

Nauvoo Illinois Historic Site:
A Facilities Management Perspective

by
Casey Cluff

A Thesis Presented in Partial Fulfillment
of the Requirements for the Degree
Master of Science

Approved April 2017 by the
Graduate Supervisory Committee:

Kenneth Sullivan, Chair
Jake Smithwick
Brian Stone

ARIZONA STATE UNIVERSITY

May 2017

ABSTRACT

As the execution of facilities management becomes ever more sophisticated, specialized skill in managing specific types of buildings has become necessary. The sector of maintaining historic structures and sites readily falls into this type of specialized classification. This paper is a case study review of the unique “best practices” at the Nauvoo Historic Site located in Nauvoo, Illinois. It outlines a facilities management model of common core practices that was developed by the author following an assessment of various similar historic preservation campuses and their responsibilities to accurately display historic culture while observing modern-day facilities management techniques. Although these best practices are of great value in Nauvoo, they are proposed to be valuable to other sites as well because of their effectiveness. As a part of the description of best practices, an overview of the unique history of Nauvoo that generated the modern-day interest in the site will be reviewed. Additionally, the Nauvoo Facilities Management (NFM) organization will be detailed and will focus on the unique challenges associated with historic restored and reconstructed structures. Finally, the paper will also examine the use of specific facilities management techniques, management of large-scale visitor events, livestock supervision, workforce dynamics, finance and capital improvements, managing NFM within the corporate structure of a worldwide religious organization, and the part that NFM plays in community relations.

TABLE OF CONTENTS

	Page
LIST OF TABLES	v
LIST OF FIGURES	vi
GLOSSARY OF ACRONYMS AND TERMS.....	vii
CHAPTER	
1. INTRODUCTION.....	1
2. LITERATURE REVIEW.....	5
Facilities Management Today	5
Monetary vs. Non-monetary motives.....	5
Key Factors in Maintaining Historic Structures	6
Authenticity vs. Functionality	8
Preservation of Existing Historic Data.....	8
Historic Facilities Management Training	10
Religious Perspective on Historic Site Maintenance	11
3. METHODOLOGY	13
4. EARLY HISTORY OF NAUVOO	14
5. MODERN-DAY INTEREST IN HISTORIC NAUVOO	19
6. CURRENT COMPOSITION OF NFM	23

CHAPTER	Page
7. WORKFORCE DYNAMICS: PAID EMPLOYEES VS. VOLUNTEER WORKERS	28
8. UNIQUE CHALLENGES WITH HISTORIC RESTORED AND RECONSTRUCTED STRUCTURES IN NAUVOO.....	31
Foundations	33
Framing	33
Roofs.....	34
Exterior Wall Coverings	35
HVAC.....	35
Plumbing.....	36
Electrical	36
Windows	36
Interior Walls & Ceilings.....	37
Floors.....	38
Doors	39
9. MODERN FM PRACTICES AND TECHNIQUES.....	40
10. VISITOR EVENTS	42
11. LIVESTOCK.....	45
12. BUDGETING AND FINANCE.....	48

CHAPTER	Page
13. WORKING AS A SUBSIDIARY TO A GLOBAL RELIGIOUS ORGANIZATION.....	50
14. COMMUNITY RELATIONS.....	53
15. CONCLUSION	55
REFERENCES	56

LIST OF TABLES

Table	Page
1. Historic Preservation Campuses Comparison.....	3
2. Chronology and Classification of Nauvoo Excavations	32

LIST OF FIGURES

Figure	Page
1. Public Domain, Early Photograph of the Nauvoo Temple circa 1846-47	16
2. Wilford Woodruff - Washington County Historical Society	17
3. John Taylor: BYU Religious Studies Center	18
4. Wilford C. Wood, Date Unknown, ca. 1950's. - Wilford C. Wood Family.	19
5. Photo Nauvoo Temple – Public Domain 2007	20
6. Dr. J. LeRoy Kimball, Date Unknown. - Photograph Courtesy NRI.	20
7. Heber C. Kimball Home before Restoration Courtesy NRI Archives.....	21
8. Heber C. Kimball Home after Restoration Courtesy NRI Archives.....	21
9. Loren C. Dunn – Courtesy NRI Files	52

GLOSSARY OF ACRONYMS AND TERMS

ARPA – Archaeological Resources Protection Act

Church History Department – Department within the Church of Jesus Christ of Latter-day Saints with responsibility for historical documents, artifacts, sites, monuments, and collections that are relative to the history of the faith

CMMS - Computer Maintenance Management Software

CPB - Corporation of the Presiding Bishop held within the Church of Jesus Christ of Latter-day Saints

FM – Facilities Management

FTE – Full Time Equivalent

HRS - Historic Structures Report

HVAC – Heating, Ventilation, and Air-conditioning

LDS - Latter-day Saint

LDS Church - Abbreviated form of the Church of Jesus Christ of Latter-day Saints

Missionary - Volunteer laborer within the organization of the Church of Jesus Christ of Latter-day Saints who serves for a specific length of time at their own expense

Mormon - Nickname given to members of the Church of Jesus Christ of Latter-day Saints due to their belief in the Book of Mormon

NFM - Nauvoo Facilities Management

NRI - Nauvoo Restoration, Inc.

O&M – Operations and Maintenance

Saints – Shortened form of Latter-day Saints

Chapter 1

INTRODUCTION

Facilities management is focused on the care, maintenance, and operations of the built environment. As industrialization continues to progress, facilities become ever more complex creating sub-sectors of the types of facilities found throughout the world. Among these sub-sectors is the area of historic facilities. Historical facilities management for the purposes of this research is defined as the care, operations, maintenance and stewardship of structures and other valuable assets that are significant due to their historic nature. This is not a study of the “history” of facilities management, but it is a study of the common elements of historical sites that are maintained by facilities managers. There are several contributors to the body of knowledge of historical facilities management including religious, governmental, educational, community-based and privately owned entities. For the sake of this review, focus will be concentrated on information available regarding historical sites within the United States. The purpose of this research is to provide a case study on historical facilities management at the Nauvoo Illinois Historic Site, which is owned and operated by the Church of Jesus Christ of Latter-day Saints (LDS Church).

Often in business ventures the motives are monetary in nature, however, for purposes of this review, financial motives will be put aside. The specific components of individual historic preservation sites are frequently determined by the key messages that the stakeholders in the site want to communicate. These key messages generally align with one of the following guiding principles:

- Providing restored settings, landscapes, and dignified memorials to help facilitate religious conviction and sentiment in the visiting public.
- Sensitive management of site development will preserve the sense of place and allow visitors opportunities to experience for themselves the significant sites.
- Original buildings, building materials, landscapes, and artifacts provide a compelling connection for visitors with events from history.
- Authentically restored sites reinforce the believability of historical events by the creating a physical and visual context that helps visitors more fully imagine significant events.
- Site maintenance enables, first and foremost, the preservation of original buildings, building materials, landscapes, and artifacts. Routine maintenance retards deterioration and prevents damage.
- Messages communicated to visitors are focused on the events that occurred at that particular site and are therefore unique. The restored settings and structures are also unique and are changed or refined only when additional historical information comes to light. Exhibits and visitor facilities are updated from time to time.
- Visitor facilities and accommodations in restored structures provide for the safety and comfort of visitors to the site. In restored structures, qualifications to authenticity, such as electricity, central heating and cooling, and security systems are made as visually unobtrusive as possible (Historic Sites Operations Committee, 2009).

Taken from the framework of these guiding principles and other practical comparables, Table 1 below details a brief cross-section of comparable sites to Historic Nauvoo and provides context for specific topics considered in this case study. Among the list are other sites owned by The Church of Jesus Christ of Latter Day Saints. Information for this table was obtained through visits to the sites, publications referenced and individual websites.

Historical Site	Ongoing Restoration	Ongoing Reconstruction	Full-time workforce	Volunteer Workforce	Livestock Program	Regularly Scheduled Entertainment	Tour guides	Funding Source
Nauvoo Historic Site, IL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Donations
Historic Kirtland, OH	Yes	No	Yes	Yes	No	No	Yes	Donations
Historic Palmyra, NY	Yes	No	Yes	Yes	No	Yes	Yes	Donations
Abraham Lincoln's New Salem, IL	No	No	Yes	Yes	No	No	Yes	Fee
Colonial Williamsburg, VA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Fee
LDS Priesthood Restoration Site, PA	No	No	Yes	Yes	No	No	Yes	Donations
This is the Place Heritage Park, UT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Fee

Table 1. Historic Preservation Campuses Comparison

A case study of the Historic Nauvoo Site works well in examining historic facilities management as it contains all the components detailed in Table 1. This nationally recognized historic site (Leonard, 1992), is in the city of Nauvoo, Illinois which is nestled on a wide sweeping bend in the Mississippi River near the area where the states of Illinois, Iowa and Missouri converge. Nauvoo played an important role in the migration of early settlers to the western United States. It was also the headquarters

of the Church of Jesus Christ of Latter-day Saints for approximately seven years from 1839 – 1846. During these years, the industrious members of this faith constructed hundreds of buildings and created a city out of a swamp in only 7 years which rivaled the size of Chicago at the time (Esplin, 2009). The remnants of a handful of these structures continue to exist today. They have been restored with painstaking effort to replicate the originals. Others have been completely reconstructed in their original locations. These structures draw thousands of visitors each year from across the world. The Nauvoo Tourism office reports the total number of visitors at approximately 125,000 for the year 2016 (Orth, 2017). The best practices of Nauvoo Facilities Management (NFM) regarding the care, maintenance, operations, and improvement of these facilities will be reviewed. The research will also explore the use of specific facilities management techniques, visitor events, livestock, workforce dynamics, finance and capital improvements, working within the corporate structure of a worldwide religious organization, and the part that NFM plays in community relations.

