Sheltering New France

Fort St. Joseph Archaeological Project
Booklet Series No. 3
Western Michigan University
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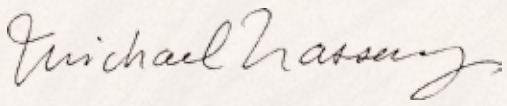
Fort St. Joseph Archaeological Project

There has been a great deal of community interest in the discoveries of the Fort St. Joseph Archaeological Project since 1998, when the investigation and interpretation of one of the most important French colonial sites in the western Great Lakes region began. Living history reenactors, local historians, students, Niles citizens, and other public stakeholders have engaged with the various public outreach and education events, activities, and media that reveal the hidden histories of the long-lost settlement along the banks of the St. Joseph River.

Fort St. Joseph archaeologists, in partnership with the City of Niles, the Fort St. Joseph Museum, Support the Fort, Inc., the Michigan Society for Colonial Wars, the Joseph L. Peyser Endowment for the Study of New France, the Quebec Government Office in Chicago, and various community groups and individuals have made ongoing results accessible to a wide audience through publications, presentations, websites, social media, DVDs, and other outlets. By using a broad range of media, we have assured that fort followers near and far, young and old, can benefit and learn from the lessons collaborative archaeology teaches us about eighteenth-century life along the banks of the St. Joseph River.

Each year we select a different theme for our research endeavors, as we recover and interrogate the material remains of the fort. Topics have included the women of New France, the fur trade, the militia on the eve of revolution, foodways, and architecture, to name just a few. We have explored these topics using interpretive panels that present information derived from scholarly historical and archaeological research.

In 2010 we decided to make the subject matter of these informational panels available to a general audience through an authoritative booklet series. Our research on eighteenth-century architecture was so well received that we decided to prepare this booklet to showcase the buildings that Native Americans and French colonists constructed. By juxtaposing information from historical documents, standing structures, and archaeological remains, historical archaeologists are well-positioned to identify the built environment of New France and interpret its meaning. We hope you enjoy learning about sheltering New France as much as we enjoyed preparing this latest booklet in the series.



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Front Cover: Larry Horrigan demonstrating French-style construction techniques at the 2015 Fort St. Joseph Archaeology Open House.

Back Cover. Map of New France showing the locations of French and Native forts and settlements discussed in this booklet.

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4 Introduction

Creating shelter is a common theme throughout human history. Architecture consists of building design, style, and construction techniques that distinguish cultures in time and space. Through architecture, we make and shape our material worlds, as we simultaneously create, recreate, and express our identities. Indeed, one might say, "we are what we build." Differences in architecture provide evidence for past cultural practices related to technology, settlement mobility, social organization, and belief systems. For example, the types of bricks (handmade versus machine) used to construct buildings can shed light on the technology available [Figure 1]. Machine-made bricks appear after the 1850s, reflecting a shift towards industrial production.

Figure 1. The Fort St. Joseph Museum is located in the former carriage house of the Chapin Mansion in Niles, Michigan. The house was constructed in the 1880s and is made of machine-manufactured bricks. Shown here are members of the 2016 Western Michigan University Archaeological Field School.

Mobility patterns are evident in the styles of buildings that people inhabit. Mobile hunter-gatherers constructed ephemeral buildings that can be disassembled, moved, and rebuilt quickly and easily. In contrast, agricultural societies inhabit more permanent buildings constructed for year-round use. Anthropologists are careful not to place value judgments on the types of shelters that different societies used because each was developed to suit various needs.

Domestic architecture can also provide archaeologists with information about other aspects of culture such as group size, technology, and the identities of its inhabitants. Seventeenth-century Iroquois long houses up to 200 feet long sheltered extended matrilocal families (a pattern in which newly married couples live with the wife's family) composed of dozens of people. This stands in contrast to the nuclear families associated with small French houses. Buildings of similar construction and size may express relative social equality, as opposed to marked disparities in building size and location. Public buildings, such as courthouses and forts, are often designed to symbolize power and the ideology of a dominant social group.

Religious buildings also reflect the belief systems of human groups. During the Middle Ages, pilgrimages were common among Christians in Europe. As a result, churches were built or adapted to accommodate the large number of pilgrims traveling to worship. Aisles were often widened to create a better flow of movement within the structures and the number of chapels serving as reliquaries also increased [Figure 2]. These transformations demonstrate the ways in which cultural practices influence architecture.

To better understand how architecture expresses culture and the identity of its makers, archaeologists collect evidence pertaining to buildings and shelters from historical documents, oral accounts, surviving structures, and archaeological remains. Historical documents such as letters, official correspondences, material inventories, labor contracts, travel journals, and maps can all reveal aspects of past architecture. While documents may not provide exact details about the appearance of a building, they often offer small clues, or insights, into the size, function, and construction materials used by its builder. The population of a town or settlement can also help suggest the number of buildings that might have been present at a site.

Oral accounts provide archaeologists with first-hand testimonies and knowledge that have been passed down from older generations. Information gleaned from oral accounts may be subjective or limited in detail, but it reveals evidence about architecture that may have otherwise gone unrecorded such as the layout of individual rooms and their furnishings.

Standing structures provide evidence of the techniques and materials employed by their builders. French-style structures

