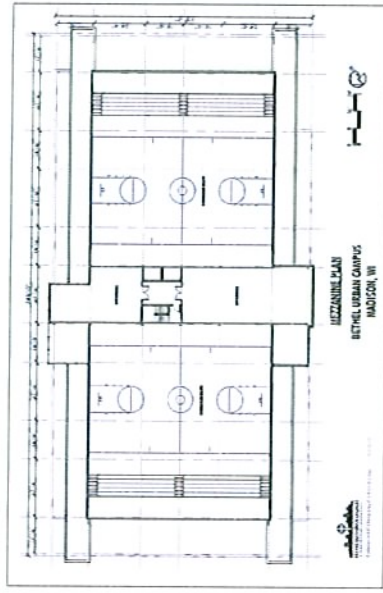
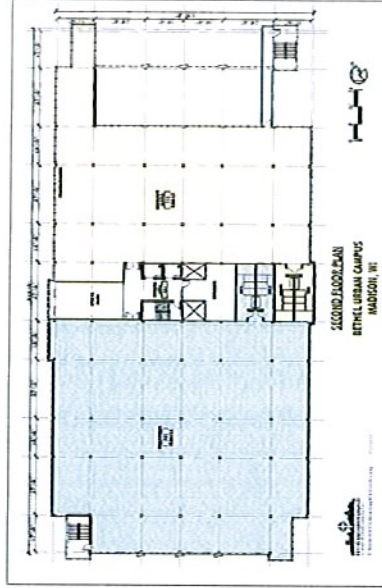
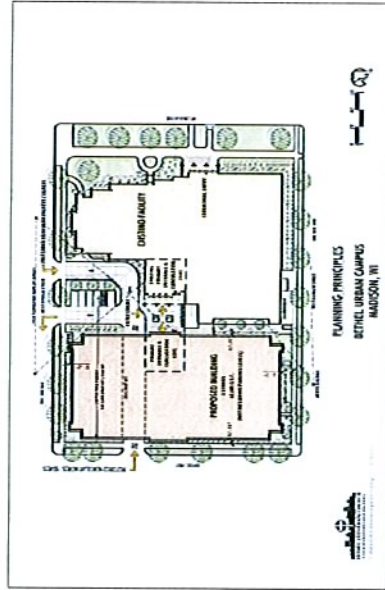
INSULATION

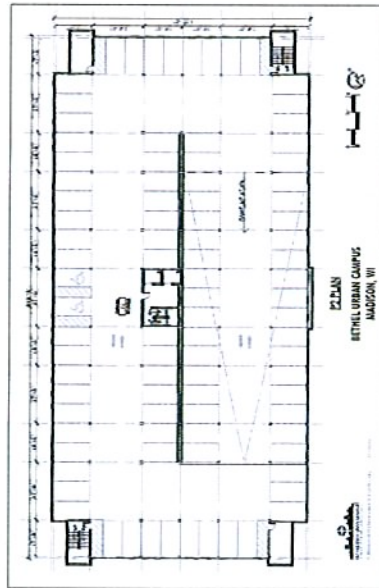
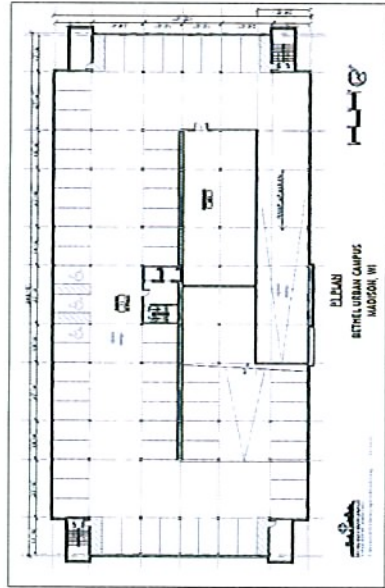
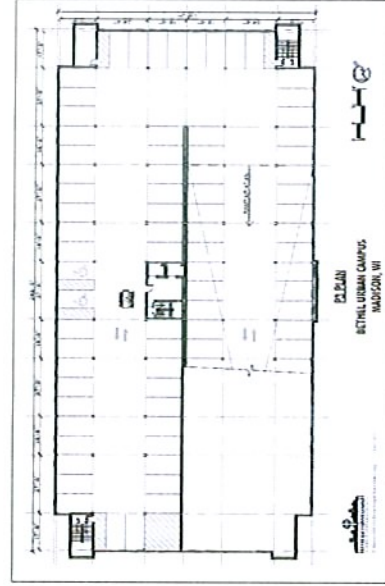
- There is no indication that the walls or roof have any insulation. The wall and roof cavities should be filled with insulation and a dew point calculation made to verify that the added insulation is not creating a moisture problem in the exterior walls.