Chapter 2

LITERATURE REVIEW

Facilities Management Today

Whether a facility is historic in nature or an ultra-modern skyscraper, the facilities manager (FM) of today is tasked with the responsibility of reducing or eliminating the downtime of the user. As defined by Seeley in his pioneering textbook on the subject, he states that FM's participate in "work undertaken in order to keep, restore or improve every part of a building, its services and surrounds, to a currently accepted standard, and to sustain the utility and value of the building" (1976). Additionally, such work includes the goals of safety, use fit, codes, quality, and maintained value for the structures and property (Alner and Fellows, 1990).

From the early days of break/fix maintenance, also referred to as "corrective maintenance" or "reactive maintenance", work was typically carried out in an "ad hoc" response procedure when site breakdowns occurred. This tended to arbitrarily tax the resources of the property maintenance groups who needed to formulate and execute repair plans on the fly (David and Arthur, 1989). One key problem with such an approach is that the repairs were done at untimely schedules which would disrupt the intended timetable of the facility purpose with costly down time.

Monetary vs. Non-monetary motives

Though it can be assumed that the operations and maintenance of a given site is primarily linked to the financial utility of the property, there are other reasons such as public access and educational motives, where the financial impact might only be

indirectly related. For this reason, both a monetary and non-monetary impact is considered when assessing the influence of maintenance planning due to increased sophistication in this field (Chanter & Swallow, 2007). Other research identifies the changing role of FM's as they take on a more business oriented role in their practice when simple skills and traits are no longer enough to cover today's more complex issues (Murthy, Atrens & Eccleston, 2002, Usman, Gambo & Chen, 2012).

Key Factors in Maintaining Historic Structures

Narrowing the field of study from a general consideration to a focused look at historic facilities, the Whole Building Design Guide (WBDG) states the following:

“Operating and maintaining historic structures must take into account the following factors:

- history
- significance of features
- original and later construction components and materials
- current or future (planned) use
- treatment objectives
- technical information about appropriate O&M processes and products
- specialized preservation skills training

If available , a Historic Structure Report (HSR) will provide a summary of a structure's history and development, dating from original construction. Information would typically be gathered through documentary research and archaeological surveys, and documented through photographs, measured drawings, materials and finishes analysis, and physical inspection. The HSR further helps identify the intact significant historic and

character-defining features of the structure. It usually contains a complete assessment of the condition of the structure at the time of the report and recommendations to address physical condition problems as well as recommendations to restore, preserve, rehabilitate or otherwise treat the historic and character defining features of the structure, depending on the goals set by the owner. Some HSR documents may contain a section that addresses operations and maintenance (O&M). Regardless, if an HSR exists, it should form the basis for O&M requirements development.

Should an HSR not exist, it is strongly recommended that one be developed before performing any extensive efforts to preserve, repair, and/or maintain the structure. An HSR should be prepared by a team of preservation professionals under the leadership of a preservation architect. The Association for Preservation Technology International is a professional membership organization of mostly architects, engineers, planners and other professionals who work extensively in the field of preservation of historic structures and landscapes, and a good resource to find such professionals. The American Institute of Architects' Historic Resources Committee is also a good source to find preservation architects and related information.

If the structure is individually listed on the National Register of Historic Places or is a National Historic Landmark, consult the nomination form that led to its listing. It will likely contain information about a structure's historical and architectural significance, and about the historic character-defining features that give it historical integrity and are important to preserve” (“Operations and Maintenance for Historic Structures | WBDG Whole Building Design Guide,” 2016).

Authenticity vs. Functionality

Authenticity versus functionality is often the predicament of the facilities manager of historic sites. In her paper entitled “Building Information and Facilities Management in Historic Buildings”, Annette McGill highlights this interesting dilemma which is often overlooked in the retrofitting or renovating of historical buildings. She notes:

“Old buildings vs. Modern priorities

- Work to be done on the best way to measure the energy performance of older buildings
- Work to be done on identifying and communicating good practice in retrofitting
- Work to be done on assessing the impact of retrofitting and the resulting environmental changes on older materials and finishes” (McGill, 2012).

As effort is focused on maintaining the architectural authenticity of a given historical structure, many times the modern objectives and even code requirements may be overlooked. There is inherent conflict in this regard, as life safety, accessibility, and environmental awareness cannot be ignored when rebuilding or restoring historical buildings and then maintaining them for the long term.

Preservation of Existing Historic Data

Another factor to consider when restoring or reconstructing historic sites is the preservation of existing historic data in proximity to the given project. Disturbing the soil or infrastructure where there is potential for historic data is of major consideration in the world of historical archaeology. Great care is taken to not disrupt existing conditions when doing so may destroy historical evidence or prevent piecing together clues of what

may have happened in the historical record. The Archaeological Resources Protection Act (ARPA) states the following:

“Archaeological Resources Protection Act (ARPA) and implementing regulations:

- Basic provisions: Prohibits excavation of archaeological resources on federal and tribal land without a permit granted by the land-managing agency consistent with the regulations
- Key definitions: Archaeological resource is defined as “any material remains of human life or activities which are at least 100 years of age, and which are of archaeological interest”. “Of archaeological interest” is defined as “capable of providing scientific or humanistic understandings of past human behavior, cultural adaptation, and related topics through the application of scientific or scholarly techniques such as controlled observation, contextual measurement, controlled collection, analysis, interpretation, and explanation”
- VA responsibilities: (1) Do not allow anyone to dig for anything over 100 years old on VA property without a properly executed permit. (2) Retain and preserve anything excavated in accordance with the curation regulations; dispose of objects and records only in accordance with the regulations” (U. S. Department of Veterans Affairs; Office of Acquisition, Logistics and Construction; Office of Construction and Facilities, 2013).

The guidelines set forth in this act are observed to varying degrees across the historic sites in the United States depending upon ownership. Public and government

owned sites tend to adhere to these regulations more closely than do privately controlled sites.

Historic Facilities Management Training

Another element to consider when reviewing historic sites management are the sources of schooling and instruction required for successful results. There are many organizations that provide training for the facilities management profession specifically in the historical and preservation arena. One of the many reputable entities, The National Historical Preservation Institute, states that “historic property management combines preservation maintenance with modern systems management” (“Historic Property Management,” 2011). “Reading” a building, searching for solutions, and then caring for the building envelope by maintaining its historic materials is an imperative balance between the environmental needs of the building and its users. Further, understanding the impacts on historic properties of the building’s mechanical systems including HVAC, plumbing, fire, security, and lighting is vital to the proper care of these structures.

In addition to the dual responsibility of preserving historical integrity and utilizing modern building systems, one of the biggest challenges is incorporating energy-saving measures and meeting accessibility and fire-code compliance requirements. Before renovating such a facility, the renovation team must identify building characteristics that it wants to preserve or restore. Is the objective to restore finishes to what they were when the building was built? Is the focus to use the same paint colors that were in vogue at the time or is the goal to find the same type of wall coverings that we see in the older photographs of the building and restore them to that state (“Old Buildings, New Life -

Facility Management Design & Construction Feature,” 2006)? Through proper training, a facilities manager learns not only how to answer these types of questions, but also learns the right questions to ask when managing the reconstruction or renovation of historical structures.

Religious Perspective on Historic Site Maintenance

The LDS Church is the primary source cited to gain a religious perspective on historic site operations and maintenance. The LDS church has printed the following.

“Understanding Historic Sites: The purpose of historic sites:

The purpose of the Church Historic Sites Program is to strengthen the faith of members and to interest others in the restored gospel by increasing visitors’ understanding of the significant events, buildings, sites in Church history and the gospel principles associated with them. The specific objectives of the Historic Sites Program are five-fold:

1. **Preserve historic buildings and sites** where significant events in the Restoration of the gospel took place by selecting, marking, restoring, caring for, and interpreting them.
2. **Help visitors understand the unique history of the building or site** by teaching them about the important events and people associated with the site.
3. **Help visitors understand specific gospel principles** restored or exemplified through the events and people at the site by teaching visitors about the faith, commitment, and sacrifice of the early Latter-day Saints.
4. **Strengthen the faith of members** by increasing their understanding of the

reality of historic events and the blessings of the restored gospel principles.

5. Interest non-members in learning more about the Restoration by increasing their understanding of important events and faithful people.

Each site is unique and offers a collection of modern, restored, and reconstructed buildings, memorials, and markers that testify to the truths of the Restoration. Even more powerful, however, is the intrinsic authenticity of walking on the same ground where significant events took place. Therefore, developing, renovating, and maintaining historic sites is determined by the Church's commitment to protect historic structures, landscapes, and materials, and to preserve them for the future" (Historic Sites Operations Committee, 2009, p. 7).

Based on this overall purpose, the printed General Maintenance Standards of the LDS church provide an in-depth and complete review of how to care for specific components of their historic sites. Further, although the key message that the LDS church desires to convey is five-fold, the first two points relate directly to the facilities perspective of the Nauvoo Historic Site and to other historic preservations campuses as well.

