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Title: ***Forgotten Treasure- An Ode to the Omaha Train Depot in Menomonie***

The accompanying research report is submitted to the **University of Wisconsin-Stout**, **Graduate School** in partial completion of the requirements for the

Graduate Degree/ Major: MFA in Design

Research Advisor: Dr. Julie Peterson

Submission Term/Year: WinTerm 2019

Number of Pages: 69

Style Manual Used: American Psychological Association, 6th edition

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Gopalakrishnan, Dharshana ***Forgotten Treasure- An Ode to the Omaha Train Depot in Menomonie***

Abstract

Vacant buildings can easily become subjects of abandonment that are overtaken by nature and eventually razed in communities. These vacant buildings carry historical value and hence it is critical to conserve these monuments. Menomonie, Wisconsin has lost many such historic buildings in the past. Long-term vacancy and improper maintenance are often the main causes for the loss of historic buildings. Many buildings could have been saved if long-term vacancy was prevented through adaptive redesign and constant maintenance was ensured through proper use.

The primary purpose of this project is to redesign the Omaha Rail Depot building in Menomonie and present its new design as an example of the potential for reuse of vacant historic buildings. Multiple suitable functions for the building were identified and the space was designed to support these multiple functions. The design demonstrates how a space can be developed to support a range of functions such as those presented here, which include a communal residence, a co-working office and a gallery. The multiple design options will share a common core of mechanical and utility area; however, a larger portion of the depot will be designed with flexible partitions to create varying functional spaces.

Acknowledgements

I would like to offer my special thanks to Dr. Julie Peterson, my research advisor for her advice and assistance in keeping my progress on schedule. Above all, for always believing in me and encouraging me. I would like to extend my deep gratitude to Dr. James E. Bryan and Maureen Mitton for their time, patient guidance and useful critique on the project as members of the thesis committee.

I would also like to thank Andrew McIntosh, technology coordinator at School of Art and Design, for all the technical help and support during emergencies.

Last but not the least, I extend my sincere gratitude to my family and friends, especially my husband, Gopinath Sivanathan, for always supporting me with a big smile on his face.

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Chapter I: Introduction

Vacant buildings exist throughout the country. When these structures are not used for long periods, they tend to become subjects of abandonment that are captured by nature and eventually razed. In small cities like Menomonie in Wisconsin these vacant buildings often form part of the history of the place and hence it is important that these are conserved. The term "adaptive reuse" is a widely used conservation technique which can benefit property owners and the community, preserve the historical value of the building and more importantly be a sustainable solution to the community (Joglekar & Achliya, 2018). Most of the existing researches in this area focus on the threats caused by unused buildings to communities (Ordway, 2018) or examine case studies on adaptive reuse. There is not significant research on how adaptive reuse of vacant buildings can protect them from future abandonment.

Menomonie has lost many old and historic buildings in the past. The Dunn County Asylum, the former Leevers store and the former Lee building are a few examples. The Dunn County Asylum was built in 1892 for the care and treatment of the chronic insane in Dunn County and other nearby counties. This building was large enough to accommodate about 117 patients and it served the county for more than 50 years. The name was changed to the Dunn County Hospital in 1947 and a new building was erected in its place in 1972 under the name Dunn County Health Care System (Russell, 2012). The exact reason for its demolition remains unknown. Another example is the Leevers grocery store that went out of business in 2003 and the building remained vacant until it was demolished in 2013. This vacant structure was considered an eyesore and the city had better plans for the site like mixed use housing and retail (Powers, 2014).

The former Lee building, one of the oldest structures in Menomonie, was built it 1862.

There was a plan with the City Council’s approval to spend up to $10,000 to move it to a new location and renovate it to a taproom, but poor condition and lack of maintenance created a need for demolition of the building according to the owners. The building was razed early in 2017 and has now been replaced by the Cobblestone Inn & Suites (Powers, 2017). Proposals existed for the demolition of the Mabel Tainter Center for Arts at one time, for it was not in pristine condition (Powers, 2016). But today, after renovation, it sits as a jewel of the community.

In the aforementioned examples, vacancy and improper maintenance of the buildings was the primary cause for demolition. These buildings might be standing today if a profitable alternative use were found and if they were consistently in use over the years. Redesigning the interiors into dynamic spaces that can meet the changing needs of the community will ensure continuous functioning of a building. There are currently several vacant structures in and around Menomonie that offer potential for reuse such as the Blue Brick building at the corner of Main Street and Broadway, the East School on 11th Avenue and the former Menomonie Food Co-op building.

Purpose of the Project

The primary purpose of this project is to redesign a historic building in Menomonie by using adaptive reuse principles and to put forth an idea to help prevent vacancy of historic structures. ‘Forgotten Treasure’ uses the Omaha Rail Depot building as an example, which was an inspiration for the project. The Omaha Rail Depot building remained unused for more than a decade before being redesigned into a brewery very recently. Adapting this structure and showcasing possibilities of using the space for different functions that fit the changing needs of the community can illustrate how these structures can offer new unique facilities in the community. Multiple suitable functions for the building will be identified and the space will be designed to support these identified functions. The project will demonstrate how a space can be designed to support a range of functions such as those presented here, which includes a communal residence, a co-working office and a gallery. The multiple design options will share a common core of mechanical and utility area; however, a larger portion of the depot will be designed with flexible partitions to create varying functional spaces.

Project Objectives

The primary objective of this project is to illustrate the possibilities of adaptively reusing an old structure. A detailed description of the objectives is as follows:

- organize a literature review about the principles of adaptive reuse, discuss case studies and learn other recent explorations in design that is similar to adaptive reuse;
- investigate the historic and architectural significance of the Omaha Rail Depot;
- conduct interviews with owners and other people and gather data for the predesign phase;
- identify different functions for the depot based on the interviews and propose a design solution using the identified functions;
- present the design through floor plans, physical models, rendered images and walkthroughs;
- curate a thesis exhibit to present ideas and solicit feedback from the show to formulate the results for the research;
- analyze the design solution against the identified adaptive reuse principles.

Assumptions of the Project

There are three main assumptions for this project:

- when buildings in communities continue to remain vacant for long periods of time, they become subjects for abandonment and demolition;
- adaptive reuse of vacant buildings is considered a sustainable practice in the long term;
- the failure of a functional space and the changing needs of the community are usually not taken into consideration while adaptively redesigning a space.

Limitations of the Project

A limitation to this project is that the adaptive reuse design solution proposed for the Omaha Rail Depot is not a standard and cannot be duplicated in the other vacant and under-utilized buildings. This can only be looked upon as an example of adaptive reuse of vacant and underutilized buildings designed with consideration to the changing needs of the community.

Definition of Terms

Adaptive reuse. The modification of a heritage place to a new use that conserves its heritage values. Adaptation may involve the introduction of new services, or a new use, or changes to safeguard a heritage item (NSW, 2008).

Reversible building design. The design of buildings which can be easily deconstructed or in which parts can be removed and added easily without damaging the building's integrity. This approach enables the design of buildings that can be easily adapted, transformed and disassembled (Buildings as Material Banks [BAMB], 2018).

Trans-functional space. A trans-functional building is one that has the ability to change from one function to another (BAMB, 2018).

Chapter II: Adaptive Reuse and Reversible Building Design

The design aims to produce an adaptive redesign solution for the Omaha Rail Depot building in Menomonie. A basic understanding of the subject of adaptive reuse and a study on earlier project typologies that are similar to adaptive reuse is important. This chapter will be divided into two main subtopics. The first section will define and discuss the principles of adaptive reuse which will be used as a guideline during the design process. The second section will discuss the idea of reversible building design which shares some similarity with adaptive reuse and is an emerging concept in the field of building design and architecture in the United Kingdom.

Adaptive Reuse of Historic Buildings

> "Historic Preservation is the practice of protecting and preserving sites, structures or districts which reflect elements of local or national cultural, social, economic, political, archaeological or architectural history" (Hazen, 2002).

Four types of treatments are available for a historic building which are preservation, rehabilitation, restoration and reconstruction (U.S Department of the Interior, 2017). Of these, rehabilitation or adaptive reuse is considered the most ideal, for it conserves the past as well as considers the needs of the present and future. Adaptive reuse can be defined as the conversion of a structure from one purpose to a whole new purpose. Adaptive reuse of historic buildings provides an opportunity to retain heritage spaces, fabric and sites that might otherwise be forgotten and makes them available for future generations (NSW, 2008). A number of old buildings that lost their original use are increasingly being transformed into functional and vital spaces. This kind of adaptation is promising the regeneration of old cities and neighborhoods.

In many countries including the United States, England and Sweden there is now a greater awareness about demolishing old buildings and a preference for adaptation and rehabilitation. This is mainly because adaptive reuse comes with social, economic and environmental benefits. The environmental benefit of reusing historic buildings is significant because of what is called an embodied energy.

"The embodied energy is defined as the energy consumed by all of the processes associated with the production of a building, from the acquisition of natural resources to product delivery, including mining, manufacturing of materials and equipment, transport and administrative functions. By reusing buildings, their embodied energy is retained, making the project much more environmentally sustainable than entirely new construction" (Department of the Environment and Heritage of the Australian government, 2004).

With rising energy costs, adaptive reuse is also an economic and cost-effective solution offering societies a long-term benefit. The concept of adaptive reuse usually falls under historic conservation. Most countries in the world have conservation rules and regulations however these conservation standards are mostly generalized for the different treatments of historic buildings and are not specifically geared towards their adaptive redesign. It was necessary to understand if there was a standard design guideline for adaptive reuse of historic buildings that can guide through the design process.

Design Principles for Adaptive Reuse of Historic Buildings

The preservation departments of many countries have standard guidelines for preservation, reconstruction, rehabilitation and restoration to help in choosing the appropriate treatment, finishes and features for the exterior and interior of historic buildings. To produce a successful design solution, it is necessary to learn and identify methodologies from existing case studies and researches. Different sets of principles that have been developed based on case studies from various parts of the world will be discussed in this section. These principles will help through the conceptual stage of design.

The first set of principles was put together by the Royal Australian Institute of Architects and the Heritage Council of New South Wales in 2008. The seven principles are as follows:

1. Understand the significance of the place.
2. Find a use which is appropriate to the heritage significance of the place.
3. Determine a level of change which is appropriate to the significance of the place.
4. Provide for the change to be reversed and for the place's future conservation.
5. Conserve the relationship between the settings and preserve significant views to and from the heritage place.
6. Provide for the long-term management and viability of the heritage place.
7. Reveal and interpret the heritage significance of the place as an integral and meaningful part of the adaptation project.

The second set of reuse principles were put together using case studies of adaptive reuse by the Government of Ireland's Department of Culture, Heritage and the Gaeltacht. According to the Architectural Heritage Guidelines for Planning Authorities (2004), the thirteen principles for adaptive reuse are:

1. Keeping the building in use.
2. Researching and analyzing.
3. Utilizing expert preservation advice.
4. Securing the special interest.
5. Supporting the least intervention.

6. Concerning prior adjustments of interests.
7. Repairing rather than replacing.
8. Evolving fidelity of repairs and modifications.
9. Utilizing proper materials and strategies.
10. Ensuring reversibility of changes.
11. Avoiding incremental loss.
12. Discouraging the use of architectural salvage from other buildings.
13. Complying with the building regulations.

All of these above principles were utilized to provide a design proposal for the Alexandria (Egypt) Sporting Club, which is one of the oldest clubs in Africa (Ragheb et al, 2017). It was built in 1890 and has been sitting vacant and vandalized for over 30 years, because the tradition of horse racing was discontinued. The club was built in two parts: the main stand and the secondary stand. By embracing the principles of adaptive reuse and after analyzing the heritage value, the best function for the main stand was identified to be an art gallery with large exhibition space and a gift shop and for the secondary stand as a lounge and library. The proposed use as an art gallery and library was intended to preserve some of the commercial functions of the structure. The design ensures minimal impact on the structured fabric and maximum retention of the structural element wherever possible.

