



The Kubala Washatko Architects

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Architectural Reuse Feasibility Report: Forest Home Library

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Purpose

In an effort to determine the reuse feasibility of the existing Forest Home Library, TKWA has examined the original 1965 construction drawings, documents from the 1999 renovation, and observable conditions onsite. Review of the existing building as it relates to the International Building Code, International Existing Building Code, and National Park Service Secretary's Standards for Rehabilitation is provided within the report. TKWA affirms the Forest Home Library building is a prime candidate for adaptive reuse and historic rehabilitation. The space can be adapted for modern use(s) while the energy performance of the enclosure and building systems can be improved - without compromising its architectural integrity.

DETAILS OF EXISTING BUILDING

Address	1432 W Forest Home Avenue
Architect	Von Grossmann, Burroughs and Van Lanen Architects
Date of Construction	1966

Type of Construction

The existing single-story structure utilizes a corten steel column and beam system with metal roof decking. Walls are corten steel, concrete, and glass. These are all noncombustible materials; therefore, the existing structure is qualified as Type IIB per International Building Code 2015 (IBC) section 602.2. Combustible materials are allowed as permitted in the code.

Existing Use

Use is Assembly (A-3) per IBC 303.4.

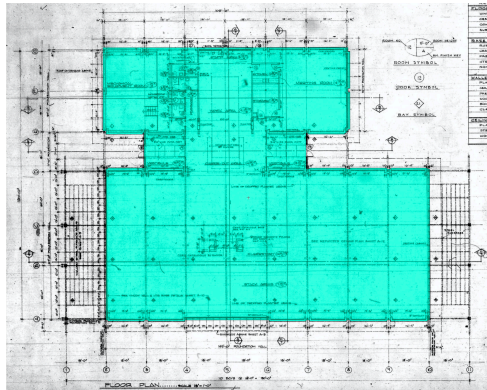


IMAGE 01_BUILDING AREA

Existing Height and Area

Area - approximately 14,500 SF (highlighted teal at IMAGE 01)

Height - the predominant roof is approximately 12'-9" above finished floor, while the upper roof is approximately 16' - 6" above finished floor

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Egress | Exit Separation | Exit access travel distance

The building is provided with six exits directly to the exterior - one pair of doors and a separate single door are provided on the south elevation fronting Forest Home Avenue; a second pair of doors is provided on the north elevation opposite the parking lot; and three additional doors are located along the eastern alley (See IMAGE 02). The combined exit width of 276" is suitable for up to 1,380 occupants per IBC 1005.3.2. A minimum of four exits are required when the occupant load is greater than 1000 occupants per IBC 1006.3.1.

Exits shall be a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the building per IBC 1007.1.1. This separation distance is reduced to one-third the maximum overall diagonal dimension when the building is not equipped with an automatic sprinkler system per IBC 1007.1.1 exception 2. The maximum overall diagonal dimension of the existing building is 188' and the greatest separation between exits is 110' such that the building is in compliance with this section of the code - whether provided with an automatic sprinkler system or not.

Exit access travel distance is the 'maximum distance a person is allowed to travel from any point in the building floor area to the nearest exit along a natural or unobstructed path.' The existing exit access travel distance will likely result within the range of 106' to 132' depending on the final configuration of the space; this distance is below the typical maximum distance of 200' per IBC 1017.2.