Chapter 3

METHODOLOGY

The purpose of this research is to provide a case study on facilities management at the Nauvoo Illinois Historic Site. The history of Nauvoo provides the backdrop for understanding the significance of the site today. Therefore, considerable emphasis is devoted to reviewing the historical account with specific focus on the Mormon period. With the historical merit of Nauvoo established and the historical authenticity of other sites generally assumed, focus shifts to what draws visitors to historic sites and to Nauvoo in particular. The management practices at Nauvoo Facilities Management (NFM) as a specific case study among other historic preservation sites is examined in detail. Additionally, information gathered on other comparable historic sites throughout the United States is assessed and an analysis of the comparable sites is made with a compilation of related features. This compilation is reviewed as it relates to the Nauvoo location. Areas of emphasis that are more common across all historic preservation campuses are reviewed in more detail including visitor entertainment, livestock management and full-time vs. volunteer labor. NFM's unique position working within the framework of a larger, global, religious organization is also considered. In the concluding chapter, the value of this information as it contributes to the overall body of facilities management knowledge is affirmed.

Chapter 4

EARLY HISTORY OF NAUVOO

To fully comprehend the significance of the structures in Historic Nauvoo today, and how to best manage them, it is imperative to grasp at least a rudimentary understanding of that portion of history relative to the Church of Jesus Christ of Latter-day Saints that played a key role in the modern desire for many to visit the site once again. The LDS Church was formally organized April 6, 1830 in upstate New York in the town of Fayette. From its inception, members of the faith were constantly persecuted for their religious beliefs. Emigrating from one place to the next became the lot of the main body of these early members of the church. Their migration took them from New York to Ohio to Missouri and eventually to Illinois in 1839. In the winter of 1838-39, the refugee Saints found themselves on the banks of the Mississippi River in Quincy, IL. They had been “taken in” by some very generous and kind locals who provided them with shelter, food and other necessities, affording them time to figure out their next course of action or direction. A decision was made to look for a suitable settlement site.

Nauvoo is located north of Quincy about 47 miles. Due to surface drainage problems that resulted in swampy, wet, bog-like conditions, this location was not a desirable site for a typical settlement. However, the fact that it was undesirable piqued the interest of the group considering that it might afford them the opportunity to live in relative peace from their persecutors (Launius & Hallwas, 1996). Accordingly, in the early spring of 1839 the main body of the LDS saints moved to Nauvoo and the beginnings were very meager. Many makeshift shelters, tents and lean-to's were erected

to provide temporary accommodations until more permanent structures could be built. Within months, if not weeks, many wood framed structures along with a limited number of brick buildings began to take form. The lumber quality in Nauvoo was poor, hence lumber was “shipped” down the Mississippi River from the north, primarily from the Black River area of the Wisconsin Territory, which came to be called the Wisconsin Pineries (Rowley, 1992). The city of Nauvoo grew rapidly and within the short course of seven years, the city rivaled the size of Chicago, IL (Esplin, 2009). By 1846, there were hundreds of buildings and the city had indeed become a haven for the LDS population (Launius & Hallwas, 1996).

In the story of the western migration across the United States in the 1800’s, Nauvoo played a role that is sometimes overlooked. The flow of the Mississippi River adjacent to Nauvoo was very shallow. It was the only area for hundreds of miles that a traveler on a horse could wade through the water. This area was known as the Des Moines Rapids, and extended from Nauvoo approximately 12 miles south to the town of Keokuk, Iowa (Griffith, 1870). For the traveler trying to get from one side of the river to the other, this would have been advantageous, but for the boat traveler on the river, it proved to be an obstacle. The industrious Mormon settlers used this to their advantage in providing portage services to those traveling by boat. Through the use of a man-made canal near present day Montrose, IA, more free movement of water craft was allowed (Great River Road, 2017). With the improved water traffic, the next step in development came with the railroad. Because of the placement of the railroad on the west side, or Iowa side, of the river opposite Nauvoo, the major industrialization occurred there. This is noteworthy in that Nauvoo was protected from rapid growth and change through the

nineteenth and twentieth centuries, allowing the areas in the Nauvoo flat lands adjacent to the river to remain primarily how they were when the Mormons left Nauvoo. This provided a prime opportunity for the restoration of Nauvoo.

Among the many key events that occurred during the early Mormon Nauvoo years, there are two that had a direct impact on the future facilities prospective of the city. First was the directive to build the Nauvoo Temple in 1841 (Doctrine and Covenants, 2015, sec. 124), and the second was the martyrdom of the LDS leader – Joseph Smith (Doctrine and Covenants, 2015, sec 135).

As if the early settlers of Nauvoo weren't suffering enough, they now had a directive to build a temple from their own resources to a magnitude that far exceeded any



Figure 1. Public Domain, Early photograph of the Nauvoo Temple circa 1846-47

structure they had previously built. Even though it took until the year 1846 to accomplish, the creative genius and resourceful ingenuity of these early Saints, is clearly evident in the fact that their task was eventually complete.

Figure 1 is an early daguerreotype of the Nauvoo temple soon after completion.

The construction of this temple came at a price, as the persecution the saints had experienced earlier in their history began to resurface. The general persecution of the LDS Saints intensified until June 27, 1844, when an angry mob stormed the Carthage Jail in Hancock County, IL (22 miles to the

southeast of Nauvoo) and killed Joseph Smith and his brother Hyrum who were being held there with other Mormon leaders.

Following the deaths of Joseph and Hyrum Smith, Brigham Young assumed leadership of the Church. Given the circumstances, it would be understandable that the Saints would want to flee the area for their own safety, but it would be almost two years later before they were eventually driven out. In the meantime, as a memorial to their prophet Joseph Smith, and as a symbol of the Saint's adoration of their God, they completed the temple and continued to construct buildings. As a true memorial to Joseph Smith, the name of the city was changed at the time to "The City of Joseph", however, this title did not continue into the twentieth century and the name of Nauvoo continues today. There was a sense among the Saints that anything they could build or any beauty they could create would further memorialize the memory of the prophet Joseph Smith (Leonard, 1992). Consequently, many structures were built which played directly into the future restoration of the site.



Figure 2. Wilford Woodruff - Washington County Historical Society

saints left in 1846. The following is a quote from the journal of Wilford Woodruff (pictured in Figure 2) who would eventually become the fourth president of the LDS Church. He wrote these words as he was leaving Nauvoo for the last time traveling west on Parley Street to cross the Mississippi River: "I left Nauvoo for the last time perhaps in this life. I looked upon the Temple & City of Nauvoo as I retired from it & felt to ask the Lord to preserve it as a

monument of the sacrifice of his Saints” (Wilford Woodruff, Wilford Woodruff’s Journal, Midvale, UT: Signature Books, 1983).

Another thought that helps provide context for the eventual return of the Mormon people to Nauvoo was spoken by John Taylor (pictured in Figure 3), who would become the third president of the Mormon church:



Figure 3. John Taylor: BYU Religious Studies Center

“As a people or community, we can abide our time, but I will say to you Latter-day Saints, that there is nothing of which you have been despoiled by oppressive acts or mobocratic rule, but that you will again possess, or your children after you. Your possessions, of which you have been fraudulently despoiled in Missouri and Illinois, you will again

possess, and that without force, or fraud or violence. The Lord has a way of His own in regulating such matters” (John Taylor, 1882, Journal of Discourses, 23:61-62).

It is interesting to note that as of this writing in 2017, the LDS Church owns approximately 1017 acres in Nauvoo proper which represents about one third of the total land area in Nauvoo. In a very real way this statement is proving to be prophetic as the church is “again possessing” their rights and land in the areas mentioned and it is being done without “force, or fraud or violence.”

Chapter 5

MODERN-DAY INTEREST IN HISTORIC NAUVOO

Although not specifically in Nauvoo proper, the 20th century beginnings of the restoration of Nauvoo by the LDS church began with the 1903 purchase of the Carthage

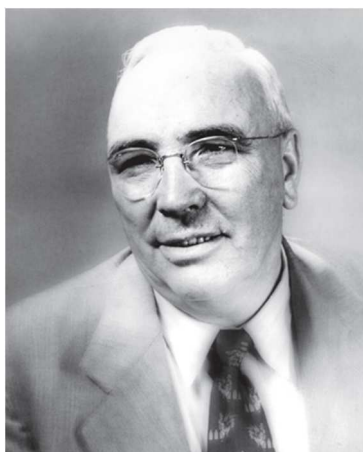


Figure 4. Wilford C. Wood, date unknown, ca. 1950's. Courtesy of the Wilford C. Wood family.

Jail (Enders, 1992). However, the first purchase that would eventually contribute to the restoration of Nauvoo proper occurred in 1937 when Wilford C. Wood (pictured in Figure 4) negotiated the land purchase for the first piece of the temple block (one city block). He also purchased several other historic Nauvoo homes and properties. With Wood's help in particular and others, the original temple block purchase by the LDS church took some 25 years and ten transactions to complete (Esplin, 2009).

Finally, in 1962 the final parcel of the temple block was in the hands of the LDS Church (Esplin, 2009). However, other than landscape beautification, historical markers and monuments, not much happened with the temple site until 1999 when Gordon B. Hinckley, President of the LDS Church, issued this announcement as part of his closing remarks in a general conference of the church:

“In closing now, I feel impressed to announce that among all of the temples we are constructing, we plan to rebuild the Nauvoo Temple. ... The new building will stand as a memorial to those who built the first such structure there on the banks of the Mississippi” (Hinckley, 1999).