Figure 1. Horse racing stand. (a) Old (b) Existing (c) Proposed. From “Adaptive Re-Use and Sustainable Development for Existing Historic Buildings – Case Study: Buildings of Racetrack Horses in Sporting Club, Alexandria, Egypt”, by G. Ragheb, A. Ragheb and R. Ragheb, 2017, *International Journal of Engineering and Technology, Volume 7,* p. 1529. Copyright 2017 by Inpressco.

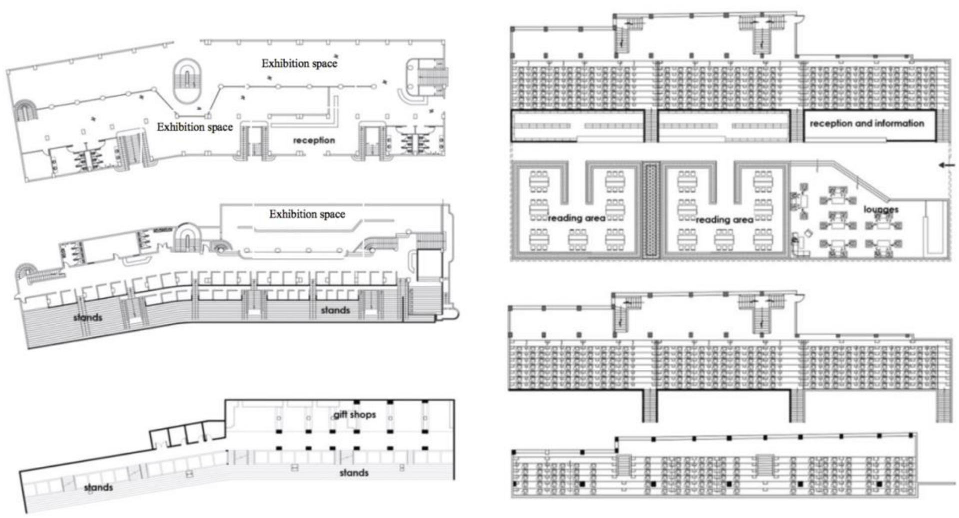


Figure 2. Floor plans of Alexandria Sporting Club. From “Adaptive Re-Use and Sustainable Development for Existing Historic Buildings – Case Study: Buildings of Racetrack Horses in Sporting Club, Alexandria, Egypt”, by G. Ragheb, A. Ragheb and R. Ragheb, 2017, *International Journal of Engineering and Technology, Volume 7*, p. 1529. Copyright 2017 by Inpressco.

Based on the first two sets of assumptions, a more recent set of principles for adaptive reuse which can be applied universally was proposed and published in the *International Journal of Current Engineering and Technology* in 2017. The following eight principles will be used as a checklist for the proposed adaptive redesign of the Omaha Rail Depot:

1. Analyzing and understanding the significance of the structure as an essential and expressive part of the adaptation project
2. Keeping a building in use by finding a new use which is suitable to the heritage value of the place
3. Ensuring reversibility of alterations and avoiding the use of process or materials whose future removal would damage the original historic fabric
4. Promoting minimum intervention based on respect for the existing building
5. Respecting maximum retention of fabric and the least possible loss of the original fabric
6. Conserving the relationship between the setting and preserving considerable views to and from the historical place
7. Providing for the long-range management and viability of the historical structure
8. Revealing and interpreting the heritage significance

On reviewing different ideas of adaptive reuse, it was understood that there is a common emphasis on finding an appropriate function and keeping the building in constant use. Preservation norms also explain that making sure buildings are regularly used and maintained is one way to conserve these structures. "The best of all ways of preserving a building is to find a use for it, and then to satisfy so well the needs dictated by that use that there will never be any further need to make any further changes in the building" (Ghada et al, 2017). The emphasis to ensure constant use is harmonious with the idea of reversible building design in the Project BAMB- Buildings as Material Banks.

Project BAMB

Project BAMB- Buildings as Material Banks is an initiative by sixteen partners from over seven countries whose mission is to move the building sector from a linear to a circular economy. Waste from the building sector usually end up in landfills when no longer needed despite causing destruction to the eco-system and resource depletion. Dr. Elma Durmisevic, Head of Research for Project BAMB describes "building demolition and construction waste as a design mistake." For a sustainable future, it is important to be able to recycle each and every component of future buildings. BAMB aims to bring this systemic revision by designing flexible and dynamic buildings for the circular economy. In a circular economy, any construction material used will not end up as waste. Through design and circular value chains, materials in a building sustain their value. Instead of being to-be waste, buildings will function as banks of valuable materials slowing down the usage of resources to a rate that meets the capacity of the planet.

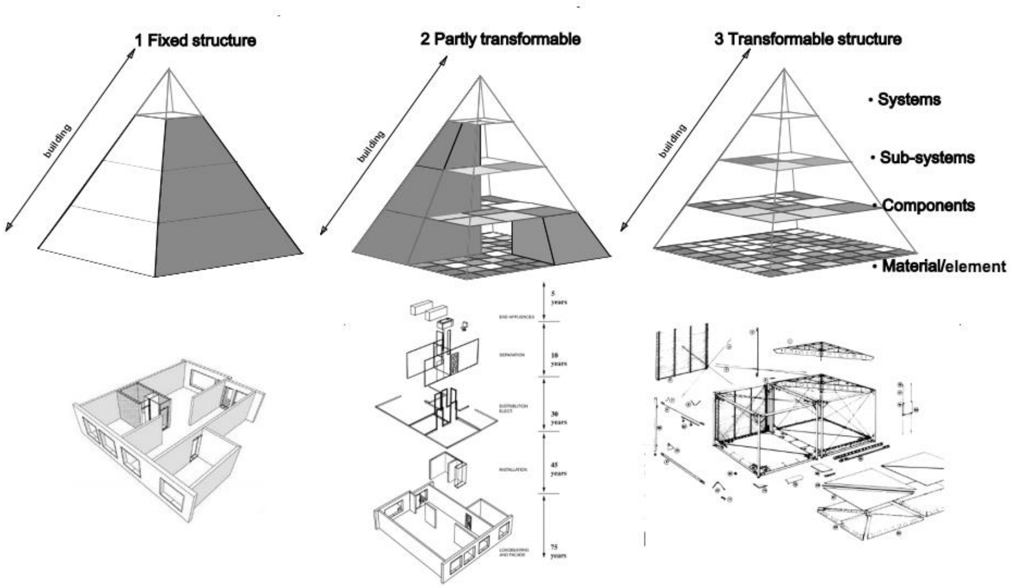


Figure 3. Concept of Project BAMB. From "WP3 Reversible Building Design", by E. Durmisevic, 2018, Copyright 2016 BAMB 2020.

A fully transformable structure means that each and every component that forms the building is reusable (Figure 3). This would sustain the value of building materials preventing them from ending up in landfills. Instead of going into waste, buildings of the future will be looked upon as material banks. This idea of BAMB is being currently experimented using the reversible building design approach and the Materials Passport. Material Passports are electronic sets of information describing defined characteristics of building materials, products and systems which make them suitable for resource recovery and reuse (BAMB, 2018). The Material Passport continues to grow with new materials constantly being added and these materials are ultimately based on design needs. For this paper, the guidelines and protocol of the reversible building design approach is more important than the Material Passport.

Reversible Building Design

Reversibility is defined as process of transforming buildings or dismantling their systems, products and materials without causing damage. Building design that can support such processes is reversible building design. Design solutions that can guarantee high reuse potential of the buildings, systems, products, materials and that have high transformation potential are described as reversible (Durmisevic, 2018). Reversible building design can be further classified based on technical reversibility and spatial reversibility. Technical reversibility is primarily applicable for new construction where each and every building component will have transformation and reuse capacity. Partial demolition might be required in case of existing buildings for technical reversibility. Spatial reversibility on the other hand can be applied to existing buildings and new constructions.

Spatial reversibility. Spatial transformations that result in change of building functions are described as spatial reversibility. Design process has to analyze the space, structure and its capacity to satisfy new functions. The transformation potential of the building is considered high if the number of modification choices are more and the effort required to transform is less. There are three types of transformations identified: mono-functional, trans-functional and fully transformable.

1. Mono-functional: Buildings under this group will have the ability to change layout typology within one function. For example, a building can change from cell office type to a meeting room office type or to an open office type without extensive efforts (Figure 4). Another example is the transformation of a family apartment into a studio apartment or an apartment for the differently abled.

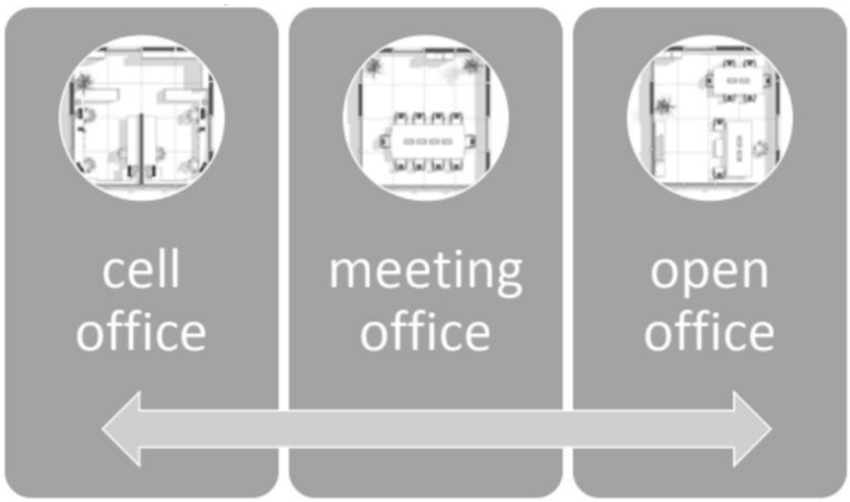


Figure 4. Example of mono-functional buildings. From “WP3 Reversible Building Design”, by E. Durmisevic, 2018, Copyright 2016 BAMB 2020.

2. Trans-functional: Buildings under this group will have the ability to change from one function to another (Figure 5). For example, a house can change into an office or a school without extensive remodeling work.

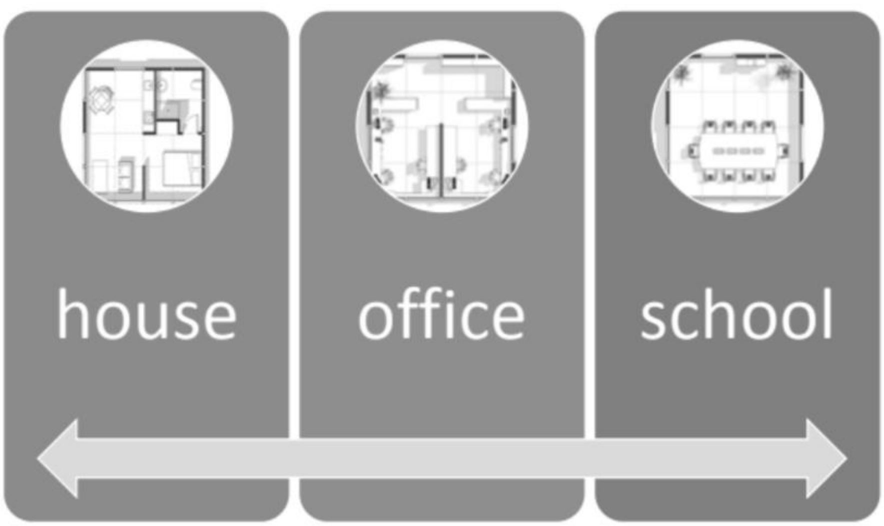


Figure 5. Example of trans-functional building. From “WP3 Reversible Building Design”, by E. Durmisevic, 2018, Copyright 2016 BAMB 2020.