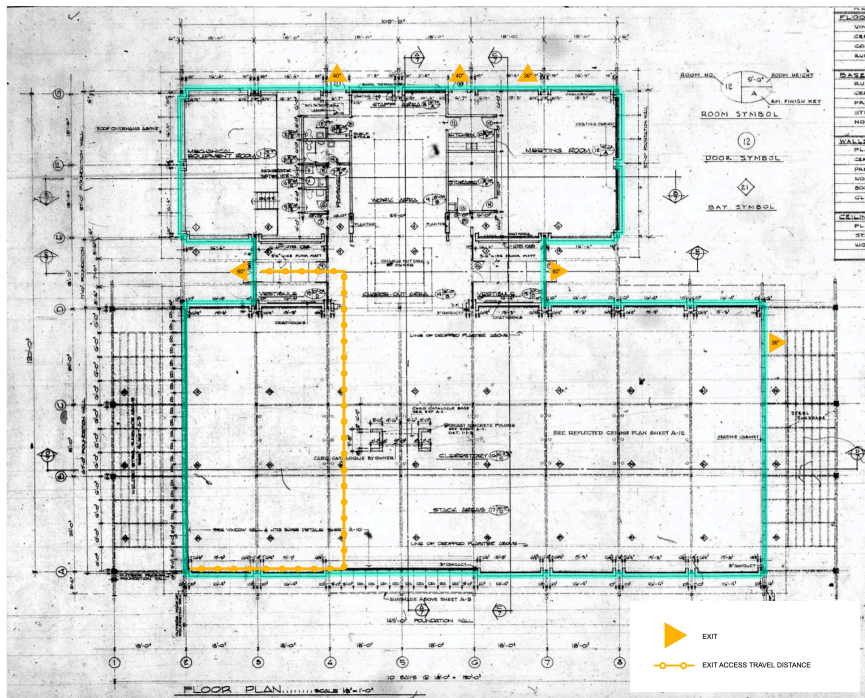


IMAGE 02_BUILDING EGRESS

Onsite Parking Provided

38 onsite parking spaces are provided on the surface lot north of the existing structure. Additional street parking is available in the area.

POTENTIAL FOR REUSE

Allowable Height and Area Table

Per the IBC Table 506.2, the allowable uses for a 14,500 SF structure of Type IIB construction (without an automatic sprinkler system) are listed below:

- Business (B) - professional services, training and skill development including tutoring centers, martial arts studios, gymnastics and similar uses not classified as Group A occupancy.
- **Educational (E) - educational purposes through the 12th grade**



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- Factory (F1 and F2) - bakeries, food processing establishments and commercial kitchens not associated with restaurants

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Adding an automatic sprinkler system would increase the allowable area and support most other uses defined in the code. These uses include:

- Assembly (A) - assembly for performing arts, restaurants, art galleries, community halls, etc
- High Hazard (H) - manufacturing, processing, generation, or storage of materials that constitute a physical or health hazard
- Institutional (I) - care or supervision is provided to persons who are or are not capable of self-preservation without physical assistance, etc
- Mercantile (M) - display and sale of merchandise
- Residential (R) - for sleeping purposes
- Storage (S) - storage that is not classified as a hazardous occupancy

Zoning

This site is zoned "Local Business District - LB2" which permits a broad range of uses - residential, educational, community-serving, commercial, office, medical, general service, motor vehicle, accommodation and food service, entertainment and recreation, industrial, agricultural, etc.

Building Improvements

Improvements to existing buildings are classified as either repairs or alterations. It is important to note the definition of each per the International Existing Building Code (IEBC).

- **Repair (per IEBC 2015)** - The reconstruction or renewal of any part of an existing building for the purpose of its maintenance or to correct damage.
- **Alteration (per IEBC 2015)** - Any construction or renovation to an existing structure other than a repair or addition. Alterations are classified as Level 1, Level 2 and Level 3.
 - Alteration Level 1: "...the removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose."
 - Alteration Level 2: "...the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment."



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Alteration Level 3: "...the work area (renovation) exceeds 50 percent of the aggregate area of the building."

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The IEBC includes *Chapter 12: Historic Buildings* that "provides some overall exceptions from code requirements when the building in question has historic value." The Forest Home Library "may be individually eligible for listing [as a historic building] in the State and National Register of Historic Places under Criterion C, locally significant in the area of architecture," and possibly under Criterion A in the area of Education as noted in the The National Register Questionnaire response from the Wisconsin Historical Society (dated August 15, 2018). With historic status, "repairs to any portion of an historic building or structure shall be permitted with original or like materials and original method of construction, subject to provisions of this chapter" per IEBC I202.1.