With this announcement, things would forever change in Nauvoo. This was the biggest authentic reconstruction project to date taken on by the LDS Church. Painstaking

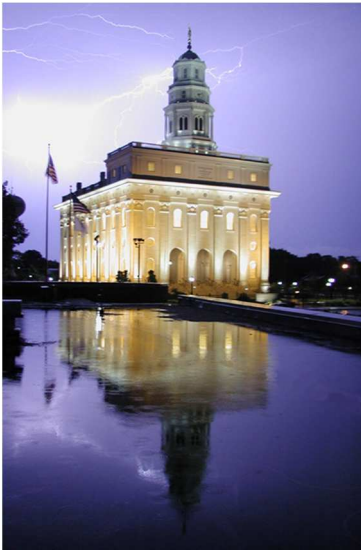


Figure 5. Photo Nauvoo Temple – Public Domain 2007

effort was made to assure that as far as possible, the end result would be a temple that was as true to the form of the original temple as possible. Although difficult to measure, the exterior of the reconstructed temple appears to be an accurate replica of the original. While entrance inside the temple is limited to members of good standing, the Nauvoo temple, pictured in Figure 5, draws thousands of visitors each year.



Figure 6. Dr. J. LeRoy Kimball, date unknown. - Photograph courtesy NRI.

With the purchase of the entire temple block complete in 1962, focus shifted to restoring the area where the early historic homes and buildings were located. This area is referred to by the locals in Nauvoo as “the flats”, whereas the area where the temple sits is known as “the bluff”. 1962 marked the year that Nauvoo Restoration Incorporated (NRI) was formed with major funding sources coming from the LDS Church. NRI would eventually become Nauvoo Facilities

Management (NFM) in 2011. The spark for NRI came in the form of Dr. J. Leroy Kimball (pictured in Figure 6) who had family roots in Nauvoo. Dr. Kimball purchased the home of his great grandfather, Heber C. Kimball, in 1954 with the intent to renovate it and use it as a summer vacation home (see Figures 7 & 8). As renovation began, the

interest shown in the home by LDS members was overwhelming. It became immediately apparent that there was great interest in many of the other historic homes in Nauvoo as well, most of which were in horrible disrepair. The idea of NRI was born and the restoration of the historic structures in Nauvoo became a lifelong quest for Dr. Kimball, who served as the president of the organization from 1962 to 1987 (Hill, 2011).

From its beginnings, the purpose of NRI was clear: “**To restore the Mormon Temple** at Nauvoo as a shrine to those whose perseverance and faith built it, and to



*Figure 7. Heber C. Kimball Home before restoration
courtesy NRI Archives*



*Figure 8. Heber C. Kimball Home after restoration
courtesy NRI Archives*

Heber C. Kimball Home – Purchased in 1954 by Dr. Leroy Kimball (a great grandson of Heber C. Kimball) and then remodeled and restored. Dedicated by Spencer W. Kimball (a grandson of Heber C. Kimball) on July 3, 1960.

establish and re-dedicate it as a present day place of religious worship; to provide an historically **authentic physical environment** for awakening a public interest in, and an understanding and appreciation of, the story of Nauvoo and the mass migration of its people to the valley of the Great Salt Lake; and to **dramatize the interpretation of that story**, not only as a great example of pioneering courage and religious zeal, but also as one of the vital forces in the expansion of America westward from the Mississippi River” (Esplin, 2009).

As highlighted above, the initial purpose statement was three-fold. In effect, this purpose statement continues today. The temple has been restored, NFM and the LDS

Church History Department labor diligently to authenticate the physical environment, and the volunteer missionaries that serve in Nauvoo dramatize and interpret the story of what took place so many years ago. Among many LDS members, a visit to the Nauvoo temple and the surrounding sites of Historic Nauvoo has become a “pilgrimage” of sorts, and many return to connect with the roots of their faith and often to the roots of their families.

Chapter 6

CURRENT COMPOSITION OF NFM

Through the years, the composition and capital asset value of Historic Nauvoo Facilities Management has steadily increased. In the early years of the 1960's, there were just a few pole barns and a tractor or two (Hill, 2011). Although the following list is not exhaustive, it does provide a near complete picture of the assets that require care and maintenance within the organization of NFM today.

❖ Physical Facilities Assets

➤ Structures

- 30 historical sites
- 2 visitor's centers
- Mission Home
- Family Living Center
- Land and Records Building
- 173 apartments for temple, site and NFM missionaries
- 10 public restroom facilities, including 2 Pageant restroom trailers and 4 portable restrooms.
- NFM complex which includes an office building, shops, greenhouses, warehouses, and antique storage
- 10 storage buildings
- Temple parking structure

- 24 space RV park for missionaries
- Brickyard
- 2 Outdoor stages
- 250 Reader Boards/signs
- Saw mill
- 2 kiosks
- call center
- Sewing Room & Post Office
- Preservation/Conservation Space
- Pioneer Pastimes
- Pageant Headquarters and Practice Facility
- Rock Quarry
- Equipment
 - 50 vehicles
 - 9 pieces of heavy equipment
 - 7 trailers
 - Backup power supply generator
 - 6 sound systems
 - 3 audio systems

❖ Grounds Maintenance:

- Equipment Assets:
 - 9 “Z” track mowers
 - 4 tractors (455)

- 3 tractors (various models)
- 1 chipper
- 1 stump grinder
- 110 hand mowers
- Vegetation Assets:
 - 275 acres of lawn
 - 30 Flower beds
 - Over 7000 tulips
 - Thousands of plants started in greenhouses
 - Over 100 large planters
 - 1 herb garden
 - Approximately 5,000 trees
- Hardscape and Systems Assets
 - Sidewalks
 - Picnic tables
 - Benches
 - Sprinkler systems
 - 2 pump stations for irrigation water
 - 4 green houses
 - Approximately 30 miles of fence
 - Multiple statutes/displays
 - Parking lots
 - Trail of Hope

❖ Livestock Operation

- 4 barns
- 10 draft horse teams
- 2 oxen teams and oxen venue
- 6 horse drawn wagons and carriages
- Carriage ride and roadway
- 3 freight wagons
- 3 covered wagons
- Pioneer handcarts and 3-mile trail
- 100+ acres pasture land

❖ Public Relations

- Security
- Missionary and guest safety
- “Giveaways”
- Assist Nauvoo City by providing monetary and service support to help with:

- Parks
- Streets
- Christmas decorations
- Pumpkin walk
- Traffic control as needed
- Community Events

- Nauvoo Community Service and Participation
 - Member of Chamber of Commerce
 - Serve on Chamber Executive Board
 - Member NBA (Nauvoo Betterment Association)
 - City council meetings
 - City zoning meetings
 - City street and building meetings

Chapter 7

WORKFORCE DYNAMICS: PAID EMPLOYEES VS. VOLUNTEER WORKERS

Many historic facility campuses tend to be a mixture of paid employees and volunteer laborers. Many of these volunteers have a financial vested interest in the site or a sentimental connection to the specific history. This is true of Historic Nauvoo. The volunteers are missionaries belonging to the LDS faith. They are often retired couples (some are single senior women and others are single young men) who submit applications to the headquarters of the Church of Jesus Christ of Latter Day Saints to serve as missionary volunteers. They do this at their own expense. If their skill set or life experience lends itself to facilities maintenance at Historic Nauvoo, their assignment will be made to serve in Historic Nauvoo for a length of time from 6 to 23 months. Many times, missionaries travel long distances from other parts of the country to labor in Historic Nauvoo. Once arriving in Nauvoo, rental housing is available to them and maintained by NFM. In addition to volunteering as missionaries at Nauvoo Facilities Management, they are involved in a host of other missionary related activities such as serving as tour guides, performing in live shows, and participating in community outreach programs. One such program, “Nauvoo on the Road” provides pioneer activities to outlying community fairs and school functions in order to generate interest in Nauvoo. The complement of these missionaries at NFM ranges from about 25 individuals in the winter off-season months to 35 individuals during the summer months.

The other component of the workforce at NFM is the paid or full-time employees. Currently, there are 25 approved permanent full time equivalent (FTE) positions at NFM.

Many of this group are long-time residents of Nauvoo and the surrounding area. They are required to be members of the LDS Church in good standing and are expected to have the skills and aptitude required to perform the functions of their respective positions.

When there are two different “types” of workers in a workforce, there can be some challenges. Among these challenges is the ability of the full-time workforce to adjust and deal with an ever-changing volunteer staff. From time to time there are issues that need to be resolved such as building means and methods, equitable treatment of the overall staff by management, compensation vs. non-compensation and holiday schedules.

Since the 1960’s, the NFM manager of operations came from among the ranks of this volunteer missionary force. This presented problems in line of authority reporting and the paid staff not receiving consistent direction due to the constant change of the volunteer manager. This lead to frustration as new policies were continually being put into place in a relatively short period of time as managers were called and released as missionaries. In 2011 this situation was changed and a full-time paid manager was installed by the leadership of the Church. This resolved many of the aforementioned issues and created a sense of stability for the workforce and for the greater community at large.

The current structure of Nauvoo Facilities Management is to have the facility manager oversee direct reports of heads of operations. Each head serves as their particular shop or trade steward, with paid employees staying indefinitely and volunteer missionaries rotating in and out of that given shop. Trades and shops in Nauvoo currently include: Cabinetry, Carpentry, Paint, HVAC, Plumbing, Electrical, Appliance

Repair, IT/AV, Vehicle Maintenance, Metal shop, Grounds, Horticulture, Conservation, and Handyman.