3. Fully transformable: Buildings under this group are those that can transform for different functions and at the same time can be extended, shrunk in physical form or moved to another place (Figure 6).

Figure 6. Example of fully transformable building. From "WP3 Reversible Building Design", by B E. Durmisevic, 2018, Copyright 2016 BAMB 2020.

The transformation potential of a building is determined based on the type, number of options presented, and the effort required to transform it. The design parameters that affect the transformation potential for spatial reversibility are size of the building, typology of the building, type of construction, core position (the core is the base element of a building that provides structural stability), distance between one core and another, type of structural system, openings and ceiling height (Durmisevic, 2018). These design parameters will help determine the level and type of transformation for a particular space. The key parameters of reversibility on the other hand that determine the success of a reversible design solution are Independence and Exchangeability.

Independence describes coming up with a solution in which assembly, disassembly and transformation from one functional scenario can be perceived without affecting the other.

Exchangeability represents the creation of a design solution in which the elements, components or systems can be dismantled without damaging the surrounding systems and parts, thus not reducing their reuse in the future.

Figure 7. Four pilot projects and the associated pilot prototype. From “D13 Prototyping + Feedback Report”, by BAMB Buildings as Material Banks, 2018, Copyright 2016 BAMB 2020

The BAMB project is currently being explored through prototyping and pilot projects. There are four pilot projects and a few prototypes associated with each of those pilot projects (Table 1). The former two pilot projects will be new construction whereas the latter two pilot projects are remodel proposals. One or more prototype that will ensure the technical possibility of the building was studied under each pilot project. These prototypes are either existing systems and elements in the construction sector that are designed for reversibility and reusability or new systems and components that are being explored for reversibility. These projects will be discussed in the following sections.

Green Transformable Building Lab (GTB Lab)	
Focus:	• Reversible Building Design supporting the transformation in shape, size and function. • Investigation of business model needs and requirements of the local stakeholders
Type:	New Construction
Size:	minimum size:1615 sq.ft; maximum size: 12917 sq.ft
Function:	Initial: multifunctional space that can adjust to changing daily activities from work lounge to meeting space and lecture hall, and 1 housing unit. After the 1st transformation: Offices and housing
Country:	The Netherlands
Location:	IBA2020, Heerlen NL

Figure 8. Green Transformable Lab. From "D13 Prototyping + Feedback Report", by BAMB Buildings as Material Banks, 2018, Copyright 2016 BAMB 2020.

Green Transformable Building Lab (GTB Lab). The GTB lab will be the center for innovation of the BAMB project. This building itself will be designed as a dynamic and evolving structure that can change form and function. It will be transformed once in every year. Figure 7.a demonstrates the transformation scenarios of the GTB lab. The prototype tested under this pilot project was called the GTB Lab Profile (Figure 7.b) which was a multifunctional steel structure that will make this design of the building possible. This steel structure will form the primary exterior wall support system and an element of the GTB lab. It can be used as the base support for the sun panels, the ceiling, partition walls, façade or any cantilevered elements.

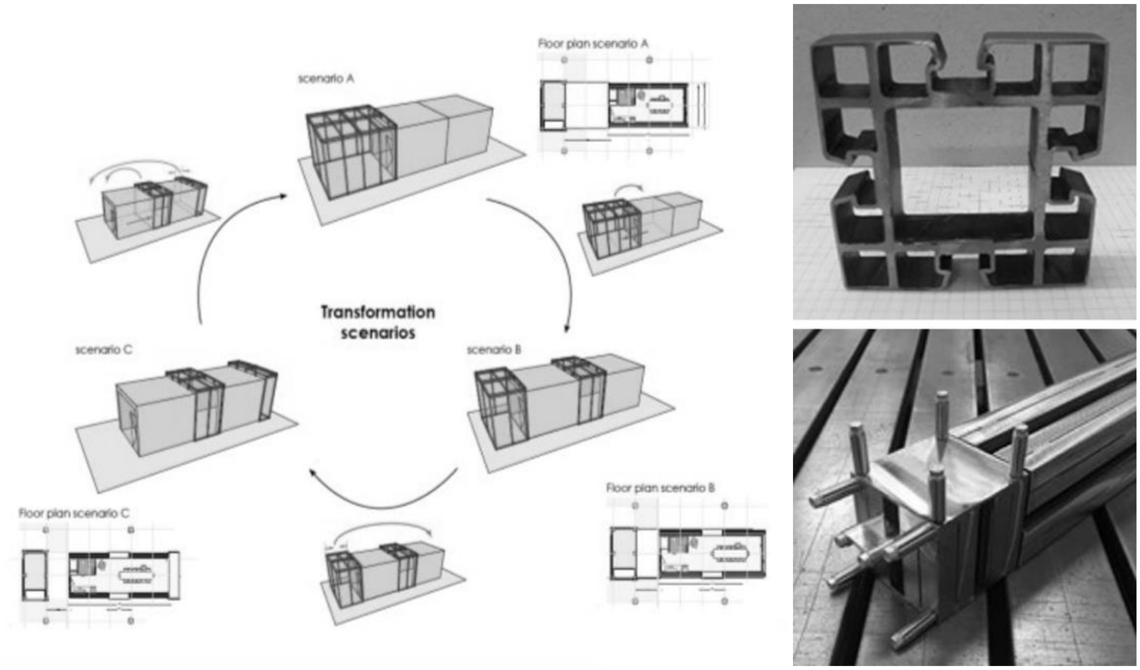
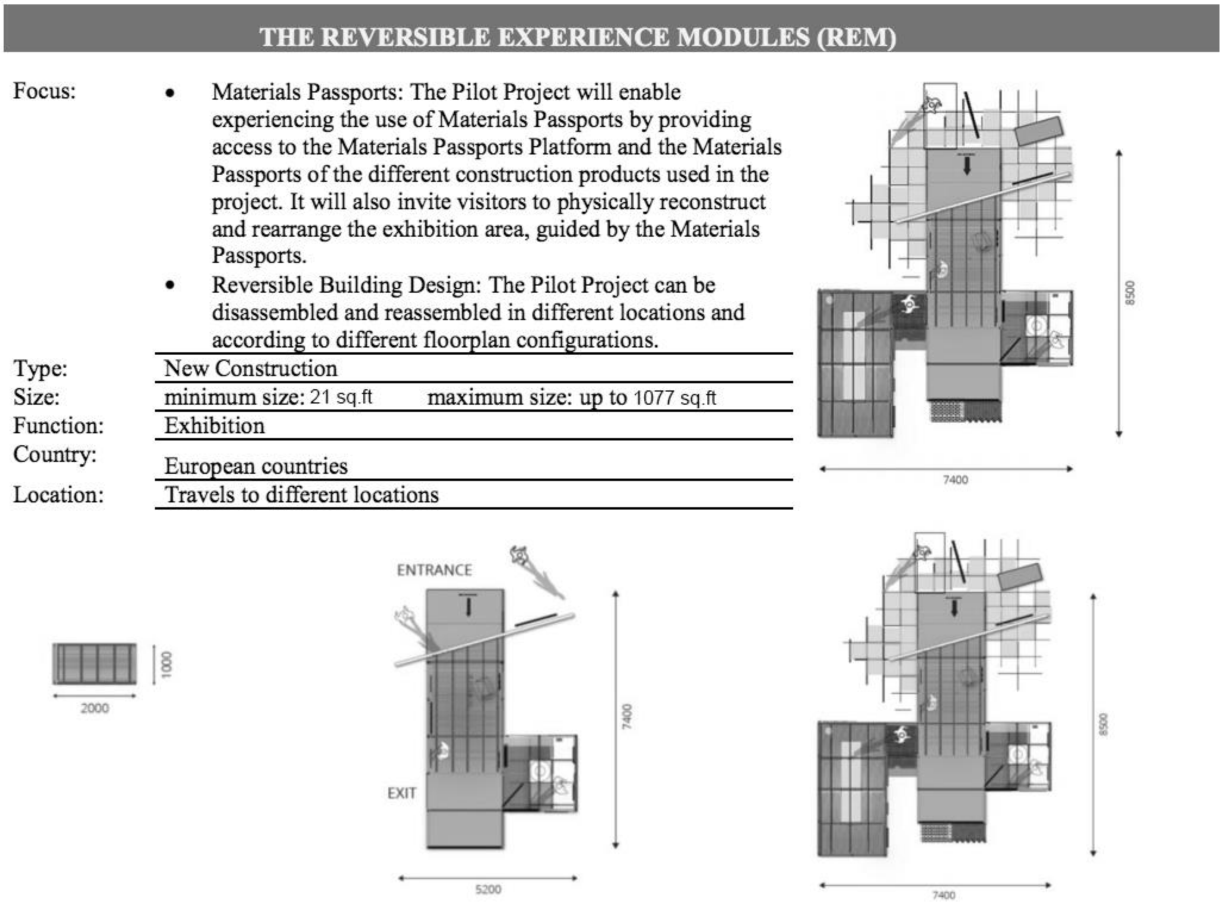


Figure 9. (a) Transformation scenarios of GTB lab (b and c) prototype steel structure.

Reversible Experience Modules (REM). The REMs is a display of about 70 different systems and products that were invented for recovery, recycle and reuse. These are a set of products that are already available in the market and have been included in the material library of the BAMB project. The REMs exhibit aims to demonstrate how material passports for reusable building elements can guide professionals to design flexible buildings. Visitors were invited to interact with the different products and reconstruct the exhibition display using those products. This enabled them to realize circular and adaptable structures. The seven elements tested using prototyping are Octanorm Aluminum profiles for wall construction (Figure 8.a); Octanorm Aluminum ceiling construction (Figure 8.a); birch panels (Figure 8.b); Hunter Douglas Heartfelt ceiling (Figure 8.c); Desso carpet tiles (Figure 8.d); lift-off hinges (Figure 8.e); Doorhandle (Figure 8.f).



THE REVERSIBLE EXPERIENCE MODULES (REM)	
Focus:	• Materials Passports: The Pilot Project will enable experiencing the use of Materials Passports by providing access to the Materials Passports Platform and the Materials Passports of the different construction products used in the project. It will also invite visitors to physically reconstruct and rearrange the exhibition area, guided by the Materials Passports. • Reversible Building Design: The Pilot Project can be disassembled and reassembled in different locations and according to different floorplan configurations.
Type:	New Construction
Size:	minimum size: 21 sq.ft maximum size: up to 1077 sq.ft
Function:	Exhibition
Country:	European countries
Location:	Travels to different locations

Figure 10. Reversible Experience Modules. From "D13 Prototyping + Feedback Report", by BAMB Buildings as Material Banks, 2018, Copyright 2016 BAMB 2020.

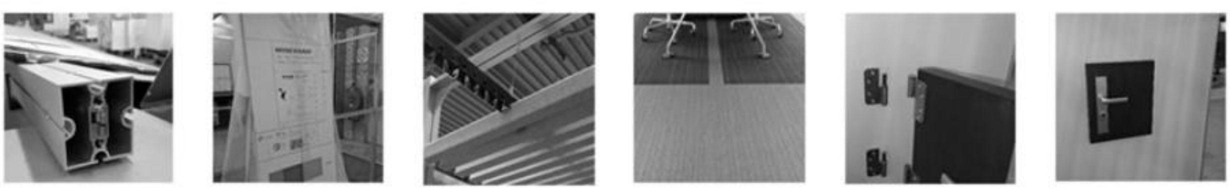


Figure 11. (a) (b) (c) (d) (e) and (f) Prototypes of REMs. From "D13 Prototyping + Feedback Report", by Brussels Environment and UTwente, 2018, Copyright 2016 BAMB 2020

Sarajevo Green Design Centre	
Focus:	• Reversible Building Design supporting the transformation in size and internal floor plan • Investigation of business model needs and requirements of the local stakeholders participating in the project
Type:	Refurbishment
Size	minimum size: 1938 sq.ft maximum size: 2691 sq.ft
Function:	Exhibition and office space
Country:	Bosnia and Herzegovina
Location:	Mostar

Existing situation

Future situation

Figure 12. Sarajevo Green Design Center. From "D13 Prototyping + Feedback Report", by BAMB Buildings as Material Banks, 2018, Copyright 2016 BAMB 2020

Green Design Center (GDC). An old military storage facility in Sarajevo, Bosnia and Herzegovina, will soon become the Green Design Center (GDC) which will be a platform for innovation and education and bring together many creative industries from around the world interested in the concept of Reversible Building Design. The design of the core will have the capacity to change function from exhibition to workshop to office space and the façade of GDC will be transformable and multifunctional. The existing structural elements and the façade filling between the columns on the second floor will be demolished to make space for new reversible façade elements. The exhibition which is the main public function will be located on the second floor for easy access by ramp and can transform as office/work space during winter. The first floor will remain as a workshop space connected to the exterior terrace enabling users to work outside during summer. A demountable and interchangeable module that can be adjusted to varying requirements of the façade in the future is currently being explored through prototyping under this project.