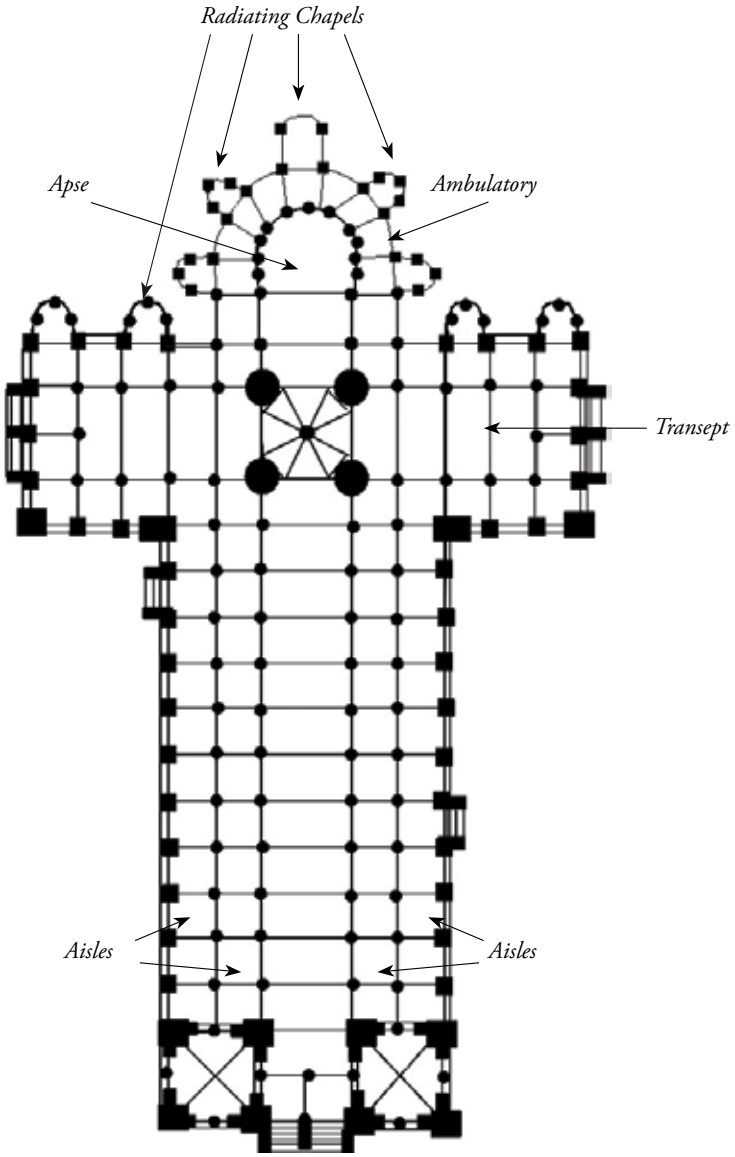


Figure 2. This is a plan view of the Basilica of Saint-Sernin in Toulouse, France. In the early eleventh century, the church was required to expand as a result of the many pilgrims. The double side aisles, an aisled transept, and an ambulatory surrounding the apse allowed pilgrims to move around the church and worship at the many apsidal and radiating chapels.

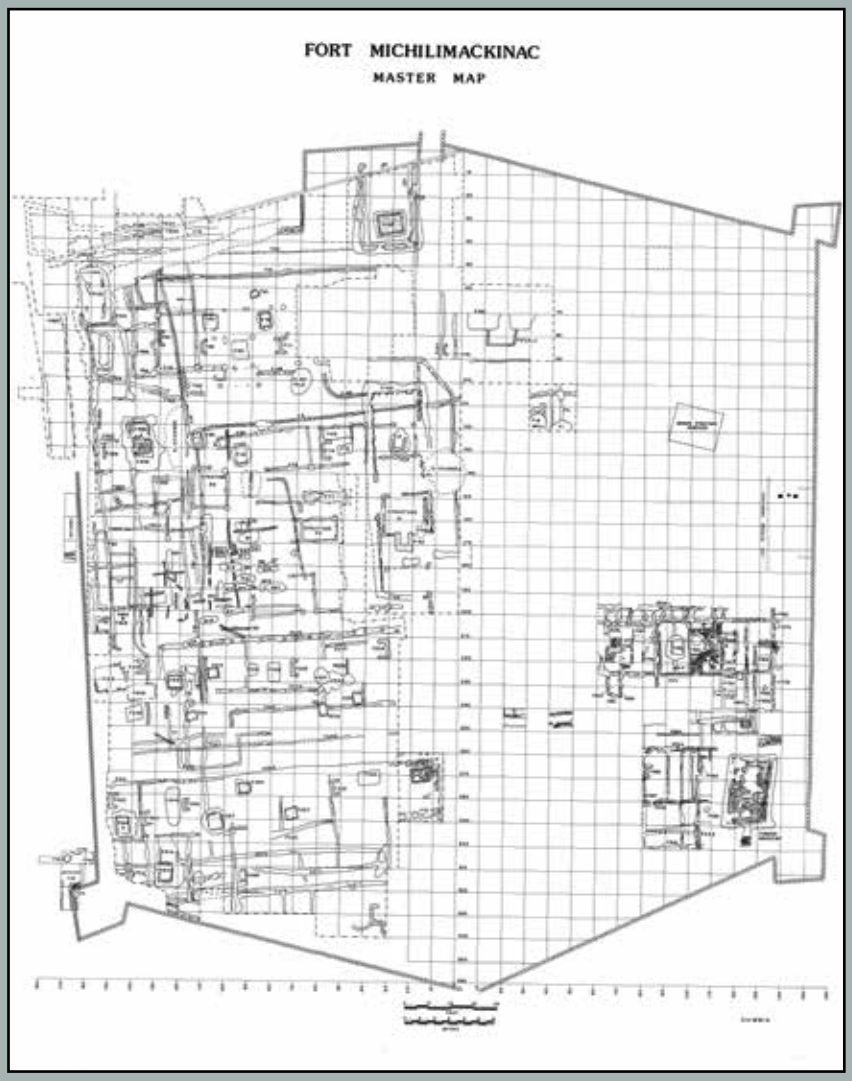
in the St. Lawrence and Mississippi River valleys have been examined with these questions in mind. For example, many houses in Ste. Genevieve, Missouri were built using upright posts placed in the ground (*poteaux en terre*) and exhibit distinctive double-hipped roof lines that were common in the eighteenth century (see Peterson 1965; Thurman 1984) [Figure 3]. Archaeologists can use this information to understand the patterns they observe in the ground (the "footprint" of a building) to infer what the building may have looked like.

Archaeological investigations conducted throughout New France have uncovered and identified numerous structures. While buildings varied considerably over an area as extensive as New France, archaeologists are able to derive some generalizations about building traditions and how they were adapted to local circumstances. Archaeological data are comprised of artifacts (objects modified by humans) and features (landscape modifications like post holes, wall trenches, or fireplaces) left behind, providing evidence of the construction methods and materials used at different places. Fort Michilimackinac, located at the northern tip of Michigan's Lower Peninsula, has yielded extensive information on colonial architecture. Scores of structures and features have been recorded in site drawings and photographs since excavations began in 1959, and much of the results have been published [Figures 4 and 5]. Other French colonial sites, including Fort de Chartres (Illinois), Fort Massac (Illinois), Fort Ouiatenon (Indiana), Fort St. Joseph (Michigan), and the Fortress of Louisbourg (Nova Scotia, Canada) have been examined through archaeology, providing valuable information that complements and sometimes contradicts historical documents. Together, these four lines of evidence—historical documents, oral accounts, surviving structures, and archaeological remains—can provide a more complete picture of the types of architecture built in New France during the seventeenth and eighteenth centuries.

Figure 3. The Bauvais-Amoureux House, located in Ste. Genevieve, was built using the poteaux en terre *construction method and exhibits a double-hipped roof and front gallery.*

Introduction

This booklet begins by exploring Native American architecture in the western Great Lakes region, where Native Americans and their ancestors have lived for thousands of years. When Europeans entered the region in the late seventeenth century, the St. Joseph River valley became an area where Native Americans and Europeans frequently interacted through trade, political alliances, and intermarriage. Both Native American and French architectural styles co-existed in New France. Native peoples constructed their homes and other buildings in traditional ways. Similarly, the French employed architectural templates and styles from their homelands; they carried ideas about how to construct buildings from France and adapted them to materials available in the New World. These cultural practices were expressed in the types of temporary shelters, fortifications, habitations, storage facilities, and special purpose buildings that we find in New France.



Figures 4 (above) and 5 (below left). Archaeologists have been conducting excavations continuously at Fort Michilimackinac since 1959.

Finally, we focus on Fort St. Joseph, where architectural remains and artifacts reveal the first buildings identified at this site. Information gathered on the architecture elsewhere in New France can be used to suggest other buildings yet to be located. Data from other sites can also help to identify the size, function, construction techniques, and materials used for buildings at Fort St. Joseph and provide a fuller understanding of the shelters of New France.