One of the biggest challenges to the manager of NFM is the constant balancing act between the full-time force and the part-time volunteer staff. One issue involves the work schedule where full-time employees work an eight-hour day (40 hours per week) and the part-time volunteers work a six-hour day (30 hours per week). Many times, the missionaries must leave work to go to a mission training meeting. Further, the full-time employees have holidays off and accrue sick and vacation time, whereas the missionaries have no paid time off and are required to work most holidays to support any visitors or other events that may occur. There is inherent inequality in the system which requires the manager, the work force, and the volunteers to be flexible and understanding of one another. Group activities and events, such as daily devotionals together, luncheons, and holiday parties, foster closeness between the paid and volunteer workers, and have proven beneficial in creating a positive work environment.

In many other small town museums or historic sites, the only way that they can afford to remain open is through volunteer help. Many of these sites depend heavily on volunteer help and many of these volunteers have remained consistent through the years and it is not uncommon to find individuals who have been going to “help out” at one site or another for decades.

Chapter 8

UNIQUE CHALLENGES WITH HISTORIC RESTORED AND RECONSTRUCTED STRUCTURES IN NAUVOO

In a facilities management world where the normal course of operations in preserving the asset is to maintain it until the end of its useful life, the management of historical structures requires a different approach. It is not acceptable to see a building though to obsolescence and then tear it down and start over. The very nature of these buildings and what draws people to them is the fact that they have been around for a long time and have historical significance. What is to be done when a door knob wears out or the plaster fails on a wall? Questions such as this are perhaps the apex of consideration from a historical preservation perspective. A plan must be developed to preserve the asset indefinitely while maintaining its historical accuracy. This means that the parts and pieces of the structure can be replaced along the way, but should be done in such a way and with “authentic-like” materials so that the casual observer will be satisfied that the entire structure is of historic origin.

In regards to historic preservation, there are two choices. Either the given site can be reconstructed in a way that presents a finished product that appears to be authentic, or the remains of an existing site can be restored with much of the original fabric intact. The latter, restoration, is a painstaking effort, but the result is more authentic and tends to draw those that are more serious historians and students of architecture. Historical reconstruction, on the other hand, usually begins with journal entries that identify a given site or the remains of an extant foundation. Verification of the geographical location is

paramount in telling the story of a historic building that has been reconstructed. Many consider “the space” where the new reconstructed building will stand to be of great significance. For example, through journal entries or other research, if the space where a room, a bed, a stove, a fireplace, or a child’s play area can be reconstructed with the original architecture and dimensions, that space is oftentimes considered hallowed by those that have a connection to the story that occurred there. Nauvoo, in particular is a hybrid of restored versus reconstructed sites. See the following Table 2 (Pykles, 2010):

Site	Year(s)	Sponsor	Director(s)	Result
Nauvoo Temple	1961-1962	LDS	M. Fowler and D.F. Green	Reconstructed
	1966-1969	LDS	V.S. Harrington & J.C Harrington	
	*1999-2002	LDS	Special Projects - LDS Church	
Brigham Young Home	1965-1968	LDS	C. Dollar & J.C Harrington	Reconstructed & Restored
Wilford Woodruff Home	1966-1967	LDS	J.C. Harrington	Restored
Webb Blacksmith & Wagon Shop	1967-1968	LDS	J.C. Harrington & V.S. Harrington	Reconstructed
North Unit of Times and Seasons Complex	1968	LDS	V.S Harrington	Reconstructed
Jonathan Browning Home and Gun Shop	1968-1969	LDS	D. Berge	Reconstructed & Restored
Winslow Farr Home	1969	LDS	D. Berge	Restored
Chauncey Webb Home	1970	LDS	D. Berge	Restored
Seventies Hall	1970	LDS	D. Berge	Reconstructed
Lorin Farr Home	1970	LDS	D. Berge	None
Stillman Pond	1970	LDS	D. Berge	None
Alvah Tippetts	1970	LDS	D. Berge	None
Daniel Butler Jr.	1970	LDS	D. Berge	Exposed Foundation
Joseph Smith Stable	1970	RLDS	R. Bray	Exposed Foundation
Joseph Bates Nobel - Lucy Mack smith Home	1971	LDS	D. Berge	Restored
Scovil Bakery	1971	LDS	D. Berge	Reconstructed
Joseph Smith Homestead Summer Kitchen and Bee House	1971	RLDS	R. Bray	Reconstructed
Joseph Smith Red Brick Store	1972	RLDS	R. Bray	Reconstructed
Theodore Turley	1973	RLDS	R. Bray	None
Hyrum Smith	1974	RLDS	R. Bray & G. Waselkov	None
Masonic Hall	1975	LDS	D. Berge	Reconstructed & Restored
Riser Boot and Shoemaker Shop	1975	LDS	D. Berge	Reconstructed
Kimball-Heywood Store	1975	LDS	D. Berge	None
Stoddard Tinsmith Shop	1975	LDS	D. Berge	Restored
Times and Seasons Print Shop	1975	RLDS	R. Bray	Exposed Foundation
Outbuildings at Joseph Smith Homestead	1976	RLDS	P. DeBarthe	None
Joseph Smith Mansion and Hotel	1977-1978	RLDS	P. DeBarthe	Exposed Foundation
	1980-1983			
Levi Hancock	1979	RLDS	P. DeBarthe	Exposed Foundation
James Brinkerhof	1979	RLDS	P. DeBarthe	Exposed Foundation
Windsor P. Lyon Home and Store	1980	LDS	J.T. Walker & R. Stamps	Restored
Sarah Granger Kimball Home	1981	LDS	D. Berge	Restored
William Law Store	1984	RLDS	P. DeBarthe	None

* Note added to original Pykles table

Table 2. Chronology and Classification of Nauvoo Excavations

Although the information listed in the Table 2 was accurate as of 2009, there are now other sites in the planning stages being considered for restoration or

reconstruction in Nauvoo, including the Orson Hyde Home, the William Weeks Home, the William Gheen Home, and the Edward Hunter Home.

Once reconstruction or restoration of a structure is in place and ready for public viewing, the operation and maintenance of the structure needs to be addressed. As the ways and means of the construction process is examined, it will give insight into the requirements for operating and maintaining the facility. Keeping in mind that the construction process directly influences the maintenance process, the stark difference between maintaining a historic structure and maintaining a conventional facility in the modern world will now be reviewed by taking a more focused look at the major components of a building.

Foundations

Many of the foundations of 1840's structures were constructed with loose rock or stone. Over time these foundations fail. Shoring up these foundations from the interior basement of the structure with grout or plaster is an acceptable approach. If stones are missing, one approach is to replace the stones with "like" stones. Another approach is to infill the voids with concrete. At times, these foundations are remarkably preserved and little is required other than observation and limited maintenance. The foundation space of the buildings in Nauvoo is not usually on the regular public tour and consequently the painstaking effort to authenticate the foundation is not as essential as it would be in other areas of the structure.

Framing

Framing of 1840's structures was usually done with rough cut timber. There are some structures in Nauvoo and the surrounding area that have retained some of

the original timber that arrived from the Wisconsin Pineries. Because the lumber in walls is covered up, it is not critical in a reconstruction situation that the lumber be of historic origin. However, the dimensions of the lumber can be critical, and in such cases the lumber must be custom milled to historic dimensions. If the lumber is exposed, it is imperative that it be as true to historic form as possible and the exposed connectors also be as authentic as possible including nails, fasteners, strapping, etc.

Roofs

Rafting lumber down the Mississippi River from the Wisconsin Pineries in the 1840's to Nauvoo was a long trip. To pass the time, effort was engaged in shaping shingles. The record indicates that over the course of four years, two hundred thousand wood shake shingles were manufactured on these trips and an estimated one-and-half million board feet of lumber was floated to Nauvoo (Rowley, 1992). Understandably, the early saints in Nauvoo would use whatever they could to weatherproof their homes. Common weatherproofing materials of the time were grass sod (earthen), pine pitch, batten and board roofs and of course wood shake shingles (Historic Sites Operations Committee, 2009). The common asphalt shingle of today would not be used until the early 1900's (Cullen, 1992). Today, wood shake shingles are readily available. Whenever a new roof is required on a historic structure in Nauvoo, wood shakes are generally used. There is also effort to seal these roofs with unique liquid wood sealers that give the appearance that the roofs have weathered, adding to the historic appearance.

Exterior Wall Coverings

In the 1840's in Nauvoo, there were generally two options for exterior siding, brick or wood. Sub-categories of wood siding included rough logs, tongue and groove, shiplap and flat plank edge (Historic Sites Operations Committee, 2009). Those who had the means would opt for the brick option. Nauvoo happens to have an abundance of brick quality clay, and in the era of the Saints there were as many as seven brickyards in operation (Thomas, 2005). Most of the historic sites that are visited today are of the brick variety. If siding or brick must be replaced, every effort is made to replicate what the material would have looked like. Some of the historic homes in Nauvoo still carry the red brick that was common to the time. Finishing the exterior wood siding was often limited by available funds and consisted of paint, stain, or faux grain (Historic Sites Operations Committee, 2009). Maintenance and historic standards are adhered to when repairing or restoring these finishes.

HVAC (Heating, Ventilation, Air-conditioning)

This was a term that was non-existent in the 1840's, but is very common today. Historic heating and cooling in Nauvoo consisted of a fire in the fireplace(s) in the winter, and opening the doors and windows in the summer. Today, most of the sites have modern HVAC systems in place. The furnace and cooling coil are usually hidden in some out-of-the-way place so as not to be visible to the public visitor. The condenser is usually outside of the structure often with a fence or some other visual deterrent to shield it from the view of the public. These

systems are maintained and changed out at the end of their useful life just as they would be in any other typical building today.