Circular Retrofit Lab	
Focus:	Reversible Building Design supporting the transformation of the internal floorplan and facade Investigation of business model needs and requirements of the local stakeholders participating in the project
Type	Refurbishment
Size:	2153 sq.ft
Function:	**Second floor:** Housing (1nd Scenario) Office space (2nd Scenario) **First floor:** Dissemination Space BAMB results
Country:	Belgium
Location:	Brussels (VUB University Campus)

existing situation

future situation

Figure 13. Circular Retrofit Lab. From "D13 Prototyping + Feedback Report", by BAMB Buildings as Material Banks, 2018, Copyright 2016 BAMB 2020

Circular Retrofit Lab (CRL). The last on the list is a retrofit pilot project that aims to explore module reconfiguration, internal and external transformation of a prefabricated student housing unit located on a university campus in Belgium. There are currently 352 housing units on this campus that were built as temporary units in 1973. They have been sustained through the years and are looked upon as iconic structures of the campus. However, the comfort conditions of these units are far below modern standards and it has become a necessity to repurpose them. The project will preserve maximum structural elements in the units and explore different wall-filling and partition wall options that can convert them into reversible buildings in the future. Five different wall systems that will enable the internal transformation of these units have been examined through prototyping.

The idea of reversible building design is exciting as a whole and represents a potential direction for the future of the building sector. Although it might be impossible to design using all the ideologies of BAMB which are still evolving, it is doable to utilize some of the intentions of reversible building design in the design proposal of the Omaha Rail Depot building.

Project BAMB is a much more elaborate technical effort which embraces circular built economy and examines every part of the building on their reversibility. Only the information that will be appropriate for the purpose of this project has been presented in this chapter. While adaptive reuse on one hand is about reusing old buildings for new functions, BAMB on other hand is an effort to make each and every component of a building reusable in the future. The idea of spatial reversibility explained in reversible building design has been applied in the adaptive reuse of the Omaha Rail Depot building.

Chapter III: Design Methodology

The data collection phase of the project reviews different principles and guidelines for adaptive reuse of historic buildings. Examples of adaptive reuse and dynamic building designs solutions were also discussed as part of the background research and predesign phase. The design stage of the project will produce a redesign proposal for the Omaha Rail Depot building. This chapter will explain how the project was approached, the materials and software that were used to produce the design and an outcome analysis.

Approach

The project was approached in the following three phases:

- Research Phase: The first stage of the project is the literature review of adaptive reuse principles and the exploration of reversible building design through pilot projects. The Institutional Review Board (IRB) approval for conducting interviews was granted and an interview was conducted with the owners of the depot to gather data for research and design. The initial preparation for the design phase was completed including the generation of a three-dimensional model of the existing Omaha Rail Depot building which was required for the presentation of the proposed design solution.
- Design Phase: The building was analyzed for structural and heritage constraints. The gathered data from the interview was utilized to identify three different functions for the depot and to guide the design of the depot. The design phase can be further classified into a schematic design phase and a design development phase. A concept was developed in the schematic design phase. The design was refined using feedback from the thesis committee in the design development phase. An interior mood was

then chosen, and suitable finishes and furnishings were selected for final presentation. An exhibition was curated, and the completed design was presented in the student gallery as floor plans, renderings and animations.

- Analysis Phase: The last phase was to assess if the design solution of the Omaha Rail Depot building has taken into consideration the different adaptive reuse guidelines from the background research. Feedback received from the thesis exhibit general audience was analyzed and utilized to determine the success of the project. The implementation to the field of design was also explained in this phase.

Participants

The project had a limited number of participants for the interview. It was limited to the owners of the Omaha Rail Depot building and a few professors at the university who were very familiar with the depot and its structural constraints. The main purpose of the interview was to gather general information about the Omaha Rail Depot and find out what kind of functions can fit best in the building. With all the information gathered, a schematic design was produced. However, feedback was obtained from all visitors during the thesis exhibit and was utilized for improving the design.

Materials

Software used during the process were Autodesk AutoCAD, Google SketchUp with V-Ray plug-in and Adobe Photoshop. Autodesk AutoCAD is the first significant Computer Aided Design program that was developed to draft two-dimensional building plans. Although three-dimensional modeling is possible with AutoCAD, Google SketchUp was preferred for its speed and ease. Production of walkthroughs and rendered images using Sketch Up was also faster than rendering using other software, including AutoCAD. Adobe Photoshop is probably the most popular and widely used photo editing software that can also produce animations using photo images.

The initial two-dimensional floor plan for the Omaha Rail Depot was formulated using Autodesk AutoCAD. The base plan produced using AutoCAD was later exported to Google SketchUp for three-dimensional modeling of the structure. The rendering and walkthroughs were created using the V-Ray plug-in on Google SketchUp. Image rendering is not possible in SketchUp without an external plug-in such as V-Ray installed to the main software. The final editing of rendered images, visuals and presentation boards was completed using Adobe Photoshop.

Chapter IV: Adaptive Reuse of Omaha Rail Depot

The Omaha Rail Depot building is located at the intersection of the 4th Street West and Wilson Avenue West in Menomonie, Wisconsin. Three train depots once existed in the region. The first was in North Menomonie, the second was adjacent to Riverside Park, and the third was the Omaha Rail Depot. The Omaha Rail Depot is one of the two historic stations that are still standing today in Menomonie. This building has not been used to its full potential or really much put in use since it lost its function as a train station and then remained vacant for several decades. This is one main reason for choosing the depot for this project for it can be seen as a representation of many other similar potential buildings that often remain vacant for long periods. The project aims to produce an adaptive reuse design that can be looked upon as an example in future adaptations of such vacant and underutilized buildings.

Interviews were conducted to gather opinions for rehabilitation, to analyze the existing conditions of the structure and to define problems for the design phase. During the programming phase, the historic and architectural significance of the building was also studied, and this helped in making a few design decisions during the process. A design concept was developed, and schematic sketches were produced. During design development, the codes were checked, and the technical possibilities were explored. Design changes were made and then the final renderings were produced.

Architectural Significance and Building Analysis

The Madison headquarters of the Wisconsin Historical Society holds an article about the Omaha Rail Depot building in a local journal published soon after it was built which describes the entire depot in detail. Here is the description of the interior as reported in the *Menomonie Times* (Figure 9) in 1906: “The interior is beautifully simple and convenient. The whole is finished in Norway pine, stained a beautiful green through which the grain of the wood appears. All the wood work was gone over three times by expert painters and was then hand rubbed. The woodwork alone is worth the journey down the hill. The walls are finished in a light color that contrasts with the darker wood and thus makes up for the lack of other decorations. The main waiting room is 26x29 feet and contains seats for thirty-six people. It is well lighted by windows and is probably one of the most cheerful waiting rooms along the Omaha line. Immediately from the main room, the architect thoughtfully provided a beautiful little room especially for the women. This room beside the regular benches has numerous chairs in which it is a pleasure to rest. A door from this room leads into a toilet room in which everything is kept in the most sanitary condition, wherein those who travel from a distance to take the train will find every convenience for removing the dust and grime of travel."

MENOMONIE, WISCONSIN, TUESDAY, FEBRUARY 13, 1906. Menomonie Times

Menomonie's New Omaha Depot.

Handsome New Structure Just Completed at a Cost of $15,000. Built of Menomonie Brick. Other Improvements to the Amount of $5,000 Made.

There are but few in this city who two years ago would have given much credit to a statement that at this time the old barn like structure that for generations has done duty as a depot for the Omaha railroad would be forced to give way to a handsome structure wholly in keeping with Menomonie ideas of beauty and with the prominence which this city holds by reason of its educational institutions; yet, this week, the TIMES is able to give its readers a pictorial representation of that kind of a structure and at the same time announce that it is used daily and that the old depot no longer exists so far as the passengers are concerned.

Menomonie has long worked for a new depot. Years and years ago the Advancement association first took up

was happy for both sides.

The new depot is indeed a thing of beauty. The cut gives a better idea of its outside appearance than could be done with words. It is built of Menomonie brick and is trimmed with Kasota stone.

The interior is beautifully simple and convenient. The whole is finished in Norway pine, stained a beautiful green through which the grain of the wood appears. All the wood work was gone over three times by expert painters and was then hand rubbed. The woodwork alone is worth the journey down the hill. The walls are finished in a light color that contrasts with the darker wood and thus makes up for the lack of other decorations.

The main waiting room is 26x29 feet and contains seats for thirty-six people. It is well lighted by large win-

Jinks who left for Rusk. Even Jim Manley has absorbed some of the sanctified spirit and when he says that "they're off at the quarter pole," he says it in a most respectful way and touches his hand to his cap as he bows courteously to Harry.

Between the office and the baggage room is the boiler room, containing a bin for 20 tons of coal, the heating boiler and a pump for the water works —the depot being away from the city mains has a pumping plant of its own, a tank holding 500 gallons occupying the space over the boiler room.

The domain over which Chas. Wagner presides is a room 18x24 feet large enough to hold any baggage that may be unloaded, so situated that the noise of loading and unloading trunks can not disturb the sleepy buss men in the waiting room. Charlie never was much

Figure 14. TIMES article on the Omaha Depot.

The building is on a rectangular plot and measures roughly 30 feet in width and 160 feet in length. It is an Astylistic Utilitarian building according to the property records of the Wisconsin Historical Society. The hipped mansard roofing represents the French Eclectic style of architecture. The building is built of Menomonie bricks and has Kasota sandstone bricks running along the roof line and its bottom. The porch in the front is where the buggies waited to pick up people from the train. Large bay windows are located in the area which used to be the depot office.

While being used as a feed mill a temporary extension was made on the northern side of the depot. Removing this structure could bring back its initial appearance but the removal now after so many years could cause damage to the existing frame. The actual building exterior has not undergone any modifications in its structure, except for its roof which was once replaced. The roof was originally cedar shakes, as seen in figure 10, which have been replaced with newer shingles. Carved posts support the roof overhang allowing people to walk around the building without getting wet. The Menomonie bricks and Kasota stone are considered important and are retained until today because they were locally produced during the period the building was initially built. The windows are looked upon as attractive elements in the façade which cannot be altered. The whole building was heated by steam and lighted with electricity. Gas connection is also available.