The first French settlements in North America were fishing villages in coastal areas in Newfoundland and Nova Scotia. Here, the French encountered Native peoples and began to exchange brass and iron objects for furs in the early sixteenth century. At different times, and to varying degrees of penetration into the interior, French explorers like Samuel Champlain, Jean Nicolet, and René-Robert Cavelier de La Salle, traveled up the St. Lawrence River hoping to discover the Northwest Passage to the Far East and find new sources of wealth. The exploration of the North American interior was staged from the St. Lawrence River valley where the core of the French settlement grew along its riverbanks, particularly at Quebec, Montreal, and Trois-Rivières. Jesuit Father Jacques Marquette and his companion, Louis Jolliet, descended the Mississippi River to the mouth of the Arkansas River in 1673, and less than a decade later (1682) La Salle continued to the Gulf of Mexico claiming the entire Mississippi watershed for the French Crown. A desire to expand the fur trade also drove French exploration during this period, which began as forays followed by permanent settlement in the interior [Figure 6]. Close encounters with Native Americans—the primary producers in the fur trade—had a significant impact on the identities of the French men and women with whom they interacted.

Figure 6. Fur trade routes, 1755.

Failing to find the Northwest Passage, France expanded and sustained its sphere of influence in the New World by establishing a network of trading posts, forts, and missions in the North American interior during the seventeenth century. For example, French colonists settled in the Great Lakes region (known as the *pays d'en haut* or upper country) and the area of the Mississippi River valley stretching down to Louisiana and the Gulf Coast. Fortified settlements were placed strategically on the landscape to protect French agricultural villages, control waterways, and function as trading posts. In the *pays d'en haut* and the Illinois Country, settlements were quickly established (e.g., Marquette Mission, Michigan [1671]; Fort St. Louis, Illinois [1683]; Fort de Buade, Michigan [1689]; Cahokia, Illinois [1699]) in an attempt to solidify relations with the western tribes, intensify the fur trade, and check the expansion and power of the Haudenosaunee (Iroquois) Confederacy. These missions, forts, and settlements reflected the empire's religious, military, and commercial goals.


Figure 7. A reenactor depicts a voyageur on the St. Joseph River.

Although the French claimed an enormous territory that greatly exceeded that of the English, they had a much smaller population that remained dispersed. In an effort to contain the English along the Eastern Seaboard, the French allied themselves with the Native occupants of the region by creating mutually beneficial exchange relationships that were often reinforced through intermarriage.

During the eighteenth century, the St. Lawrence River valley and the Great Lakes region were actively involved in the fur trade. Voyageurs journeyed from Montreal in birch bark canoes laden with imported goods like metal tools and cloth to supply trading posts such as Fort St. Joseph where these goods would be exchanged with Native peoples for furs and food [Figure 7]. As a result, the French population and their Native allies constructed buildings for various purposes to shelter their activities in New France.

8 Native American Buildings

Native North Americans employed construction for the living and the dead for millennia before Europeans arrived in the western Great Lakes region. They used wood, bark, stone, and earth to construct various types of shelters to house the living and monuments to commemorate the dead. Their buildings were adapted to their lifeways, and reflect group size and mobility patterns among other factors.

The most visible monuments on the landscape were the earthen mounds that Native Americans constructed for millennia throughout eastern North America. The largest and most numerous mounds were built in the Mississippi and Ohio River valleys [Figure 8], though mound construction extended north into the western Great Lakes region. Mounds were territorial markers that often housed the dead. Some larger structures served as platforms to support ceremonial buildings or residences of important people, though these types of constructions tended to be found further south among societies with positions of hereditary leadership.

In addition to human remains, low conical mounds often contained accoutrements that accompanied the dead into the afterlife. Unfortunately, grave goods like ceramic vessels, copper axes, and other utilitarian and ritual objects often attracted looters and archaeologists, leading to the desecration and destruction of mounds. These mortuary sites were targeted as they were quite visible and more likely to yield complete artifacts than habitations where people lived and deposited broken items in their trash. As a result, habitations were not deemed as interesting to early archaeologists who ignored information on the types of buildings that were constructed.

Fortunately, we have other lines of evidence (oral accounts and documents) to provide information on Native architecture to accompany limited data on house floors and patterns of posts outlining their walls. Oral accounts provide archaeologists with first-hand testimonies and knowledge that may have been passed down from older generations. These accounts can offer information on the types of buildings used for different seasons and special purposes as well as their construction techniques and numbers of occupants. Moreover, Europeans sometimes left historical documents that describe Native architecture. These complementary sources of information are critical to archaeologists because they provide perspectives on architecture from different points of view.

Figure 8. Mound B at the Toltec Mounds site (3LN42) in central Arkansas.

Figure 9. The large Mississippian mound and village complex known as Aztalan in Wisconsin.

Native Fortifications

Native peoples have a long history of constructing fortifications made of wooden stockades, low earthen walls, and ditches. At a large Mississippian mound and village complex known as Aztalan (occupied roughly from A.D. 1000-1300) in Wisconsin, archaeological investigations uncovered evidence that the settlement was surrounded by a stockade of upright log posts plastered with clay mixed with grasses [Figure 9]. In northeastern Ohio, the Whittlesey Culture (A.D. 1000-1600) enclosed their villages with earthen walls that sometimes included wooden stockades. Beginning around the fourteenth century, the Iroquois would often construct wooden stockades, set either in or on low earthen walls, to enclose their villages.

Europeans often recorded and sketched information about Native fortifications in the area. For instance, during Champlain's travels in the Northeast (1604 and 1618), he often noted that Native peoples were using wooden palisades to enclose their villages. In 1739, Gaspard-Joseph Chaussegros de Léry, an officer and engineer in the French army, wrote an illustrated memorandum on how to attack Chickasaw forts (Peyser 1992: 167-176). Some were as large as sixty feet on a side with an outer wall made of seven-foot tall stakes planted one and a half feet in the ground. Wooden poles and arched branches angled on the inside of the wall provided additional support. Entrance to the fort could be accessed by a short corridor in the outer wall. Palisades investigated by archaeologists elsewhere show that Natives often used decay resistant wood such as cedar in their construction. Furthermore, houses could be packed in relatively small, fortified areas, to offer refuge in times of war.

The historical site known as the Fox fort, located in eastern McLean County, Illinois was built in the 1730s by Meskwaki (Fox) peoples on what is now formally labeled by archaeologists as the Arrowsmith Battle Ground. Due to vague and conflicting documentary evidence, the location of this earth-and-timber fortification remained unknown until archaeological excavations were conducted (see Stelle 1992, 2008; Stelle and Hargrave 2013). The defensive works were expeditiously constructed in a small grove of oak trees. About 200 French and 1,200 Native allies pursued the estimated 800 Meskwakis as they traversed east-central Illinois on their way to join the Haudenosaunee in modern New York. The French combatants produced five plan view drawings of the fortification and battleground. Surprisingly, the geometry of each map differs radically from the others. Only the one produced in New Orleans and based on the report of the Fort de Chartres officers finds correspondence to the archaeological reality. A comparison of the site's geophysical survey imagery to the 1731 *Carte du Fort* map has revealed many similarities [Figure 10]. Archaeological excavations have exposed the locations of fifteen (of the estimated one hundred and twenty-five) oval semi-subterranean structures, measuring as much as eleven feet in diameter and dug just over three feet into the ground. All but two structures appeared to have been roofed with rafters, cattail mats, and banked earth. Each house was a bullet-proof fortification and several were discovered to have ditches emanating out that connected them to other houses. In total, eight ditches were exposed; they measured two feet wide and extended two feet below the surface. While the historical accounts sometimes describe an outer palisade-type wall surrounding the Meskwakis, archaeological excavations have "located portions of several of the shallow trenches that served as the fortification's perimeter defenses, a short segment of a footing trench for a timber construction…, and elements of earthworks employed by the attacking forces" (Stelle and Hargrave 2013: 41). Even though the Meskwaki's main village in central Wisconsin included a palisaded fort, such was not the case in these hastily created defensive works. Notably, however, is the observation that both Native and European cultures employed fortified settlements, suggesting that these cultures independently arrived at similar solutions for defense.