Plumbing

Indoor plumbing was non-existent in Nauvoo in the 1840's. Today most of the sites have a small bathroom in the basement that can be used by site guides. They consist of modern fixtures that are not historical in nature and can be maintained using contemporary methods.

Electrical

Electricity was also non-existent in 1840's Nauvoo. Buildings were generally illuminated with candles, gas lamps, or light from the fireplace. There are many light fixtures on the market that give the appearance of candles or gas lamps. Care must be taken to procure the type of fixture that most closely approximates the original light source. Most visitors are aware of the period when electricity became widely used and overlook discrepancies in lighting today.

Windows

Glass was at a premium in the 1840's. Window panes were often bought in the larger cities en route to Nauvoo. It was the practice to try and save as much glass as possible if a home burned, and it was not uncommon to remove treasured glass from one structure and move it to another when the occupants moved (Allen, 2002). Historic, restorative glass is available, but it comes at a premium price. Purchased restorative glass has the classic wavy flow of historic glass and a semi-hazy view. The window frames were made of various types of wood species depending on availability. Of all the elements in a structure, windows and frames

are the most vulnerable to damage from moisture, ultra-violet rays and breakage. Accordingly, many of the resources for maintaining the exterior envelope of a structure are used on the windows. If glass does need to be repaired or replaced, every effort should be made to procure glass with the same appearance as the original. The window framing material should also be of the original wood species or a moisture resistant wood local to the area. Further, historic construction and maintenance of windows often requires that a film be applied to the surface of the glass to prevent UV light from penetrating into the interior of the structure and exposing historic furniture and artifacts to the damaging UV rays of the sun (Historic Sites Operations Committee, 2009).

Interior Walls & Ceilings

In today's world, wallboard or sheetrock is the common material to finish out the interior of a structure. Sheetrock was not introduced until 1916 (Rae, 2016). In the days of Historic Nauvoo, there were various options depending upon available materials and resources. A viable option and the least expensive was to leave the walls with no finish at all. Due to little or no insulation value, this option was not ideal for the long cold winters of Nauvoo. A second option was to finish the interior walls and ceilings with (wood) lath and plaster. The void between the exterior siding and the interior lath could be filled with some type of insulating material. Everything from blankets to hair to newsprint to bricks has been found serving as insulation material in historic buildings. The plaster material often contained horsehair which served as a type of binding ingredient (Lamachio, 2014). This is significant because many times the authenticity of the plaster can

be verified by the presence of horse hair in the mixture. A third option was to use similar material to the exterior siding on the interior walls as well. With all of these options, usually a coat or two of white wash paint was applied. Maintaining and repairing these walls today requires the work to be done in such a way that the appearance of a “patch” is not readily viewable. Since the walls and ceilings are very visible to the public, it often requires that a craftsman specializing in historical construction and renovation be employed to make these types of repairs (Historic Sites Operations Committee, 2009).

Floors

Hardwood floors are often sought after for their beauty and natural appearance. In early Nauvoo, hardwood floors for the most part were the only option for flooring. Initially, some Saints first arriving lived in dugouts with dirt floors. All restored and reconstructed sites in Nauvoo use hardwood for the floor covering. When replacing or repairing hardwood floors today, it is rare indeed to find an original wood floor that is over 150 years old. Painstaking effort is made, however, to assure that the floor appears as it might have in the 1840’s. As with the window frame material, the species of wood is important. A common hardwood used in Nauvoo was Walnut. Today restored floors of oak, maple, cherry, and even some soft wood pine floors can be found. The key to reconstructing or restoring these floors is to provide the appearance of an 1840’s floor through proper tooling, scraping, sanding and finishing.

Doors

As with the windows, doors often withstand a substantial amount of abuse. Historic doors are made from the same species of wood that floors are made from. Doors often tell a story. In the case of the Carthage Jail massacre, there were shots fired through the door into the quarters where Joseph Smith and Hyrum Smith were being held (Blake, 1994). There has been debate for years as to the authenticity of that door. Some say it is the original door and others say that it is a replica. There are other doors in the Carthage Jail that have been reproduced by very talented craftsman and one would be hard-pressed to distinguish between an original and a replica. When it comes to a door that has failed, the general operating procedure is to replace the given door with a replica. These replicas are works of art and the skill required to reproduce them comes only after many years of experience. The wood species, door component assembly, tooling and finishing must all be accurate to achieve the desired result.

Chapter 9

MODERN FM PRACTICES AND TECHNIQUES

For many years, the facilities management approach at Historical Nauvoo was typical of the industry at large. This involved a reactive approach to work requests or complaints, which were logged on paper forms or communicated verbally through word-of-mouth and telephones. As late as 2011, work requests were filled out by hand on a request form and reviewed by management to consider approval. With the formation of NFM and the employment of a full-time, long term manager, in lieu of a volunteer missionary, some of these things began to change. No longer was it necessary to fill out a paper form to have work done in each site or home. Roughly 170 of the living units in Nauvoo, although not “historical”, are occupied by the missionaries themselves and maintained by NFM. This creates many issues that warrant a work request. To expedite this process, the use of Computer Maintenance Management Software (CMMS) was explored. Beginning in 2011, a simple and locally designed web-based software was used. As of this writing, there are other “off-the-shelf” products being explored. With the use of an online maintenance program, the efficiency of the facilities management system has drastically improved. All users and occupants of the historic sites and modern homes need only enter their work request via the internet and the request is relayed directly to the receptionist at NFM. Based on pre-approved methods, the receptionist or gatekeeper of the system then assigns the work request to the appropriate department for resolution. No longer is it necessary to have management review every work request for

approval. NFM exists to resolve these issues and a cultural mental change has occurred with the use of this software providing more automation, flexibility, and freedom to all involved.

Part of the motivation for the current pursuing of a different CMMS is to incorporate some type of a preventative maintenance aspect into the operation. The current software does not have this capability and when compared to other historic preservation sites, this is essential to elevating NFM to the next level. There are currently preventative maintenance concerns that are being addressed on a regular basis, such as equipment maintenance, changing out air filters, replacing batteries in smoke detectors, testing backup generators, winterizing exterior drinking fountains, etc., but to create a robust and a truly preventative maintenance program, rather than a reactionary program, CMMS options are being explored.

Vision for continually seeking to improve the facilities management process at NFM is a constant objective stemming from the words of the current president of the LDS Church, Thomas S. Monson who said, “When performance is measured, performance improves. When performance is reported, the rate of improvement accelerates” (Monson, 2004, p. 150). As with many disciplines, facilities management excels when this statement is put into practice and becomes the prevailing culture of the organization.

Chapter 10

VISITOR EVENTS

Due to the historic nature of many preservation sites throughout the United States, there is a natural interest in the story behind the site. To capitalize on this interest, many times there are video productions, live shows and outdoor pageants that interpret the story. Behind the scenes of these productions, from a facilities management perspective, there are many resources required to successfully execute these events. In Nauvoo, visitors from all over the world visit to view these productions, and a successful visitor experience is essential in maintaining future visitation and reputation. In 2016 alone, there were 125,000 people who visited Nauvoo from multiple nationalities (Orth, 2017).

In the Historic Nauvoo visitor's center, video productions play continually throughout the year and require constant oversight on the part of NFM to assure that the video feeds are functioning, the lighting is correct and the seating is acceptable. In the event of a breakdown, it is important that the show be up and running again as soon as possible. Avoiding situations where the public gets the sense that things are broken or "out of order" is imperative. Word of mouth advertising is very effective and if the word is spread that the entertainment experience in Nauvoo is not top notch, visitation will decrease.

In addition to digital video productions, there are a variety of live shows in Nauvoo that run during the summer months that require constant attention on the part of NFM. Included are shows on the outdoor stage, short vignettes performed around town, a horse-drawn live band wagon, nightly performances in the historic Masonic Cultural

Hall (which runs all year long), and the annual Nauvoo Pageant. All of these venues require maintenance and coordination.

Of all the outdoor productions, the one that requires the most NFM resources is the annual Nauvoo Pageant that usually occurs during the month of July. It is a full-scale, Broadway-type production with a core cast of approximately 30 actors that receive a small stipend for their efforts. Families from all over the world participate as “extras” in the cast. The show runs Tuesday through Saturday and draws crowds of up to 3500 spectators per night (Orth, 2017). The pageant venue requiring facilities attention consists of the stage itself, the dressing rooms behind the stage, the grass seating area, the lighting towers, the portable restrooms, the portable concessions stand and a variety of support services including first aid, language translation, audio visual and visitor services. Further, in addition to the performing venue itself, there is a newly constructed 20,000 square foot practice facility that is located three miles east of Nauvoo where the entire cast practices in air-conditioned space. The summer months in Nauvoo tend to be hot and humid requiring practice facilities with climate control.

Although these shows typically occur in the summer months, facilities management is required at all seasons of the year because the majority of the rework, remodeling, and preventative maintenance of these facilities is most effectively carried out when visitors are not around in the off-season. Typical preventative maintenance activities include repairing any damage to the stage surfaces and supporting structure, yearly painting, lighting repair and adjustment, assuring that the seating is up to standard, providing a quality audio experience, maintaining the grounds including sod replacement as required, and a variety of other specific tasks. In addition to the resources provided by

NFM, the pageant organization brings an in-house construction and labor crew to focus specifically on preparation for the show. Although they provide the labor to perform many of the functions specific to the pageant, they also depend upon the equipment and tools provided by NFM.