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Alternative GDP Plan - Relocating Steensland House





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Evaluation of Option 1

OPTION 1: ALTERNATIVE GDP PLAN RELOCATING STEENSLAND HOUSE

In Option 1, the Steensland House would be moved to the corner of Gorham and Carroll Streets, facing Carroll, and would not be used for any of the program functions. The proposed new building would have a smaller footprint and would be 7 stories: 3 levels of underground parking, and 4 levels of occupied space above grade. The house would sit on a plaza supported by the underground parking structure.

Pros:

- House is maintained on site and given prominent visibility on corner location
- Probable Landmarks Committee approval

Cons:

- House must be temporarily moved off site in order to complete the underground parking and then moved back onto the new supporting structure adding \$350,000 to the project budget
- Required structural and mechanical repairs to the house, as detailed in the appendix, add \$670,250 to the project budget
- The parking structure costs increase by \$205,000 for added structural support, proper drainage on the plaza, and landscaping for the house
- Updates required by current codes for a third party use will require substantial renovations to both the exterior and interior of the house
- The building program does not fit efficiently in the smaller footprint resulting in \$814,200 additional cost to the program budget for more common area/circulation space and increased building height (the gymnasiums (28' floor to floor height each) would need to be stacked on top of each other pushing the building height up to 84' above grade)
- A smaller footprint also forces the daycare to be split between first and second levels compromising function and efficiency

Summary:

Keeping the Steensland House on the site adds significant cost to the project, increases building height, and decreases efficiency and program flexibility.

Note: Additional Costs, as noted above, are summarized in Appendix B

Evaluation of Option 2

OPTION 2: GDP PLAN - HOUSE REMOVED

In Option 2, the house would be demolished or moved to an alternate site. The proposed new building would be 6 stories: 3 levels of underground parking, and 3 levels of occupied space above grade.

Pros:

- Above-ground building function (such as daycare being all on one floor) is maximized
- The building program will fit within three above grade levels
- Per-stall parking cost is the least expensive
- Least expensive project cost of the options
- No need to upgrade, lease or maintain the house

Cons:

- Finding a person or entity to acquire the house and the costs of new site improvements will be difficult

Summary:

The addition is not encumbered by the house and the design can focus on functionality, aesthetics, and good connectivity with the existing facility and street.

Appendix A - Code Review

OCCUPANCY (Chapter 3 of International Building Code (IBC))

Occupancy classification of the proposed uses are:

- Community Center A3
- Educational A3 if under 100 students, E if over 100 students
- Day Care E

NON SEPARATED USES

The code does not require A and E occupancies to be separated per Table 508.3.3.

CONSTRUCTION CLASSIFICATION

The Steensland House is a wood frame structure with three floors above grade and a full basement. The exterior is brick and wood. Each floor is approx 1,600 GSF. The house is classified as type 5B wood frame construction.

Option 1: Because of the building height, the new building would be classified as type 2A, fire rated noncombustible construction with one hour rated structure and one hour rated exterior walls that are within 30 feet of the existing church and Steensland House.

Option 2: The new building could be Type 2B, noncombustible construction. The structure is not rated, but any exterior walls within 10 feet of the existing church will need a one hour rating.

ALLOWABLE HEIGHT AND AREA

Occupancy A3 is a bit more restrictive than E.

Option 1: Using A3 as the occupancy, and a Construction classification of 2A, the sprinklered new building can be 4 stories and 85 feet high, with a floor plate size of over 45,000 sf. (Table 503, 506.2, 506.3).