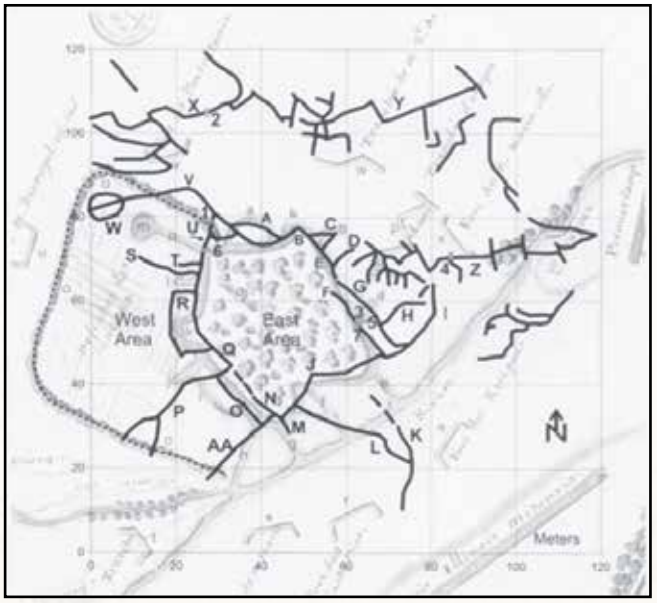


Figure 10. This interpretive map shows the geophysical anomalies associated with the Meskwaki fortification perimeter in McLean County, Illinois, and the attackers' ditches superimposed on the 1731 Carte du Fort map.

10 Domestic Structures

Anthropologists have documented the presence of habitation structures throughout North America from the Gulf of Mexico to the Arctic Circle. Yet the practice of house construction and the types of raw materials (e.g., wood, earth, skins) used have long differentiated Native groups throughout the continent.

Figure 11. Reconstructed wigwam at the Forts Folle Avoine near Danbury, Wisconsin.

The Potawatomis are an Algonquian people who lived in southwest Michigan during the eighteenth century and their descendants inhabit the region to this day. Potawatomi ancestors subsisted on hunting and gathering, supplemented with the domestication of some plant foods, namely maize, beans, and squash (known as the "Three Sisters"). As with other so-called "mixed horticultural groups," they moved their settlements on a seasonal basis within a larger homeland to take advantage of the shifting availability of resources. They did not spend much time in their homes and regarded them as shelters from the weather, places to sleep, and storage areas. They cooked and ate outdoors as weather permitted. The Potawatomis lived in wigwams [Figure 11] during late fall, winter, and early spring, and spent the warmer months in a summer house. During the winter, their homes were positioned in valleys to shelter them from the harsh weather. In the summer, the Potawatomis lived in larger villages near rivers alongside relatives and extended families.

To construct an oval frame for the wigwam [Figure 12], women bent saplings in the ground and fastened them together to form an arch. Potawatomi homes had a central fireplace and sleeping platforms padded with mats or skins along the walls [Figure 13]. Women sewed mats of cattails and reeds to cover the frame. The mats were sewn tightly together and overlapped slightly to keep out rain and wind. On top of the mats, women placed large sheets of elm bark for insulation. The rear was used for storage and the frame of the house was used to hang household goods and food stuffs.

These portable structures were easy to assemble, dismantle, and transport, making them efficient and effective shelters. When they moved, the Potawatomis carried the mats from one house and placed them on the other. They left the framework of the abandoned home standing for reuse. These buildings are hard to identify archaeologically because they left few traces in the ground. Archaeological evidence consists of compacted house floors and occasional post molds, sometimes associated with areas of burned earth. Historical records and oral accounts from members of the Pokagon Band of the Potawatomi, who still reside in southwest Michigan, also allow us to interpret these ephemeral traces.

Figure 12. Assembling a pek-ye-gan *(wigwam), a mat covered winter house, 2001.*

Figure 13. Inside view of a wigwam.

Figure 14. Wigwam frame constructed by members of the Pokagon Band of the Potawatomi for the 2015 Fort St. Joseph Archaeology Open House.

Members of the Pokagon Band constructed the frame of a wigwam at the 2015 Archaeology Open House in Niles, MI [Figure 14]. Amelia Harp, a member of the Pokagon Band and a Georgia State University graduate student in anthropology, educated visitors about the process of building this type of structure and discussed the importance of traditional knowledge to the public. Many were impressed by the simplicity, ingenuity, and strength of the construction.

Special Purpose Structures

The Potawatomis used temporary structures, especially in the late winter season, when they harvested maple syrup. The structures in the sugar bush had a small frame and resembled a teepee. The women could easily build one of these structures in less than an hour.

Another common special purpose structure used by Native peoples in the western Great Lakes region was a sweat lodge. Archaeological evidence suggests that sweat lodges were used for centuries in a ceremonial ritual for purification. They also served as a community bathhouse to remove illness caused by evil spirits. Similar to wigwams, sweat lodges were made by placing bent saplings into the ground to form a dome shape. Water was poured onto heated stones in the lodge to create steam. This traditional healing practice was a religious rite of passage. Native peoples believed this ritual gave them both a spiritual and emotional awakening.

Figure 15. This concentration of fire cracked rock is interpreted as the remains of a Native American sweat lodge at the Schilling site in Kalamazoo County, Michigan. The burned wood used to heat the stones was radiocarbon dated to 2,300 years ago.

Archaeological evidence from the Schilling site (designated with the number "20KZ56" in the state site files) along the Kalamazoo River demonstrates what the remains of a sweat lodge may look like [Figure 15] (Quattrin and Cremin 1988). Located in a tilled farm field, an abundance of fire cracked rock (FCR) was observed on the surface. Below the one-foot deep plowed soil, the archaeologists encountered oxidized soil demarking a dense concentration of FCR in soil blackened with charcoal dating to over two thousand years ago. The orientation and great preservation of a piece of white oak wood identified in this feature suggested the presence of a vertical support post at least six to seven inches in diameter. The overall shape of this feature was oblong, measuring fourteen by seven feet. Initially unsure as to what this feature may have been, the excavators turned to the historical record and oral accounts, demonstrating the importance of multiple lines of evidence and traditional knowledge.