The existing windows are an example of such repairs that may be necessary. The original window system utilizes 1/4" plate glass, and repairs could be completed with the same material. That being said, new technology in glazing allows for a retrofit of the plate glass with an insulated glass unit within a like system. The Pilkington Spacia product utilizes vacuum glazing technology to create an insulated glazing unit in 1/4" and 3/8" profiles. This product was used in the successful restoration of the "bird cage" stair at the 1955 Milwaukee County War Memorial. Similarly, an interior storm panel would provide a "low-tech" approach to improve the thermal performance of plate glass windows.

The IEBC also allows for an incremental approach to improvement with the levels included in the definition of "alteration" above. Given the space is currently configured for a library user, it is assumed the work area will exceed 50 percent of the building area and qualify as a Level 3 Alteration. In section 908.1 the IEBC states "Level 3 Alterations to existing buildings or structures are **permitted without requiring the entire building or structure to comply with the energy requirements** of the International Energy Conservation Code or International Residential Code. The alterations shall conform to the energy requirements of the International Energy Conservation Code or International Residential Code as they relate to new construction only." As such, the corten steel frame, a character-defining feature of the existing building, can remain unchanged.

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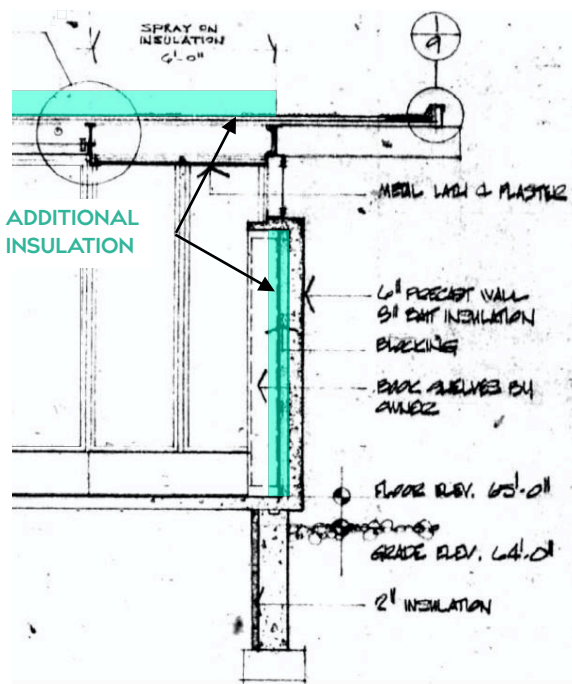


IMAGE 03_BUILDING SECTION

There are opportunities to improve **thermal performance** of the roof and wall without significantly altering the aesthetics, however. Additional rigid insulation could be added above the existing metal roof deck, which could terminate at the “line of enclosure” to maintain the historic roof profile (see roof area highlighted at IMAGE 03). Within the precast concrete wall panels, new cavity insulation with a higher R-value could be provided - the depth of this insulation could be increased in such a way that the alcove feature is preserved (see wall area highlighted at IMAGE 03).

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Reconfiguration of Interior

The interior of the building remains largely unaltered. As a historic structure, an appropriate use is one that “requires minimal change to the defining characteristics of the building and its site and environment” as per the National Park Service Secretary’s Standards for Rehabilitation.

The “stack area” - located on the west side - is the most significant space within the building. This room is defined by the open space, with exposed corten steel structure, wood grid ceiling, window walls and perimeter concrete alcoves. The center of this space is enhanced by a roof monitor that provides continuous clerestory windows - allowing an abundance of daylight at the center of the building. The defining character of this room, its features and finishes, should be preserved.

Much of the supply ductwork is buried beneath the concrete floor. Drawings indicate these ducts are made of transite, which is a hazardous material containing asbestos. Following a condition assessment of these ducts, it is possible that the transite can be encapsulated with a duct lining system that is

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sprayed applied to the interior walls. With additional modification to the existing mechanical system, which is likely with any reconfiguration of the space, new ductwork should be concealed in “stack area.”