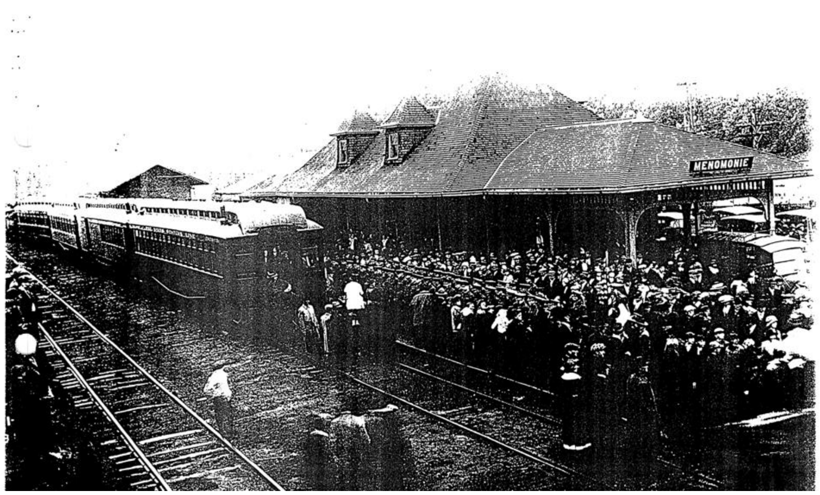


Figure 15. Omaha Depot.

The building was analyzed before its current renovation as a brewery. Inside the depot, a structural wall separates the northern zone from the larger portion of the building. This wall (figure 11) cannot be demolished for it is load bearing. The ceiling height is twelve feet. The ceiling also has leaks and requires complete rework which could cost more. The depot has about four large doorways which could be considered too many openings for a building of this scale when adapted for residential or office purpose. Most of the windows need new glass panels. There are no bathrooms available inside the building. The wood flooring inside the depot requires a suitable preservation treatment. The building lacks a service and mechanical core. The depot also does not meet the standards for accessible design. For example, the ramp in the entrance does not have a slope ratio of 1:12 which is required for wheelchair accessibility. The design of the depot had to answer all of these issues that exist in the building.

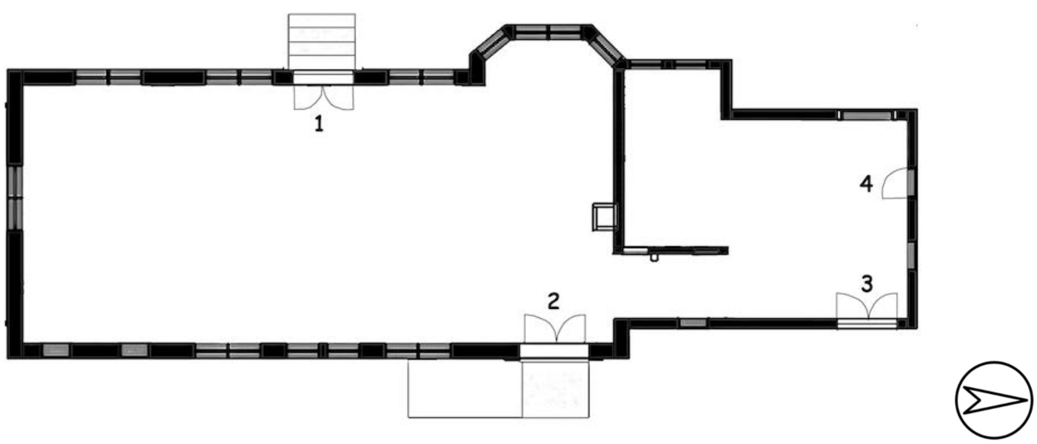


Figure 16. Floor plan showing structural wall and the openings.

Almost all the participants in the interview felt that the depot was suitable for both residential and commercial functions. One of the participants even had thoughts about buying it and making it as a personal live/work studio. Being only a few minutes away from the university the depot still provides the privacy required for a residence and the peacefulness required for a work space. The structural wall on the inside could be considered a downside for it interrupts the ability for an open floor plan. When asked if they would be willing to share the space for an office, all the responses were positive. Even those who were only traveling to Menomonie occasionally loved the idea of having it as their work space. This sparked the idea of converting it into a co-working office. A historic themed restaurant also came up as an alternative suggestion for the depot. The lack of public galleries in the city was also suggested and the depot could be used as gallery or a museum.

Design Concept

> "Good conservation practice allows a structure to evolve and adapt to meet changing needs while retaining its particular significance" (Ireland's Department of Culture, Heritage, and the Gaeltacht, 2004).

Based on the interviews, three suitable functions identified for the building are a communal residence, a co-working office and an art gallery. The initial decision was to present three different adaptive reuse solutions for the depot. Later, it changed to integrate the three different functions under a single roof. The new idea was to capture the essence of reversible building design for spatial planning and to use it in the adaptive reuse of the Omaha Rail Depot. The residential needs in a community like Menomonie keep changing. The use of residential spaces usually depends on university students. During semesters more, houses are rented and that is not the case during the summer vacation. For summers, the building could be alternatively used as a co-working office or a gallery. The co-working office will also be an addition of new concept for Menomonie. The solution is to design it as a space that can change its function periodically. The depot will be designed to transform with minimal efforts from a communal living to a co-working office or into a gallery.

Schematic Design

Initial preparation of the floor and zoning was required for locating the service core and common utilities like a bathroom that cannot change during the transformation. The structural wall naturally separates the interior into two sections as shown in figure 12. The decision was to use the smaller portion of the building (zone B) as the static core of the building and for functions that do not change. Zone A on the other hand can be designed to accommodate the changing functions. Also, the number of doorways will be reduced to two. It was realized that the doorway on the western side of the building next to the bay window was not often used after the building stopped functioning as a depot. It also reduces the possibilities of using the larger zone in the new design proposal. Similarly, the doorway in eastern wall of zone B will also be filled in on the inside to make space for a corner kitchen. The inside of this doorway will be filled, and the outside doors will only remain as an architectural element to preserve the original exterior appearance of the depot.

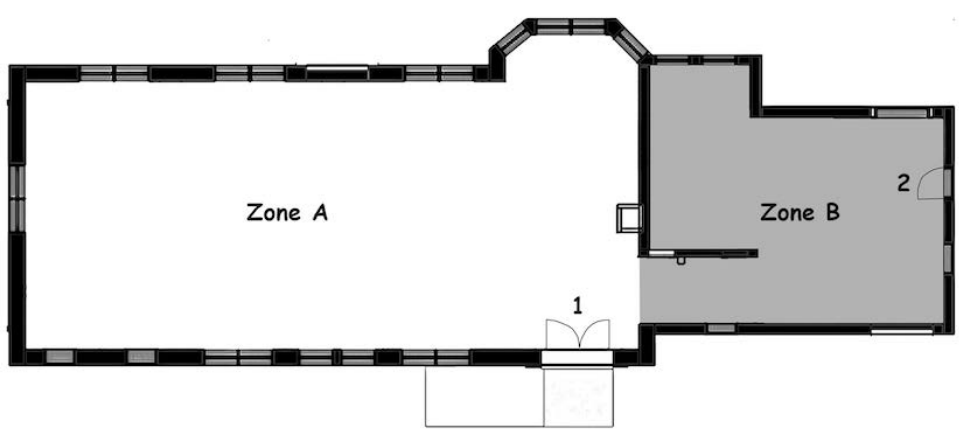


Figure 17. Schematic zoning.

Code review. The occupancy classifications for residence, co-working office and gallery are Group R-2, Group B and Group A-3 respectively (IBC, 2012). The occupancy load was calculated as 11 for communal living, 22 for the co-working office and 42 for the gallery. The number of exits required for this size of a building is one in all three scenarios. The exit distance cannot be more than 100 feet (without sprinkler) in the case of communal living and 200 feet (without sprinkler) in case of co-working space and gallery. Any dead-end corridor in the building should not exceed 50 feet. The total number of bathrooms required is one in all three cases.

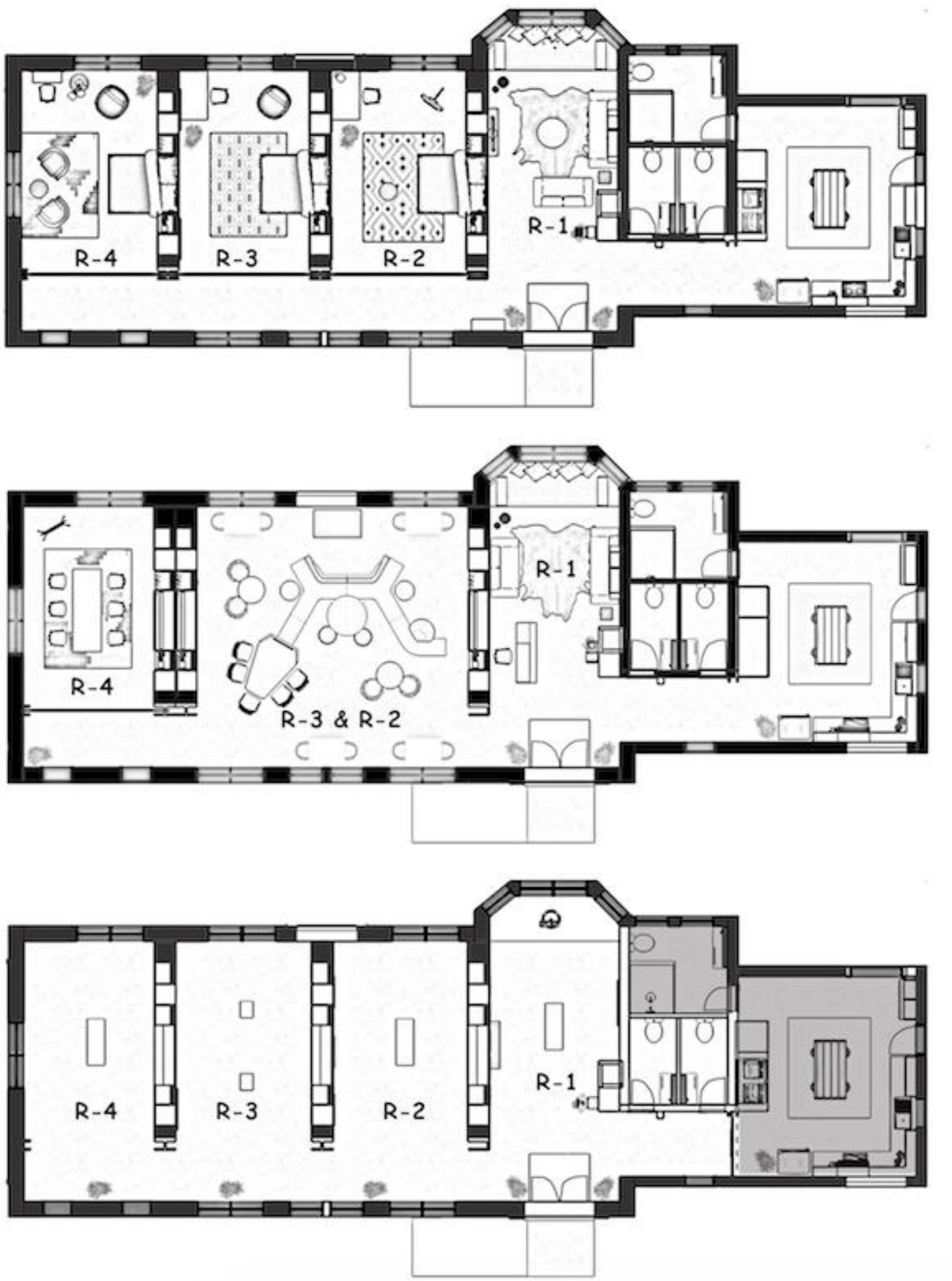


Figure 18. Conceptual floor plan. a) Communal living b) Co-working office c) Gallery

First scenario. The first scenario is the communal living dwelling. The requirements for a three-bedroom communal living residence is a common living room, bathroom, bedrooms, kitchen, dining room, storage and services. With these requirements a floor plan was drafted to scale (figure 13.a). As planned earlier Zone B (figure 12) will house the static core in the building which is the kitchen, dining room and services. The space was designed with a common living space and three bedrooms on the larger side of the depot. These rooms are represented as R-1, R-2, R-3 and R-4 respectively in figure 13. These four rooms will be the ones that undergo transformation. They will be designed with movable walls and pull-out partitions that will make it possible to open up the space for the second scenario. The beds will fold into the movable walls and additional storage will also be provided in these walls that divide the rooms. Initially one full bath and two toilets were planned for easy access during transformation into co-working space and gallery.