A historical reference to the Baw Beese Band of Potawatomi in Hillsdale County, Michigan described the use of a sweat lodge in the late nineteenth century:

"They held a ceremony which we called 'sissing stones.' For this they had a long, narrow wigwam as the temple. A shallow hole was made in the center and encircled with a row of large stones. Fire was then built within the circle. When the stones were thoroughly heated five or six Indians would enter the 'temple,' shut it tightly, and pour water on the hot stones until the wigwam was filled with steam. After remaining in there for several moments they would run a few rods and plunge, all in that sweaty condition, headlong into the lake"
(Quattrin and Cremin 1988: 34).

12 Temporary European Shelters

Like Native peoples, the French did not always see the need for permanent buildings and employed temporary shelters on occasion. In the course of their travel to forts such as Michilimackinac and St. Joseph, voyageurs would use lean-to tents for shelter [Figure 16] or just sleep beneath their canoes. Lean-to shelters would consist of a frame that was covered with animal hides, canvas, and/or bark, typically open on three sides. Voyageurs could leave the frame constructed for reuse when they returned to the area or for others to take advantage of.

Tents also kept New France travelers warm and dry in cold and wet weather. A standard wedge tent was fitting for the task because of its durability [Figure 17]. When erected, wedge-style tents were seven feet tall. To position the tent, three large poles were placed inside to form the frame. Thirteen pegs were then pounded into the ground. These temporary structures suited mobile lifestyles.

During the Revolutionary War, sailmakers produced military tents with the same canvas cloth used for boat sails. Similar tools and sewing techniques were used to produce the tents. Sometimes animal hides were combined with canvas to cover the tent frames.

Figure 17. Wedge-style tents were set up by reenactors at the 2016 Fort St. Joseph Archaeology Open House.

Tents also kept New France travelers warm and dry in cold and wet weather.

Figure 16. Voyageurs would often sleep beneath their canoes and use lean-to tents as additional forms of shelter.

In contrast to the voyageurs, the majority of the French population was sedentary and inhabited permanent buildings. In New France, these settlers (also known as *habitants*) often lived among each other in small agricultural villages or dispersed settlements where they could trade for resources. Many settlements on the frontier used some elements of fortifications in their design such as stone or wooden palisade walls, bastions, and powder magazines. Wood was the most common construction material, though stone increased in frequency after the 1750s. These places played an important role in the establishment of New France. The French built fortifications to demonstrate power, provide a place of refuge when necessary, and—most importantly—to secure trade goods and resources. Many were built hastily and at little cost to spread French influence by staking a claim to the area. Raw materials, landscapes, and the skills of the builders all impacted the final appearance of such constructions.

Figure 18. The palisade wall and southeast bastion at Fort Michilimackinac.

Design

Seventeenth- and eighteenth-century French fortification designs were influenced by the principles of military engineers Jean Errard de Bar-le-Duc (1554-1610) and Sebastien Le Preste de Vauban (1633-1707). Errard believed that fortifications and defenses should match the terrain and accommodate local circumstances rather than slavishly follow a plan based on geometry. Vauban is known for his strategic fort designs specific to site conditions and a preference for gridiron town plans. He established a corps of military engineers in France during his time as a confidant of Louis XIV; some of these engineers came to North America with engineering manuals to lay out small and large fortifications throughout the settlement. One element of Vauban's principles was the bastion—a pentagonal-shaped projection at the corners of the palisade wall used for artillery to defend the flanks during an attack [Figure 18]. Bastions were common to fortified sites in New France, as evidenced by their presence at Fort Carillon, Fort de Chartres, Fort Massac, Fort Michilimackinac, Fort Pontchbaartrain, and the Fortress of Louisbourg, among others. Older, smaller, or more informal forts may not have taken advantage of this component.

14 New France Fortifications

Figure 19. An aerial view of the Fortress of Louisbourg.

Fortress of Louisbourg

The Fortress of Louisbourg, located on Cape Breton Island, Nova Scotia, is one of the most impressive colonial settlements in New France [Figure 19]. The original settlement was founded in 1713 and construction of the fortress occurred over the next few decades. The fortress was built according to Vauban's principles; it was a town laid out in a grid pattern and enclosed by a massive stone fortification, similar to fortresses that Vauban had constructed in France during the seventeenth century.

Fort St. Frédéric

Located at Crown Point, New York on Lake Champlain, Fort St. Frédéric was a fortified town built between 1734 and 1737 [Figure 20]. It consisted of a square limestone palisade wall with corner bastions that enclosed guardrooms, storage buildings, a chapel, and a massive four-story high redoubt, or tower. The redoubt, located in the northern corner of the fort, was built of ten- to-twelve-foot thick limestone walls containing twenty cannons, baking ovens, trading stores, an armory, a powder magazine, a dungeon, and quarters for the commandant and some of the officers. This design of a fort within a fort provided additional security for Fort St. Frédéric necessitated by its close proximity to British forces.

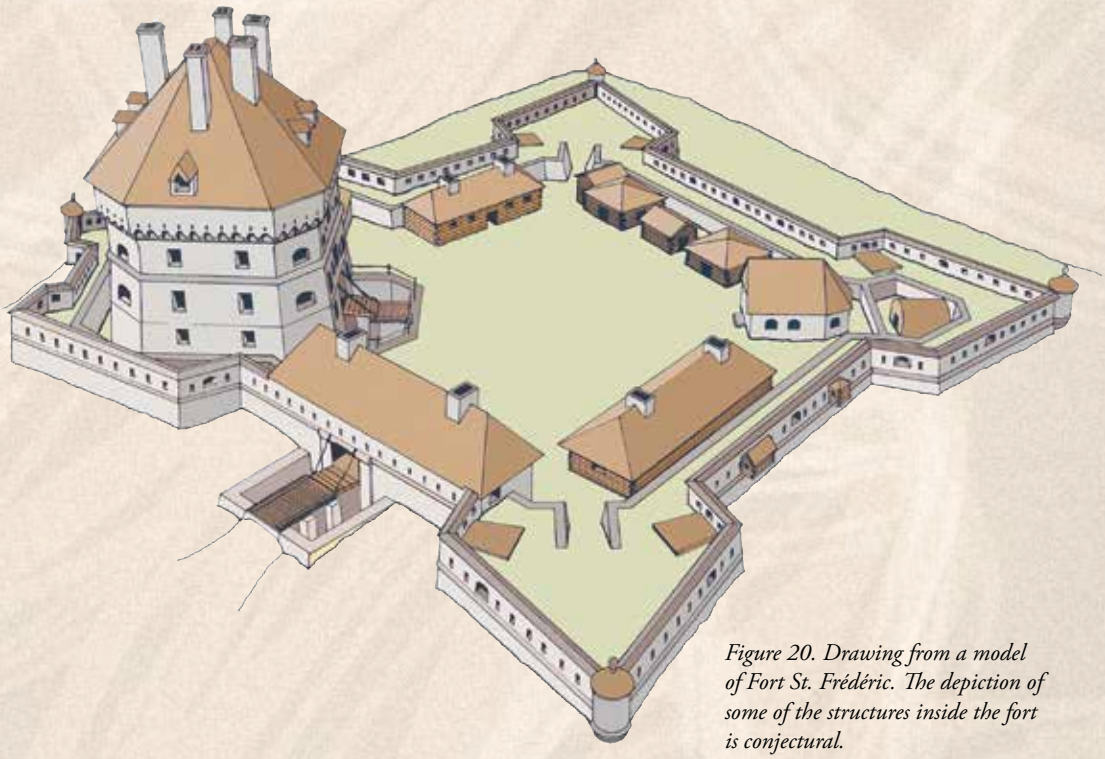


Figure 20. Drawing from a model of Fort St. Frédéric. The depiction of some of the structures inside the fort is conjectural.