Chapter 11

LIVESTOCK

In order to immerse visitors more fully in the 1840's Nauvoo experience, horse drawn wagon and carriage rides through the streets of Historic Nauvoo are offered. These popular attractions, along with oxen rides, draw large numbers of visitors. The wagon ride gives visitors a general overview of all the historic structures in town while the carriage ride ventures to the north of town through woodlands as a narrator shares stories of the early settlers in 1840's Nauvoo. The oxen ride takes visitors around a short dirt path in a small covered wagon pulled by two oxen, as was often done by emigrating pioneers in the mid 1840's.

Providing these services requires the maintenance of a livestock operation which falls under the management of NFM. The specific components of this operation are indicated in Chapter six. The day to day care of the horses and oxen, and the actual driving of animals is tasked to volunteer missionaries called "teamsters". These teamsters have usually had a lifetime of experience with livestock. There is usually a large-animal veterinarian assigned to be a teamster who provides medical care for the livestock. This person is an integral part of the operation and saves considerable medical expense in the care of the horses and oxen.

Currently in Nauvoo, the two different breeds of draft horses are Percheron and Belgian, with a total of 20 horses. These horses weigh around one ton each. Each wagon or carriage is pulled by a team of two horses. As a general rule of thumb, effort is made to acquire fully trained teams of horses at about the age of four years old and use them

until they reach the age of approximately 20. There is a relatively large Amish population in the surrounding area and it is with this group of people that the majority of the horse buying, selling and trading occurs. The training program of the Amish is top notch and the horses acquired from them are of high quality in both temperament and health. At the end of their cycle with NFM, the Amish are usually willing to take the horses back and continue to use them in farming activities as they finish out their lives.

Currently there are two teams of oxen in Nauvoo. One team is of the Lineback breed originating in Europe and then arriving in New Hampshire. The other team is the Devon breed hailing from New England as well. Oxen have a slow steady temperament and were actually the preferred livestock travel method in the 1840's due to their durability, easy foraging, superior health and less susceptibility to failure. Acquisition of oxen in Historic Nauvoo still comes from the New England area of the USA as there are many youth who raise oxen for programs such as 4-H and sell them to supplement their college funds.

The oversight of the livestock is the responsibility of NFM. This includes buying, selling and trading of the animals, as well as procuring feed, medical care, foot care, tack (harnesses, bridles, blankets, etc.), grooming and a host of other incidental issues. Without efficient oversight, prioritization, and organization, this aspect of the operation could quickly become overwhelming and cumbersome.

Included in the livestock operation in Nauvoo is the management of approximately 100 acres of hay-producing fields. NFM usually produces enough hay to sustain the livestock through the winter months. In the summer months, the animals graze freely on the summer grass, reducing the need for supplemented hay.

The care and maintenance of the wagons and carriages themselves is also part of the operation. These wagons and carriages are not specific to the historic period. They have modern rubber tires, canopies to protect the riders from the elements, modern braking systems and other mechanics. Although there are few riders in the winter months, rides are available all year long. This is done in an effort to help the horses maintain their habits of training and to provide review of the equipment. Because of the constant use of these wagons and carriages, constant care and maintenance is critical.

Chapter 12

BUDGETING AND FINANCE

The required monetary funds to support NFM come from the general tithing funds of the LDS Church. Faithful members donate ten percent of their income as a “tithe” (The Church of Jesus Christ of Latter-day Saints, 2009). The expenditure of these funds is taken very seriously at the highest levels of the Church. The governing bodies of the Church ultimately approve budget proposals and allocate a portion of these funds to NFM.

In regards to budget preparation and finance management, NFM is no different than many facilities organizations operating today. There are basically two “buckets” of money that are budgeted for expenditures throughout the fiscal year. One bucket is labeled “operations”, the other is labeled “capital expenditures”. Operational funds are required to run the day-to-day operations, including payroll, administrative expenses, travel expenses, material and supplies, equipment expenses, cleaning, utilities, etc. Capital expenditures are funds required to execute new projects or purchase capital equipment. Capital funding requires a more vigorous proposal to the Corporation of the Presiding Bishop (CPB), the management group within the LDS Church with responsibility for the Nauvoo Historic Site. Capital proposals highlight the defensibility of the projects. Although these capital proposals are often approved and work moves forward, from time to time projects are denied. If the management team at NFM feels that a project still has merit, then the project may be proposed again in a subsequent year for consideration.

In an effort to conserve finances and to promote environmental consciousness, NFM makes every effort to recycle and reuse resources as much as possible. Hay production for the livestock is locally grown and maximized with very little need to purchase hay from outside vendors. Trees that are no longer viable are converted into wood chips and used to beautify the landscaping. Various species of trees are processed to manufacture cabinets. Clay for the bricks is locally excavated in Nauvoo. Through these efforts and a myriad of others, NFM reaches evermore for the ultimate idea of self-sustainment and cost effectiveness.

Chapter 13

WORKING AS A SUBSIDIARY TO A GLOBAL RELIGIOUS ORGANIZATION

The Church of Jesus Christ of Latter-day Saints is a worldwide religious organization of approximately 15.6 million members (“LDS Statistics and Church Facts | Total Church Membership,” 2017). Within the organization are various entities, some being for profit and others classified as nonprofit. The Corporation of the Presiding Bishop (CPB) is of the nonprofit variety. NFM, which was formally NRI, is a subgroup residing under the umbrella of the CPB. Although NRI always existed as a subgroup of the LDS church, when it was officially moved under the umbrella of the CPB in 2011, procedures had to be adjusted. The autonomy that was experienced by NRI diminished. This required that the NFM organization observe applicable procedure and policies published by the parent organization. It also opened direct lines of support and communication that were not previously in place. This time of transition was also the time that the full-time manager of NFM was put in place. The cultural shift was very observable and perceived as positive within the organization and to the community of Nauvoo.

As a smaller entity within a large corporate structure, NFM is required to align with the CPB in the observation of human resource policy, adhere to maintenance standards published by the larger organization, submit and receive approval of yearly budgets and adhere to them, provide accountability to direct lines of report in the CPB, and otherwise conform to established procedures of the CPB. This has provided

support and defensibility for NFM and has opened the door for further development and restoration in contemporary Nauvoo.

As a general rule of historic facilities preservation, any project on a property that requires “soil to be disturbed” should require both an informal and formal historical assessment. As part of the due diligence process at NFM, it is imperative, as mandated by the Church History department, that a thorough review be conducted of the area to determine historical value. For example, if a sidewalk or concrete pathway is anticipated in a given location of the site, a study would need to be done of the proposed path to assure that historical artifacts, building foundations or other items of historical significance are not disturbed (Historic Sites Operations Committee, 2009). This process often takes time, and if historic valuables are encountered or there is a likelihood they will be revealed, the project will either be cancelled or an alternate means to accomplish the desired purpose will be necessary. It is the desire of the Church History department that any new, modern construction within the Nauvoo Historic Site be kept to a minimum in order to preserve the overall historic atmosphere. At times there is a conflict in this regard as modern restroom facilities, entertainment venues and visitor support services are required. Coordination and communication between all parties is the key to successful outcomes.

Relevant to NFM’s association with the parent organization, is the creation and implementation of what is being termed the “Master Plan”. This is a document that was authored and published by the Church History department. This document outlines what will take place with development and restoration in Nauvoo over the next 22 years. The idea is to consistently upgrade, restore, beautify, and generally improve Nauvoo per the

Master Plan each year up to and including the year 2039, which marks the 200th anniversary of the refugee LDS saints coming to Nauvoo. This is not to say that construction and restoration will stop at that point, but that Nauvoo will present a type of showcase for that year. The idea of ending restoration, however, has been considered before. Loren C. Dunn (pictured in Figure 9) who was responsible for NRI from 1987 to 1990 made the following comment in 1989:

“No further restoration is planned in the Nauvoo area. With the homes and shops the Church has restored over the years, plus the visitor’s centers at Nauvoo and Carthage,



*Figure 9. Loren C. Dunn –
Courtesy NRI Files*

there is enough of a flavor of the old city there now to give people a good idea of how it was... After this year, Nauvoo Restoration, Inc., will continue to function, but in an operations and maintenance mode, rather than one of construction.” (Dunn, 1989).

Although large scale restoration has all but ended over the past several years since this statement, various major capital improvements have occurred. Highlights would be the reconstruction of the temple, the renovation of the NFM complex, the construction of the new horse barn, the pageant stage improvements, the outdoor sunset stage improvement and the construction of the pageant headquarters and practice facility.

Chapter 14

COMMUNITY RELATIONS

As noted in chapter six, the dedication of resources to bolster the relationship between NFM and the community of Nauvoo is part of the organizational objective. In many facilities management organizations, the degree of community involvement is a choice that is often made by senior management. In Nauvoo, community connection cannot be overlooked. The current census of the city of Nauvoo indicates that there are 1149 people living in the city proper (US Census Bureau, 2010). Ironically, approximately the same number of people remained in the community after the Saints emigrated in 1846 (Esplin, 2009). Accordingly, there has not been a lot of growth through the years. Due to the limited population and the fact that NFM has a payroll of about 25 employees, NFM is one of the largest employers in town. Therefore, the link between the community and the organization is vital.