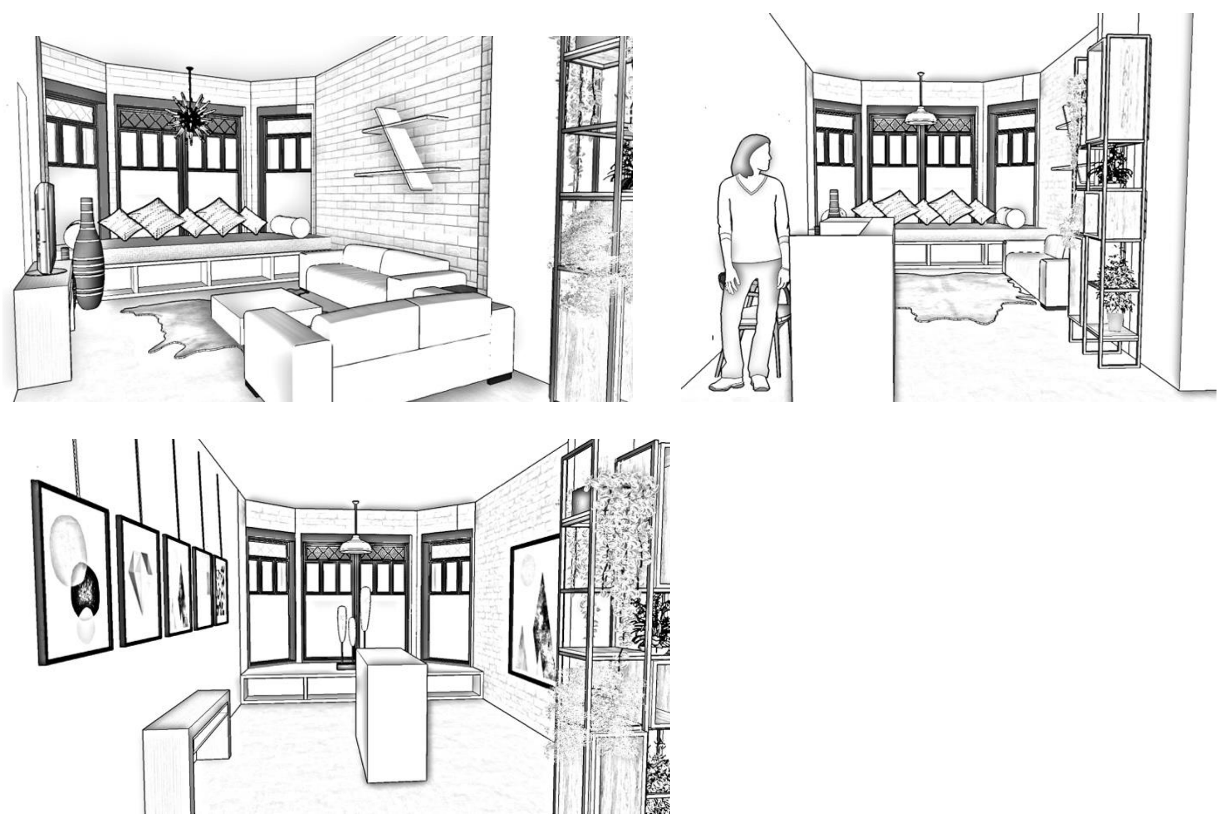


Figure 19. R-1 transformations. a) First Scenario b) Second Scenario c) Third Scenario

Second scenario. The second scenario is the transformation into a co-working space. The requirements for this are a reception/front room, main hall/workspace, a conference room, breakout room/kitchen, toilets, storage and services. The kitchen, dining, storage and bathrooms can be considered as common amenities in the first and second case and hence were designed in the static core of the depot. This core remains unchanged in the second scenario. To make the main hall a larger space two rooms, R-2 and R-3, will be combined. The beds from the first scenario will fold into the walls. The wall that separates these two rooms will move to the south and make space for the main hall. The tables used in the communal living residence will expand further and be used in the co-working space. R-4 will become the conference room in the co-working space. Most of the furniture will be relocated and reused in the second scenario. Excess chairs for the main hall and conference will be available from the storage. The toilets that are accessible from the main corridor will be utilized in the co-working office.

Figure 20. R-2 transformations. a) First Scenario b) Second Scenario c) Third Scenario

Figure 21. R-4 transformations. a) First Scenario b) Second Scenario

Third scenario. The third scenario is the transformation into a gallery. The requirements for this are rooms to display art work, storage, toilet and service rooms. The gallery users however do not need access to the service rooms. The kitchen and dining space from the first two scenario are not required in the third scenario. Therefore, they will be closed using a foldable wall system as shown in figure 13.c. Only Zone A (figure 12) of the depot will be utilized for the third scenario. All the furniture will be stacked and moved into the storage space. Adhesive techniques that require no nails and that leave behind no residue will be used to hang artwork. If more surfaces are required for display, the wall between R-2 and R-3 can be pulled back into its position as in first scenario and the four rooms R-1, R-2, R-3 and R-4 can be utilized for gallery space (figure 13.c), but this is only an option. The walls can also retain their position in the second scenario and make a larger gallery and with space for more pedestals.

Figure 22. Corridor to kitchen transformations. a) First and Second Scenario b) Third Scenario

Figure 23. Kitchen and dining.

Design Development

Two of the problems that were identified in the conceptual stage was accessibility and need for storage. The toilets did not meet the Americans with Disabilities Act (ADA) standards for accessible design for the gallery and co-working space. As per the code review it was sufficient to have one lavatory for a facility of this size. To make the bathrooms larger and wheelchair accessible the design was revised to have one bathroom and one wheelchair accessible toilet. Similarly, the ramp that leads to the main door did not meet the slope ratio for wheelchair access. The ramp was made accessible by changing the slope ratio to 1:12. The main corridor was widened to six feet. More storage was added into the depot by adding a small room in the south-eastern corner right before the entrance to R-4 (figure 19). For design development, fixtures and furniture were selected and different types of systems and components were explored to check the possibility of movable and foldable walls. Sustainable material choices will be made and any existing wood inside the depot will be recycled and used for the bathroom doors and furniture.

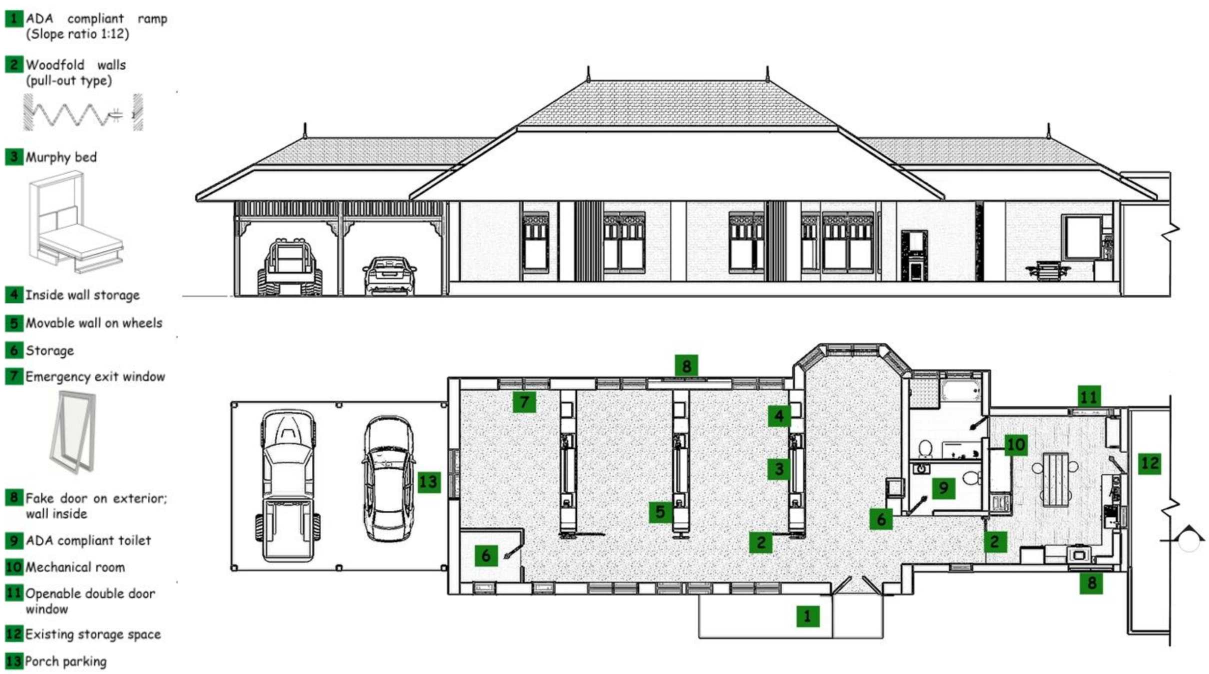


Figure 24. Annotated floor plan.

Systems and components. The two main systems that make the transformation possible are the movable wall and the foldable partitions. Although furniture does play an important part in creating this kind of design solution, it is usually not considered as building components that are permanent (Durmisevic, 2018).

1. Movable wall component: Several systems that enable the walls to move either on tracks or on wheels have been developed in small apartment designs for conserving spaces and making homes multifunctional. A Spanish firm, PKMN Architecture, has designed a transformer wall on wheels that makes a 753 square foot apartment adapt to different requirements (Mok, 2015). Similarly, a custom wall that can move on wheels (figure 20.a) can be produced for the depot that will also have a foldable double bed and plenty of storage integrated in it.
2. Foldable partition walls: Partition walls are required to close R-2, R-3 and R-4 in the communal living residence and to shut off the kitchen from zone A while being used as the gallery. The product identified for this purpose is the Accordian Woodfold Series 240 Vinyl Laminate (figure 20.b). The wood fold partitions operate on tracks that are fixed to the ceiling. They are sound proof and easy to use with handles on both sides to operate. These partitions are available in different colors and textures for a maximum ceiling height of twelve feet that can stretch to any length required (see Appendix B for more images).

Figure 25. Custom wall on wheels and accordion woodfold partition.

Color scheme. The finishes and furniture will work together to bring in an eclectic vibe by mixing different styles. Warm and rustic pieces will be utilized while at the same time clean white lines and trendy accessories will modernize the space. Unexpected colors, patterns and country styles will help to bring out this mood in the interior.

Furniture and finishes. Furniture was chosen to bring out the eclectic style and color scheme. The tables that will be used in the bedrooms and the co-working main hall are the same. They are expandable to five different lengths. All the chairs used in the second scenario are stackable and easy to store. The chairs and sofas will be lightweight and easy to move. Custom seating will be designed for the bay window for users to sit, relax and read. Recycled wood from the depot will be utilized to produce doors for the bathroom, a custom wood dining table and floating wall shelves for the kitchen. The existing wood floor in the kitchen will be treated, stained and reused. A light blue terrazzo floor will be used in the rest of the depot to provide a subtle contrast for the white walls. Sustainable and recycled fabrics and upholstery were preferred for the furniture.