Fort Frontenac

Built in 1673, this French military and trading post stood at the northeast end of Lake Ontario where it empties into the St. Lawrence River [Figure 21]. Fort Frontenac consisted of a square palisade with four bastions, originally made of wood, but soon replaced by stone. A blacksmith's shop, a guard house, a well, a cow barn, the officers' and commandant's quarters, the traders' quarters, a chapel, and priest's quarters were located within the palisade. Several French houses, an Iroquois village, a convent, and a Récollet church were situated near the fort, suggesting a diverse community in this area (the Récollets were a reformed branch of the Franciscan religious order). Extensive archaeological investigation during the 1980s has led to partial reconstructions of the west and north palisade walls including the northwest bastion.

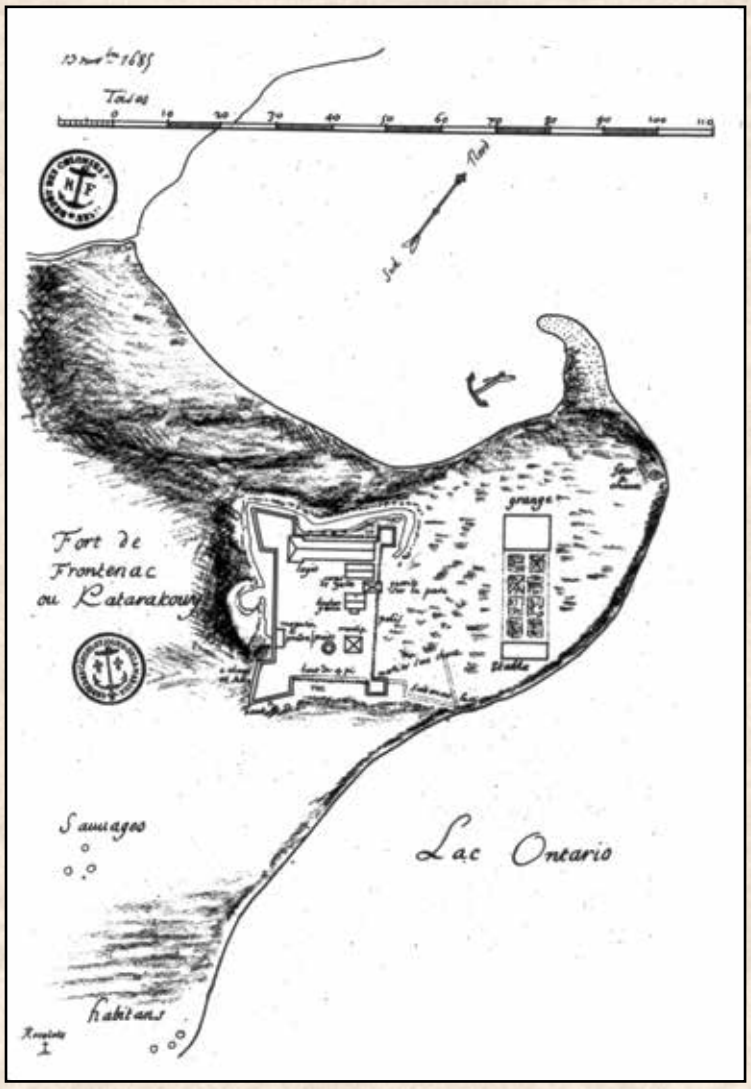


Figure 21. 1685 plan depicting the transition from the second Fort Frontenac of 1675 to the third by 1687.

Fort Michilimackinac

Constructed between 1715 and 1717, Fort Michilimackinac was a wooden stockade with its enclosed buildings laid out in a grid-pattern characteristic of the Vauban-style fort [Figure 22]. Fort Michilimackinac was placed strategically at the tip of Michigan's Lower Peninsula to ensure French control of the Straits of Mackinac. During Fort Michilimackinac's occupation the palisade was enlarged three times to accommodate a growing population tied to the increasing demands of the fur trade. The structures inside the palisade walls included the commandant's quarters, a guardhouse, a church, a powder magazine, and seven row houses. Inhabitants resided both inside and outside of the palisade walls after 1765 attesting to its use as more of a fortified trading post than a military post. A stable, an ice house, and two bake ovens were located outside of the main palisade.

Figure 22. Fort Michilimackinac was an important regional trading post in the western Great Lakes region.

Fort Pontchartrain

Fort Pontchartrain [Figure 23] was built by the French along the Detroit River in 1701 and was likely destroyed before any archaeological investigation could take place. Maps indicate that the fort was laid out in a grid pattern and enclosed by a palisade wall built of vertical oak logs. The 1702 plan of the fort depicts the buildings enclosed by the palisade including a church, a sacristy, a guardhouse, officers' quarters, a powder magazine, and about thirteen houses.

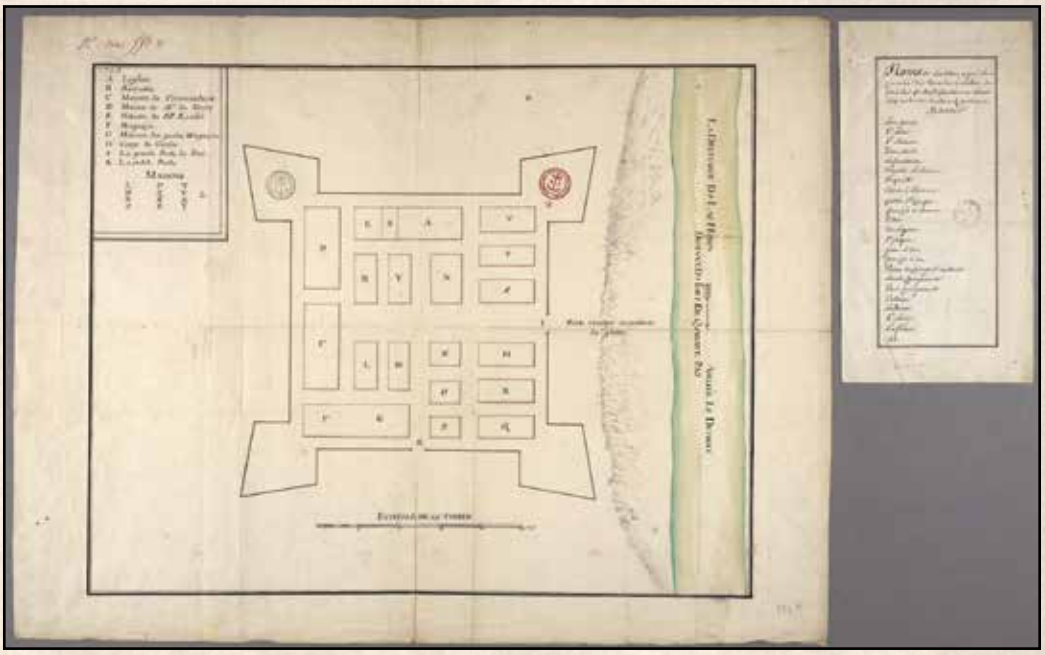


Figure 23. The 1702 map of Fort Pontchartrain.