It is critical to LDS church leadership that NFM be regarded as a “good neighbor”. Nauvoo will always be a place of historical significance to the LDS Church and its members will continue to come to Nauvoo to visit their “roots” and connect with their religion. In order to promote a healthy community relationship, NFM is a member of the Nauvoo Chamber of Commerce and the manager attends the regularly scheduled meetings and holds a seat on the executive board. The manager also attends the monthly city council meetings and other development and construction meetings. This is done in an effort to not only stay in touch with what is happening in the community, but to provide influenced leadership and direction.

Through the years, NRI and NFM have supported and offered services to various city projects in Nauvoo such as road construction, water line installations, landscape mitigation, community events, parking services, etc. Through these efforts, along with having NFM involved in the community as a friendly support, a good working relationship with the community has been fostered. This has proved very valuable to the organization when permits are required, parking adjustments are needed, pageant traffic control is desired, horse-drawn wagons and carriages need approval to travel on streets, variances are sought, and when joint projects are being considered to accomplish the NFM work.

Chapter 15

CONCLUSION

The purpose of this research was to provide a model outline of common core practices among comparable historical preservation sites and a case study on historical facilities management at the Nauvoo Illinois Historic Site as it relates to this model. A history of Nauvoo was provided as the backdrop for understanding the significance of the site today and considerable emphasis was devoted to reviewing the historical account with specific focus on the Mormon period. Following a look at the historical background, an overview was given of the current general facilities management practices with essential components of the comparable sites distilled into topics for discussion as they pertain to the Nauvoo model. Areas of emphasis that are more common across other historic preservation campuses were reviewed in more detail, including full time vs. volunteer labor, the unique challenges inherent with the management of historic sites, current management techniques and practices, visitor events and entertainment, livestock management, finances, and NFM's unique position working within the framework of a larger, global, religious organization. The worth of this case study is the value that it offers to other facilities managers and owners of historic sites. By studying and utilizing facets of the Nauvoo Facilities Management model, other historic sites can gain valuable insight into improving their own sites.

REFERENCES

- Allen, C. W. (2002). *Window Maker* (4th edition). Nauvoo, IL: Allyn House Pub.
- Alner, G., & Fellows, R. (1990). Maintenance of local authority school building in UK: A case study" *Proceedings of Implementation of Quality in Construction*, 90-99.
- Blake, R. (1994). Martyrdom at Carthage. *Ensign*, June
- Chanter, B., & Swallow, P. (2007). *The Changing Context within which Building Maintenance Operates. In Building Maintenance Management* (2nd ed. ed.). Singapore: Blackwell Publishing.
- Colonial Williamsburg (2017). Take Time To Go Back. (n.d.). Retrieved March 2, 2017, from <https://www.colonialwilliamsburg.com/>
- Cullen, W. (1992). evolution-of-asphalt-shingles [1].pdf.
- David, W., & Arthur, B. (1989). *Management to maintain quality in buildings. Proceedings of Implementation of Quality Construction*, 212-18.
- D.N.P. Murthy A. Atrens J.A. Eccleston, (2002), "Strategic maintenance management", *Journal of Quality in Maintenance Engineering*, Vol. 8 Iss 4 pp. 287 - 305
- Doctrine and Covenants, T. C. of J. C. of L. S. (2015, Edition).
- Dunn, Loren C. *NRI Historical files*. June 27, 1989
- Enders, D. (1992). Carthage Jail. *The Encyclopedia of Mormonism*.
- Esplin, S. (2009). *The Mormons Are Coming: The LDS Church's Twentieth Century Return to Nauvoo*. Mormon Historical Studies
- Griffith, J. E. (1870). The Des Moines Rapids of the Mississippi River and its Improvements.
- Hill, C. (2011). Carol Hill Interview.
- Hinckley, G. B. (1999). Thanks to the Lord for His Blessings - Gordon B. Hinckley. Retrieved March 8, 2017, from <http://www.lds.org/general-conference/1999/04/thanks-to-the-lord-for-his-blessings?lang=eng>
- Historic Kirtland Visitors' Center. (n.d.). Retrieved March 6, 2017, from <https://www.lds.org/locations/historic-kirtland-visitors-center?lang=eng>

- Historic Palmyra. (n.d.). Retrieved March 6, 2017, from <https://history.lds.org/section/historic-palmyra?lang=eng>
- HISTORIC PALMYRA of Palmyra, New York. (n.d.). Retrieved March 6, 2017, from <http://www.historicpalmyrany.com/>
- National Preservation Institute (2011). *Historic Property Management: Materials to Systems*. Retrieved March 6, 2017, from <https://www.npi.org/sem-hpm.html>
- Historic Sites Exec Committee - LDS Church, & Heritage Landscapes LLC. (2012, August). Historic Sites Strategic Master Plan 2012 to 2032.
- Historic Sites Operations Committee. (2009). General Maintenance Standards - For Historic Sites of The Church of Jesus Christ of Latter-day Saints.
- Holzapfel, Richard, and Jeffery Cottle. *Old Mormon Nauvoo and Southeastern Iowa*. 1st ed. Santa Ana: Fieldbrook Productions, 1991. 257. Print.
- Lamachio, P. (2014). *When did plasterers stop using horse hair in plaster?* Retrieved March 19, 2017, from <https://www.quora.com/When-did-plasters-stop-using-horse-hair-in-plaster>
- Launius, R. D., & Hallwas, J. E. (Eds.). (1996). *Kingdom on the Mississippi Revisited: NAUVOO IN MORMON HISTORY*. Urbana: University of Illinois Press.
- Leonard, G. (1992). *Nauvoo*. The Encyclopedia of Mormonism.
- Lewis, B., & Payant, R. (2007). *Facility Manager's Maintenance Handbook* (2 edition). New York: McGraw-Hill Education.
- Lincoln's New Salem State Historic Site. (n.d.). Retrieved March 6, 2017, from <http://www.lincolnsnewsalem.com/>
- McGill, A. (2012, November). Building Information and Facilities Management in Historic Buildings. Retrieved March 6, 2017, from http://www.cotac.org.uk/conf_2012_pres/amcgill.pdf
- Monson, T. (2004). *Preach My Gospel*. Salt Lake City, Utah: Author.
- Old Buildings, New Life - Facility Management Design & Construction Feature. (2006). Retrieved March 6, 2017, from <http://www.facilitiesnet.com/designconstruction/article/Old-Buildings-New-Life-4680>

- Operations and Maintenance for Historic Structures | WBDG Whole Building Design Guide. (2016, November 18). Retrieved March 6, 2017, from <http://www.wbdg.org/resources/operations-and-maintenance-historic-structures>
- Orth, K. (2017, March). Nauvoo Tourism Office Interview.
- Priesthood Restoration Site. (n.d.). Retrieved March 6, 2017, from [/subsection/priesthood-restoration-site](#)
- Pykles, B. C. (2010). *Excavating Nauvoo: The Mormons and the Rise of Historical Archaeology in America*. Lincoln: University of Nebraska Press.
- Rae, H. (2016, July 29). An Exciting History of Drywall. *The Atlantic*. Retrieved from <https://www.theatlantic.com/technology/archive/2016/07/an-exciting-history-of-drywall/493502/>
- Rowley, D. (1992). The Mormon Experience in the Wisconsin Pineries, 1841–1845 | BYU Studies. Retrieved March 6, 2017, from <https://byustudies.byu.edu/content/mormon-experience-wisconsin-pineries-1841-1845>
- Rutkowski, J. (2014). John Rutkowski Interview.
- Seeley, Ivor. *Building Maintenance*. 4th ed. London: Macmillan Press Ltd, 1976.
- The Church of Jesus Christ of Latter-day Saints. (2009). Tithing | Freely Giving One-Tenth of Income to the Lord. Retrieved March 8, 2017, from <https://www.lds.org/topics/tithing?lang=eng>
- The Restoration of Williamsburg. (n.d.). Retrieved March 7, 2017, from <http://www.history.org/history/teaching/enewsletter/volume4/july06/restoration.cfm>
- This Is The Place Heritage Park. (n.d.). Retrieved March 6, 2017, from <http://www.thisistheplace.org>
- Thomas, J. (2005). Nauvoo: On the Banks of the Mississippi - New Era May 2005 - new-era. Retrieved March 8, 2017, from <https://www.lds.org/new-era/2005/05/nauvoo-on-the-banks-of-the-mississippi?lang=eng>
- U. S. Department of Veterans Affairs; Office of Acquisition, Logistics and Construction; Office of Construction and Facilities, M. (2013, July). Historic Preservation - Office of Construction & Facilities Management [General Information]. Retrieved March 6, 2017, from <http://www.cfm.va.gov/cfm/historic/index.asp>

- US Census Bureau. (2010). American FactFinder - Community Facts. Retrieved March 8, 2017, from https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkml
- Usman, N., Gambo, M., & Chen, J. (2012). Maintenance Culture and Its Impact on the Construction of Buildings in Nigeria. *Journal of Environmental Science and Resource Management*, 4, 69-81. Retrieved May 15, 2015, from [http://www.cenresinpub.org/pub/September Edition 2012/JESRM/Page 69-81_985_.pdf](http://www.cenresinpub.org/pub/September%20Edition%202012/JESRM/Page%2069-81_985_.pdf)
- Great River Road (2017). *Visitors Guide to Lock & Dam No. 19 - Keokuk, Iowa* Retrieved March 8, 2017, from <http://www.greatriverroad.com/quincy/lockdam19.htm>