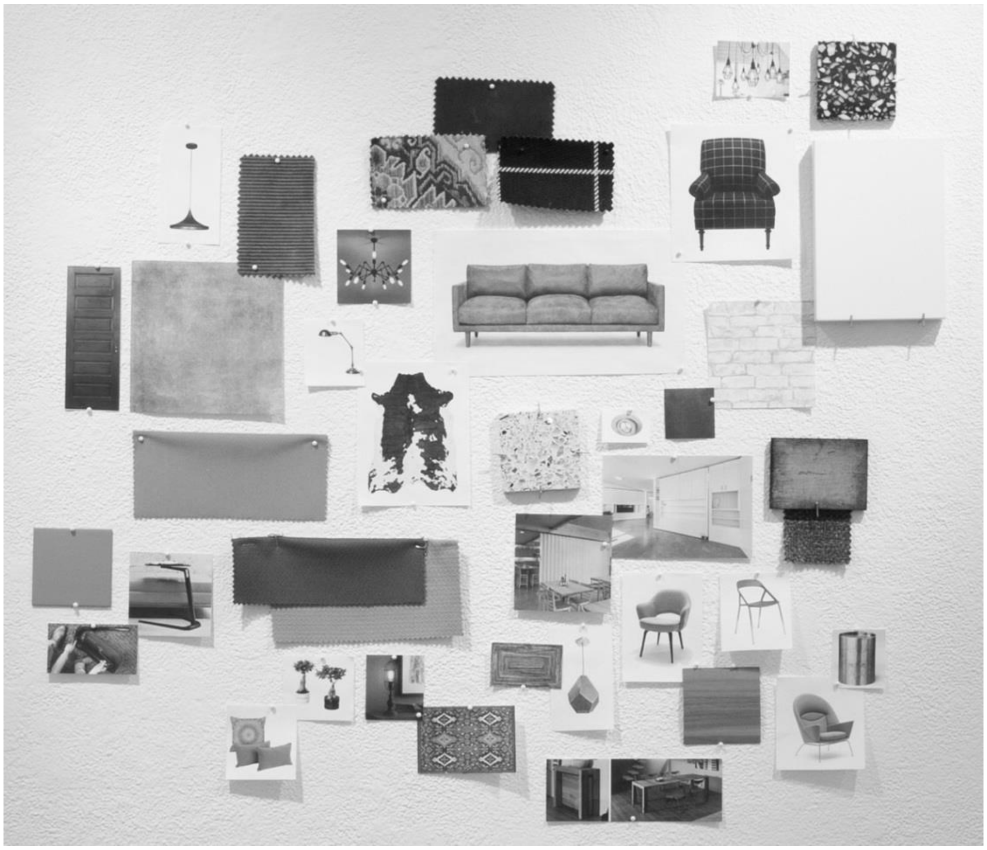


Figure 26. Material palette.

Lighting. For a space with ceiling height of twelve feet using more pendant type fixtures help to break the scale and make it feel residential and attractive. Recessed Light Emitting Diode (LED) lights that can change angles, which will not interrupt the movement of wall during transformation from one scenario to another, will be used for the rooms R-2 and R-3. These recessed lights can also be used as spot lights for artwork displays.

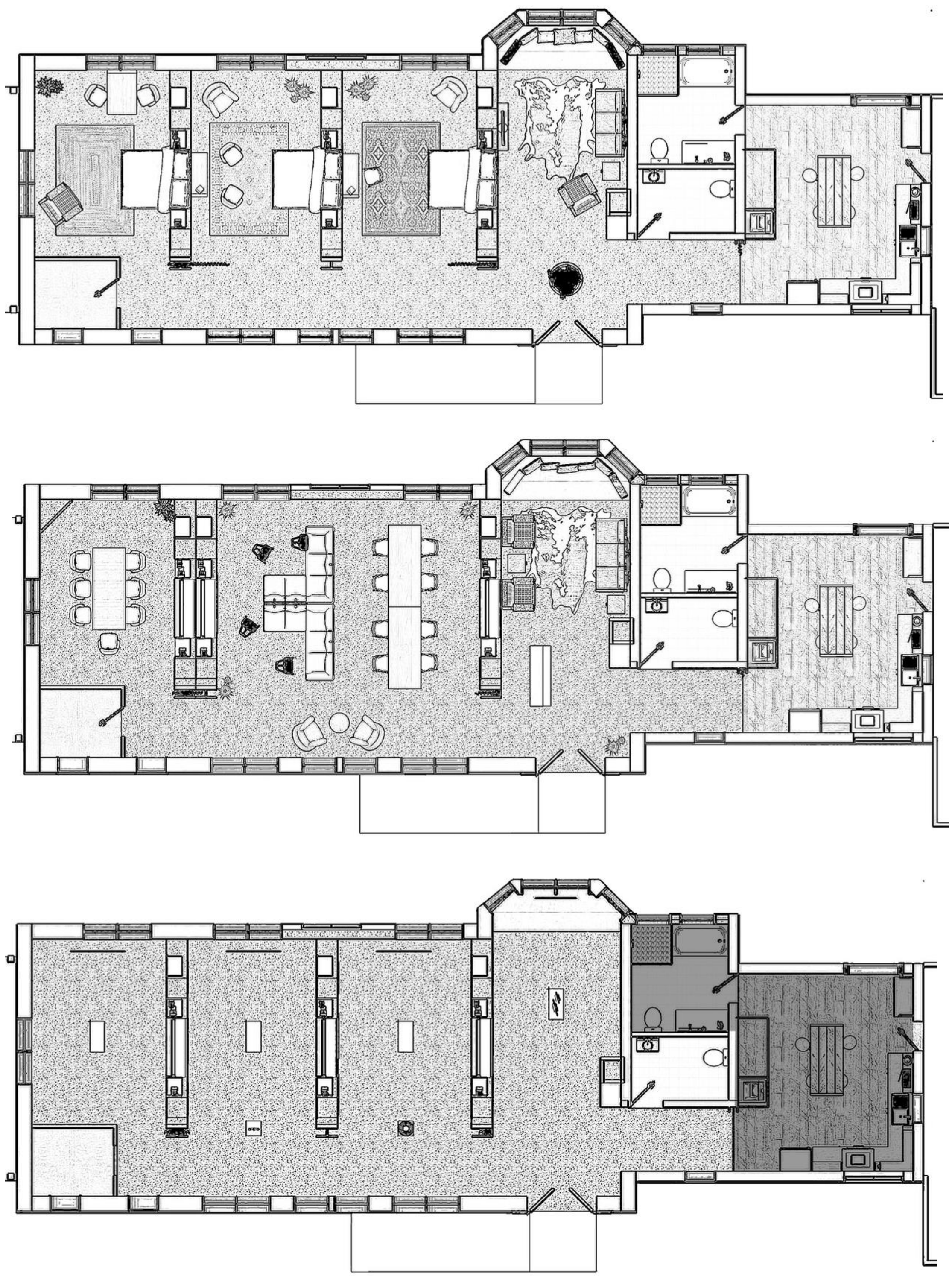


Figure 27. Final floor plan. a) Communal Living b) Co-working office c) Gallery

Figure 28. R-1 first scenario.

Figure 29. R-1 second scenario.

Figure 30. R-1 third scenario.

Figure 31. Kitchen and dining in all three scenarios.

Figure 32. Corridor to kitchen in first and second scenario.

Figure 33. Corridor to kitchen in third scenario.

Figure 34. R-2 in first scenario.

Figure 35. R-2 and R-3 in second scenario.

Figure 36. R-2 and R-3 in third scenario.

Figure 37. R-4 in first scenario.

Figure 38. R-4 in third scenario.

Chapter V: Summary and Implications

The project aimed to demonstrate a new adaptive redesign solution to an old existing building and ensure constant use of it by creating three different functions for the same building. The design was guided by a set of eight adaptive reuse principles that were discussed in the background research. This section will discuss how these adaptive reuse principles have been utilized in the final design solution (Table 6).

Table 1

Checklist to Assess the use of Adaptive Reuse Principles

Adaptive Reuse Principles	Assessment
1. Analyzing and understanding the significance of the structure as an essential and expressive part of the adaptation project	Through building analysis, the structural possibilities and constraints were identified in the programming phase and used to guide the proposal
2. Keeping a building in use by finding a new use which is suitable to the heritage value of the place	The design proposes the depot to change functions seasonally enabling constant use and protection of the structure
3. Ensuring reversibility of alterations and avoiding the use of process or materials whose future removal would damage the original historic fabric	The new functions for the depot were based on opinion from people and based on community need to ensure the success of these functions in the long run
4. Promoting minimum intervention based on respect for the existing building	No extensive construction on the interior and the exterior will be required. The three walls on the interior are not permanent features that affect the existing structures now or in the future
5. Respecting maximum retention of fabric and the least possible loss of the original fabric	The new design does not require any demolition of the interior or exterior elements. The window glass and any wood available in the interior will be treated and reused
6. Conserving the relationship between the setting and preserve considerable views to and from the historical place	If the roof requires replacement, then it should be restored in the way it was initially built.

7. Providing for the long-range management and viability of the historical structure	The success of the new proposal will ensure regular use and maintenance
8. Reveal and interpret the heritage significance	Reusing fabric such as the Douglas fir wood available on the interiors will help preserve the heritage of the building on the inside

The first principle emphasized the importance of analyzing the depot. Through analysis the heritage of the depot and most importantly the structural constraints it laid for the new design proposal were understood. It was also realized that the historical value of the building was tremendous and because of this the building will be eligible for tax credits if the design follows adaptive reuse principles. Two important things identified during this stage were the structural wall and the hindrance with too many openings. These were taken into consideration while zoning the space for schematic design. The ability of the depot to change functions for the varying needs of the community ensures that the building will be constantly used. Suitable functions that have less chances of failure in a university community like Menomonie were determined and then chosen for design which means no demolition or future redesign might be required. These explain the consideration of the second, third and seventh principles of adaptation.

Minimum intervention was aimed for and the major walls in the design will not be permanent structures that are attached to the existing building frame. Removing these structures anytime in the future will not affect the existing structure. Reusing all the wood available in the interior and replacing only those glass panels on windows that really require replacement will help retain the heritage value of the interior. These ensure the consideration of the fourth, fifth and eighth adaptive reuse principles. The sixth guideline applies to the exterior façade. The condition of the roof could not be determined. If the roof requires replacement, then taking it back to the original cedar shakes will bring back the old charm.

Feedback from Audience

The project was exhibited, and responses were gathered (Appendix C). The general feedback from the audience on the idea of trans-functional spaces was positive. Many visitors to the gallery thought that the Omaha Rail Depot building had tremendous potential and would be willing to buy and use the building as a live/work space if they had the financial ability to acquire it. Two of them mentioned that most unique buildings in Wisconsin are usually made into breweries or restaurants and it is good to see a different solution for reusing old buildings. People also shared their own interpretations on the design solution. One of them mentioned that the interior format and ability to move the walls can also transform the building into a short-term rental facility for travelers if needed.

The whole idea of trans-functional spaces is still evolving, and it is not commonly seen. Hence, it was difficult to understand the technical difficulties of the design and the long-term cost benefits of the idea. Due to time limitations, it was also not possible to determine if it can be completely executed as proposed. More analysis on the technical and a cost benefit analysis which would consider the long-term effects such as the tax credits against the expenses to execute the design could have helped to understand the level of success.

Implications

The project set out to introduce a new futuristic and sustainable concept in the design of an existing old building. It is important, in fact a necessity, for designers to consider the future needs of both society and environment while designing spaces because we construct and destroy within a few years as needs keep changing. Development of certain technology is driving the change in the use of buildings and infrastructure. Incorporating these technologies is easy in case of new construction but not so in existing buildings which are usually on the far end of technology. This requires the exploration of incorporating these growing technologies into the existing historic fabric without disrupting the conservation regulations. With growing interest in customization and personalization on anything and everything, designers should also make sure that the future space designs should provide the freedom to alter the interiors with less effort or minimal damage to the structure.

"The greenest building is the one that is already built" (Elfante, 2012). Considering this saying it should be possible that these existing buildings can be easily modified to become zero energy buildings furthering the sustainability efforts. The construction sector is also increasingly moving towards prefabricated building components. Converting these prefabricated building components into reusable building materials and components like those that are explored in BAMB promises another successful direction for design growth. Reversible building components that can reduce wastes from the construction sector could be the future. If this is to happen, there are still a lot of things that can be explored along these lines.