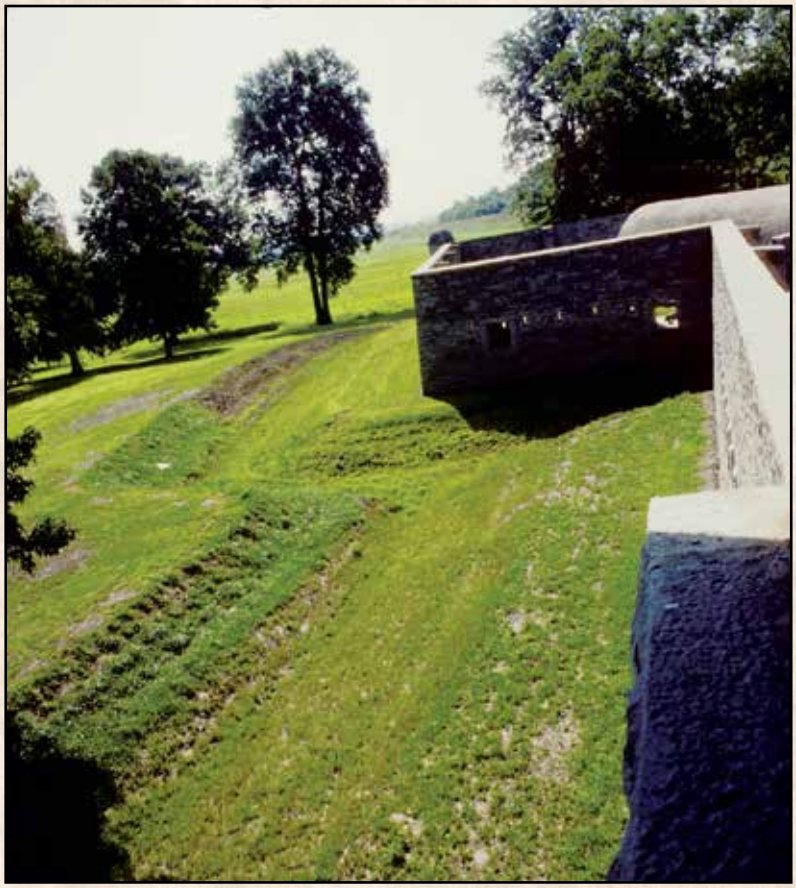


Figure 24. Palisade wall and ditch at Fort de Chartres.

Fort de Chartres

Although Fort de Chartres never housed a civilian population, it was built with a Vauban design in mind [Figure 24]. Located on the east bank of the Mississippi River near Prairie du Rocher, Illinois, the massive stone fort was built between 1753 and 1756. It was preceded by three wooden forts built nearby, with the first fort erected in 1720. The square fifteen-foot palisade walls with four corner bastions enclosed a powder magazine, a store house, a bake house, military barracks, and a guardhouse containing a chapel, the priest's room, the gunner's room, an officer's quarters, and the guard's room.

Palisade Walls

Palisade walls were made with rounded or split logs or stone. To construct a fifteen-foot wooden palisade wall, logs were placed vertically several inches apart in a one to four-foot deep trench that was dug to hold the logs in place. Evidence from Fort Massac and Fort Michilimackinac indicates that cedar was preferred, although at Fort Pontchartrain oak was used. Archaeological evidence from Fort Michilimackinac suggests that the serviceable life of wood in sandy soils is between fifteen to twenty years. In order to help protect the wood from deteriorating, the French would often char the bottom three to four feet of the logs. The palisade wall at Fort Michilimackinac was built of twelve-foot high cedar posts with two entrances on the north and south sides, the doors of which were made of oak. Smaller, shorter pickets were placed between the wall posts to fill the space and provide cover for defenders who could stand on a raised platform and fire through the gap.

Figure 25. Stone palisade walls at the Fortress of Louisbourg.

Palisade walls built of stone were not as common in New France because stone was either unavailable or, more likely, stone construction required considerably more effort and cost. Examples of stone palisade walls can be found in large urban centers (e.g., Quebec) and strategic locations such as the Fort Carillon, Fort de Chartres, Fort Frontenac, Fort St. Frédéric, and the Fortress of Louisbourg [Figure 25].

Bastions

The simple bastion was a four-sided projection from the palisade, or curtain wall, of the fort, often shaped like an ace of spades. This angular shape allowed the artillery to be strategically placed making it possible for the shooters of one bastion to cover those in the neighboring bastion and target enemies approaching the palisade walls, eliminating blind spots. If the enemy did make it inside the fort, the presence of bastions created the opportunity for the gunmen to turn on the fort itself if absolutely necessary during an attack. Each bastion was thus virtually an independent fortress. A 1749 plan map of Fort Pontchartrain depicts a small side bastion in the shape of a triangle, known as a *fleche*, which was added to each of the four palisade walls in addition to the corner bastions [Figure 27].

The purpose for these small side bastions may have been to enhance the appearance of the fort and provide further defense to compensate for the increasing length and width of the stockade, and thus the increasing distance between the bastions.

Prisons, cellars, powder magazines, and wells were sometimes located within bastions. At Fort Massac, archaeological excavations indicate that three of the bastions contained subterranean cellars and the remaining bastion enclosed a well. One of the cellars, measuring twenty-five by fifteen feet, may have served as Fort Massac's powder magazine. Log steps were found leading down into the basin of the cellar, which had a floor of hewn planks [Figure 28].

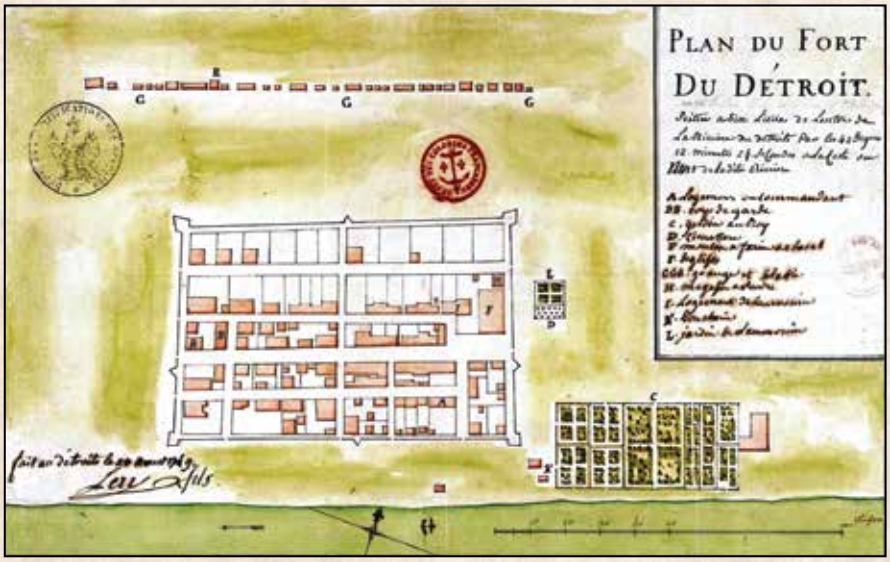


*Figure 27. The 1749 plan map of Fort Pontchartrain depicting its corner bastions and small triangular side bastions (*fleches*) added to each of its four palisade walls.*