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Possible Additions

Future additions are possible within the existing boundaries of the site. The most likely location for an addition is along the north side of the structure in the area of the existing parking lot. In order to preserve the character of the stack area, it is recommended that any addition be made alongside the existing mechanical room. This area is shaded orange on the site plan (IMAGE 04) and measures 4,000 SF. The guidelines for the addition can again be found in the National Park Service Secretary’s Standards for Rehabilitation.

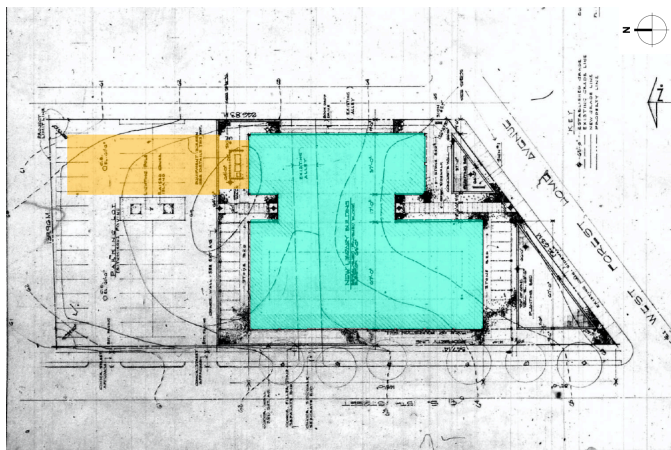


IMAGE 04_SITE PLAN

The Standard states in part that “new additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.”

Such an addition could allow for approximately 20 onsite parking spaces. The required parking will vary depending on use. However, the examination of parking requirements for an office use shows only **6 spaces are required onsite** - after the applicable 25% parking reduction for this location (Milwaukee Code of Ordinances 295-403-2-b-4) as well as accounting for the approximately 200’ of parking (10 spaces) available along 15th Street (Milwaukee Code of Ordinances 295-403-2-b-4).



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Conclusion

As a single story structure with multiple doors to the exterior, the exiting is not complex and would allow for a great variety of layout configurations. The large, open floor plan and regular structural system offer flexibility for a change in use. As noted within the report, many uses are allowed per the building code based on the size and type of construction. Adding an automatic sprinkler system will allow for nearly any appropriate use.

There are methods available to improve the energy performance of the building envelope as well. Added insulation at the roof and walls, while not required, can be done sensitively to retain the profiles and features of the Mid-Century Modern design. And window performance can be improved with vacuum glazing or interior storms.

Work related to a new user would potentially involve abatement of hazardous materials, new walls/partitions, modification of the existing restrooms, accessibility improvements as well as reconfiguration of the heating and air conditioning, electrical, and plumbing. With a historic building, these costs can be offset by as much as 40% with both state and federal Historic Tax Credits - as part of an approved rehabilitation. A list of expenses that are generally eligible for the tax credit (per the National Park Service) is shown below:

- Walls
- Partitions
- Floors
- Ceilings
- Permanent coverings, such as paneling or tiles
- Windows and doors
- Components of central air conditioning or heating systems
- Plumbing and plumbing fixtures
- Electrical wiring and lighting fixtures
- **Sprinkler systems**
- Other components related to the operation or maintenance of the building

Even improvements that reduce the net energy use can be eligible for the tax credit. NPS notes that "solar panels, wind turbines, and geothermal systems that are essential to the operation or maintenance of the rehabilitated historic building should qualify for this tax credit."

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Operational energy, while important, is just a portion of the overall lifecycle impact of a building. Embodied energy needs to be considered as well; there is energy built into the materials that form this existing building - most notably the concrete and steel. Preserving the existing building means the energy that went into the production of the Forest Home Library is not wasted. In the words of Carl Elefante, "the greenest building is the one that already exists". We share in the belief that the Forest Home Library is a prime candidate for adaptive reuse and historic rehabilitation.

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Respectfully,

A handwritten signature in black ink, appearing to read 'A. Voltz'.

Adam Voltz, AIA
Project Architect
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A handwritten signature in black ink, appearing to read 'Vincent B. Micha'.

Vincent B. Micha, AIA
Partner
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