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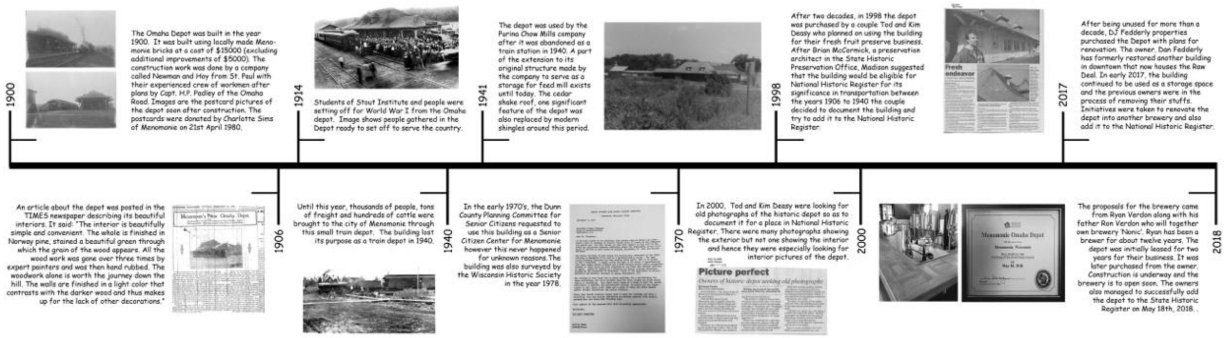
Appendix A: Historic Significance of the Depot

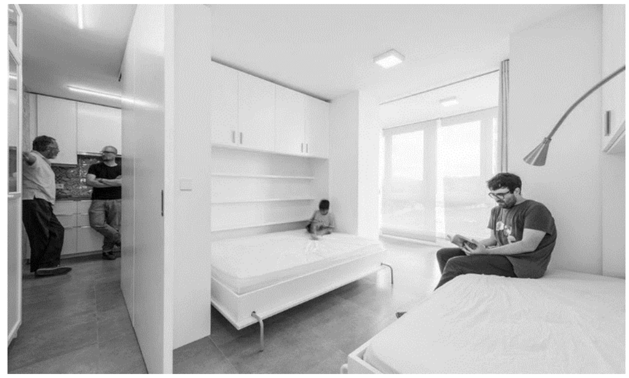
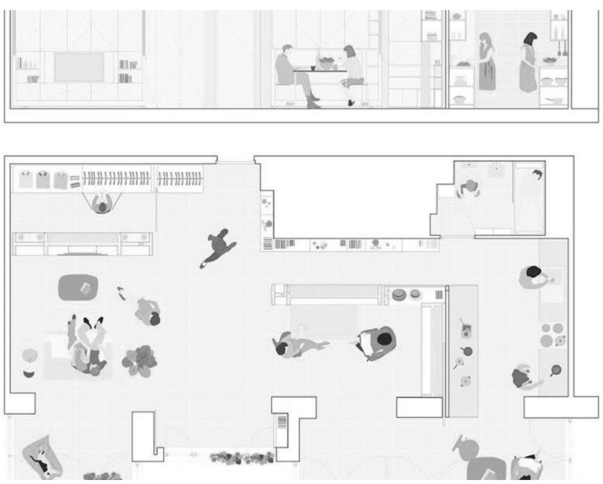


Historic Timeline

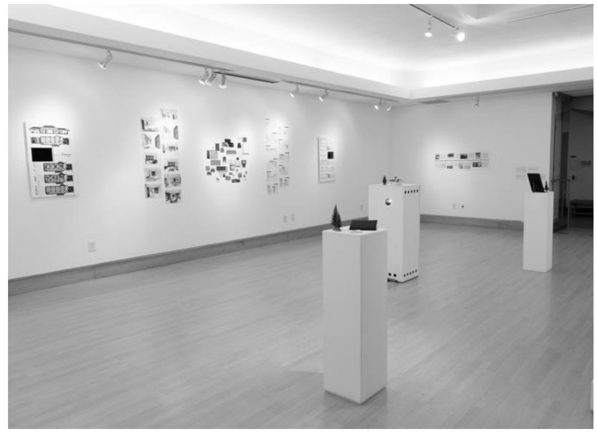
The Omaha Depot was built in the year 1900 using locally made Menomonie bricks at a cost of $15000. The construction work was done by a company called Newman and Hoy from St. Paul. Thousands of people, tons of freight and hundreds of cattle were brought to the city of Menomonie through this small train depot. The building lost its purpose as a train station in 1940. The depot was then used as a feed mill by Purina for a few years. It was surveyed by the Wisconsin Historic Society in 1978. In the early 1970's the Dunn County Planning Committee for Senior Citizens also requested to use this building as a Senior Citizen Center, but a different place was later allocated for this purpose. In 1998, Tod and Kim Deasy purchased the depot and planned on using it for a fresh fruit preserve business. When they learned the depot would be eligible for the National Register of Historic Places for its significance in transportation between the years 1906 to 1940 the Deasys decided to document the building and get it registered. In 2000, they were looking for old photographs of the depot, especially pictures of its interiors. However, nothing seemed to have worked out for the Deasy family with this depot.

After being unused for more than a decade, DJ Fedderly properties purchased the Depot with plans for renovation. The owner, Dan Fedderly, had formerly restored another building in downtown Menomonie that now houses the Raw Deal. In early 2017, the building continued to be used as a storage space, but initiatives were taken to renovate the depot into a brewery in late 2017. The proposals for the brewery came from Ryan Verdon along with his father Ron Verdon who will later own the brewery 'Nonic' together. The depot was initially leased for two years for their business. It was later purchased from the owner. Construction is almost complete, and the brewery is set to open soon. The Depot has also successfully been added to the State Historic Register on May 18th, 2018.

Appendix B: Details of Walls, Dividers and Furniture

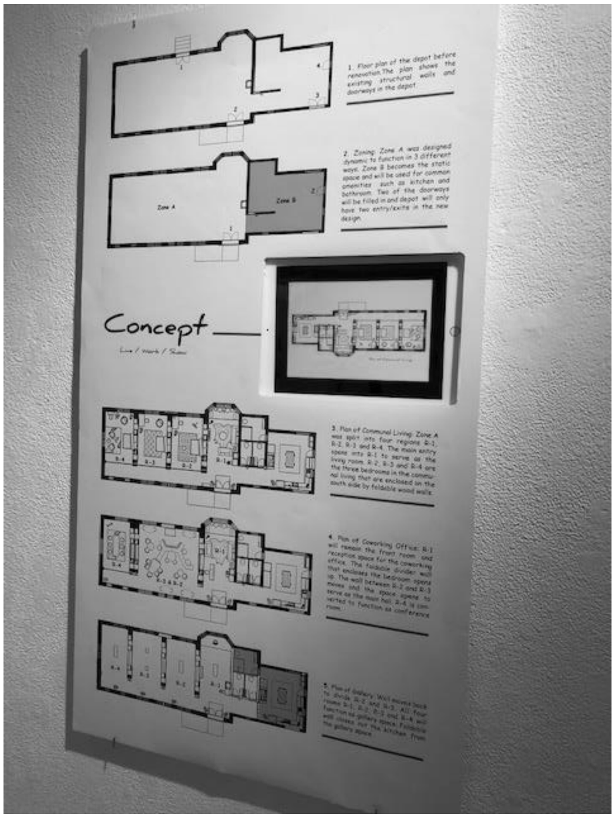

Appendix C: Thesis Exhibit

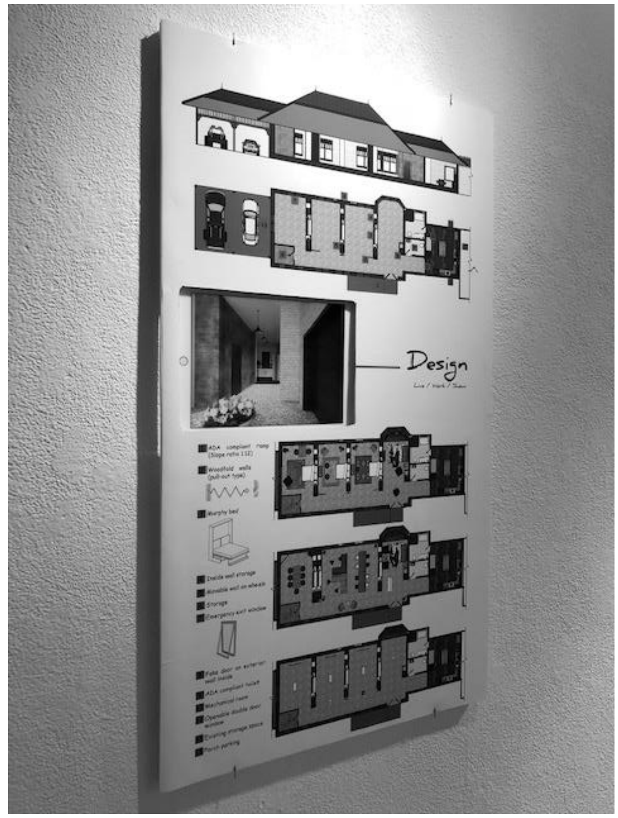



Vacant buildings can easily become subjects of abandonment that are captured by nature and eventually razed in communities. These vacant buildings often carry historical value and hence it is critical to conserve these monuments. Menomonie has lost many such historic buildings in the past. The Dunn county asylum, the former Leevers store and the former Lee building are some examples of buildings lost over time . The Mabel Tainter Center for Arts also faced demolition proposals at one time, but today after renovation it sits as the crown jewel of the community. Vacancy and improper maintanence are often the main cause for the loss of historic buildings. Many buildings could have been saved if long term vacancy was prevented through adaptive redesign and proper maintanence was ensured through constant use. There are currently many vacant structures in and around Menomonie that are struggling to find a purpose like the Blue Brick building at the corner of Main Street and Broadway, the East School on 11th Avenue and the former Menomonie Food Co-op building.
Adaptive reuse of vacant and underutilized buildings to create dynamic spaces that can be transformed for different functions with minimal effort according to the changing needs of the community can help prevent vacancy. The primary purpose of this project is to redesign a historic building in Menomonie by exploring dynamic space planning for multi-functional uses. The project Forgotten Treasure' uses as an example the long-forgotten Omaha Rail Depot which was the primary inspiration for this project. Multiple suitable functions for the building were identified and the space was designed to support these multiple functions. The project demonstrates how a space can be designed to support a range of functions such as those presented here, which include a communal residence, a co-working office and a gallery. The multiple design options will share a common core of mechanical and utility areas, however a larger portion of the depot will be designed with flexible partitions to create the varying functional areas.


1900
The Omaha Depot was built in the year 1900. It was built using locally made Menomonie bricks at a cost of $15000 (excluding additional improvements of $5000). The construction work was done by a company called Newman and Hoy from St. Paul with their experienced crew of workmen after plans by Capt. H.P. Padley of the Omaha Road. Images are the postcard pictures of the depot soon after construction. The postcards were donated by Charlotte Sims of Menomonie on 21st April 1980.
1914
1941
1906
An article about the depot was posted in the TIMES newspaper describing its beautiful interiors. It said: "The interior is beautifully simple and convenient. The whole is finished in Norway pine, stained a beautiful green through which the grain of the wood appears. All the wood work was gone over three times by expert painters and was then hand rubbed. The woodwork alone is worth the journey down the hill. The walls are finished in a light color that contrasts with the darker wood and thus makes up for the lack of other decorations."
1940
1970


Omaha Train Depot in Menomonie, WI
The building is on a rectangular plot and measures 35 feet in width and 150 feet in length. It is described as an Astylistic Utilitarian building in the property records of Wisconsin Historical Society. From the exterior view of the building especially after looking at its hipped mansard roofing it appears to be built in French Eclectic style of architecture. It is built with Menomonie bricks manufactured in the city and has Kasota sandstone bricks running along the roof line and the bottom of the building. The open area in the front is where the buggies waited to pick up people from the train. The train depot office was in the area where the bay window is located.


Concept


Design