Option 2: Using A3 as the occupancy, and a Construction classification of 2B, the sprinklered new building can be three stories, 75 feet high, and a bit over 30,000 gsf per floor (Table 503, 506.2, 506.3). The proposed floor plan is in compliance with just under 30,000 gsf per floor.

Occupancy A3 use in the Steensland House allows 6,000 GSF per floor, but only for a single story. Sprinklering the structure would allow two stories per the IBC. Three stories might be allowable per the IEBC – see Historic Building Code below.

SEPARATION OF THE STEENSLAND HOUSE

Because of the construction classification difference between the house and the new building, the buildings must be separated for fire protection (704.3).

A separation of 20 feet provides the needed separation (Table 602) while still allowing some windows into the space on the new building (Table 704.8). The 20 foot space also provides fire department access to all sides of the Steensland House.

HISTORIC BUILDING CODE

The Steensland House is a Madison Landmark. Any work on the house will fall under the jurisdiction of the Historic Building Section (Chapter 11) of the International Existing Building Code (IEBC). The IEBC allows many exceptions to the IBC in order to maintain historical context and significance. Adding sprinklers to the house will bring the building into conformance with most all code life/safety requirements, except the number of required exits (1103.2 and 1103.12.1). Two new fire rated stairs with exits at the bottom would meet the exiting requirement for any type of use in the House.

ACCESSIBILITY AND TOILETS

The new building will need to meet all current code requirements.

Option 1: The Steensland House will need an accessible grade entrance, and accessible toilets on the 1st floor. Depending on how the upper floors are used, an elevator may be required to access floors 2 and 3.

CITY OF MADISON LANDMARKS COMMISSION

The landmarks ordinance (33.19(5)b) requires that any suggested improvements or alterations to a landmark building must first be approved by the Landmarks Commission.

Demolition of part or all of a landmark building must be approved by the Landmarks Commission. The Commission considers standards identified in 33.19(5)c3 when making their decision.

Appendix B - Additional Costs

Project: Bethel Lutheran Urban Campus
 Location: 312 Wisconsin Avenue, Madison, WI
 Owner: Bethel Lutheran Church

1. Steensland House Repairs (excludes interior upgrades/renovations)

Abatement allowance	3200	sf	\$5.00	\$16,000.00
Porch rehab	1	ls	\$40,000.00	\$40,000.00
Tuck point brick	5500	sf	\$7.50	\$41,250.00
Brick repairs	1	ls	\$25,000.00	\$25,000.00
Rebuild Chimneys	1	ls	\$30,000.00	\$30,000.00
trim rehabilitation	1	ls	\$15,000.00	\$15,000.00
Labor	240	hrs	\$65.00	\$15,600.00
Foundation repairs	2200	sf	\$12.00	\$26,400.00
Roof	1800	sf	\$12.00	\$21,600.00
Insulation	9300	sf	\$2.00	\$18,600.00
Window replacement/repairs	40	ea	\$1,150.00	\$46,000.00
Sills	40	ea	\$150.00	\$6,000.00
Doors				\$10,000.00
Paint	40	ea	\$200.00	\$8,000.00
Lifts	1	ls	\$2,500.00	\$2,500.00
Labor	320	hrs	\$65.00	\$20,800.00
Lead paint removal	2200	sf	\$10.00	\$22,000.00
Repaint	2200	sf	\$5.00	\$11,000.00
Mechanical and Electrical Upgrades	3200	sf	\$30.00	\$96,000.00
General Conditions	6.00%		\$471,750.00	\$28,300.00
General Contractor	5.00%		\$471,750.00	\$23,600.00
*Subtotal Construction				\$523,650.00
Contingency and Soft Costs	20.00%		\$523,650.00	\$104,700.00
A&E	8.00%		\$523,650.00	\$41,900.00
Total				\$670,250.00

2. Moving Steensland House offsite and back again (excludes fees for storing house during construction) \$350,000.00

3. Parking ramp reinforcement, waterproofing, drainage & landscaping for house \$205,000.00

4. Due to inefficient layout, additional stories, and added building volume
 6900 sf \$118.00 \$814,200.00

Total Added Costs \$2,039,450.00