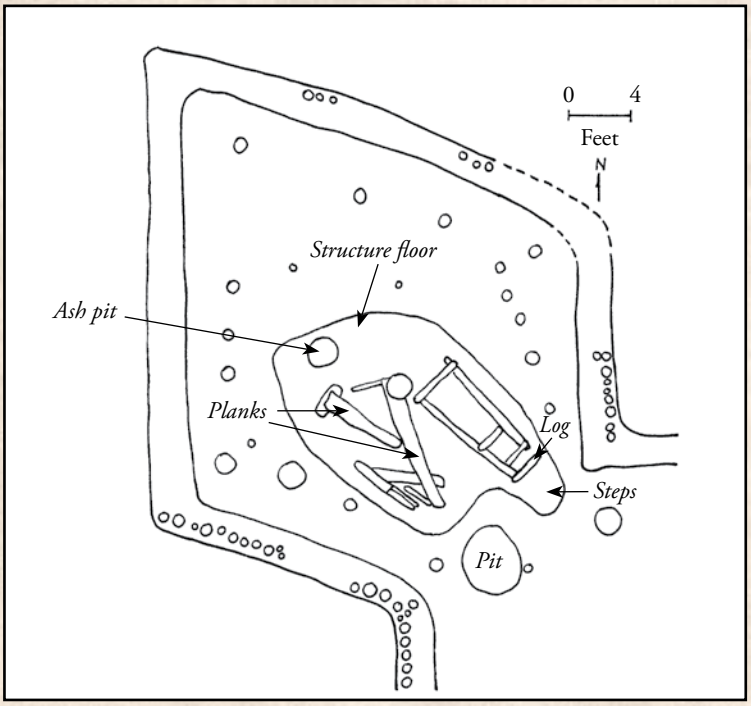


Figure 28. This cellar in the northwest bastion of Fort Massac represents the fort's main magazine for the storage of gunpowder and other armaments.

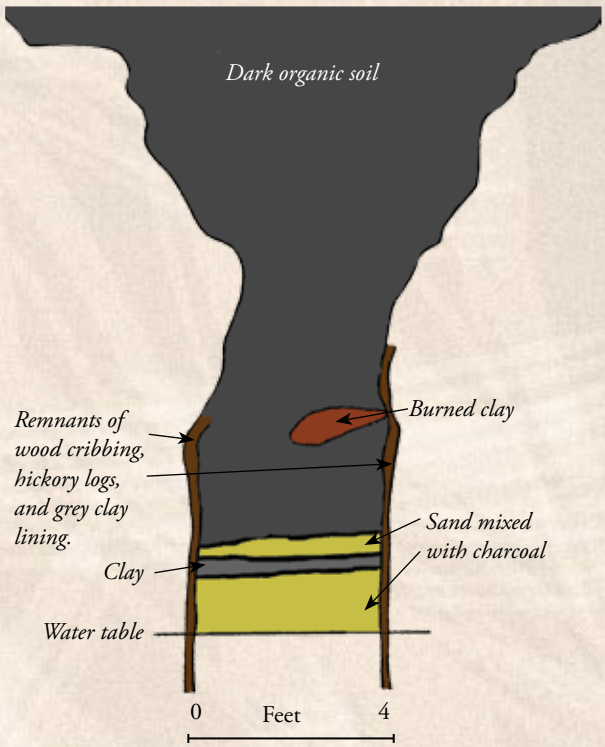


Figure 29. Cross-sectional view of a well excavated at Fort Ouiatenon.

A Source of Potable Water

Wells were necessary features should a fort come under siege. Evidence of wells constructed to provide potable water has been found at Fort Frontenac, Fort Massac, Fort Michilimackinac, Fort Ouiatenon, and Fort Pentagoet, Maine. However, not all French fortifications maintained wells within their palisade walls. For instance, at Fort St. Frédéric historical documents reveal the concern of some elite settlers that the redoubt and outer fort did not have reliable access to water within. On a day-to-day basis, water access within the fortification was probably not necessary, however if the fort ever came under siege the inhabitants would be forced to open the gate and collect water from Lake Champlain.

At Fort Ouiatenon, archaeological excavations revealed the presence of a well within the palisade walls. It was constructed by digging a stepped shaft. When examining the well in profile two feet below the surface, its diameter was thirteen feet. At around eight and a half feet below the surface, the well shaft straightened. Wood cribbing was used to assist in maintaining the well shaft until thirteen feet below the ground surface, when it was replaced with one inch strips of gray clay [Figure 29]. A water well appears in the parade ground on the 1766 Magra map of Fort Michilimackinac. Archaeological excavations revealed it to be sixteen-feet deep. The well was most likely dug between 1725 and 1735.

In late summer 1679, René-Robert Cavalier, Sieur de La Salle, accompanied by three friars, ten French men, and a Mohican hunter, left Green Bay in four large canoes for the mouth of the St. Joseph River, then known as the "River of the Miamis" (Cunningham 1961:49). They reached the mouth of the river on November 1, 1679 where they waited for the Griffin (also known as the Griffon), the first ship on the Great Lakes, which had left Green Bay laden with a cargo of furs on her ill-fated voyage. In anticipation of her arrival, La Salle and his companions selected an area on the bluff above the river and "cleared away the timber from a place large enough to build a fort and provide a cleared space about it" (Morton 1929:12). According to Father Louis Hennepin, they took three weeks to build the fort of hewn logs, forty by eighty feet in dimension (Cunningham 1961:52).

When the Griffin failed to appear, the fort was abandoned with the onset of winter and then reoccupied the following spring when La Salle returned from the Illinois Country. There he met two men that he had sent to Michilimackinac to learn what had become of the Griffin. La Salle again left the fort, this time to travel cross-country to Canada. When he returned the following fall he found that Fort Miami had been burned by some of his own men who had deserted. He left a small party at the ruined fort and the men rebuilt it in his absence and cleared a considerable area of ground for planting in the following spring of 1681 (Cunningham 1961:55-56).

Local historian Robert Myers suggests that La Salle built Fort Miami partly as a staging area but also to keep his men busy. According to Fr. Hennepin, La Salle wanted to await the arrival of Henri de Tonty with reinforcements, being leery of entering the Illinois Country without a sufficiently large force of men to impress the Natives. Those men he had were prone to deserting (a problem that plagued La Salle repeatedly throughout his career) and keeping them busy building a fort prevented idle hands from mischief.

Figure 26. La Salle's Fort Miami, once located at the mouth of the St. Joseph River, was the oldest French fur trading post in lower Michigan.

There is little documentary evidence of activity at the mouth of the river for more than a century after 1681, although French activities in the valley twenty leagues upriver at Niles have often been confused with the history of Fort Miami. For example, Reber (1924:4) places the St. Joseph mission at the mouth of the river. He also transposes the history of French settlement at Niles to the mouth of the river, claiming that "the fort at St. Joseph was visited by Charlevoix [and] . . . was subsequently captured and destroyed by Pontiac's Indians in 1763, *and from that date the bluff site reverted to a wilderness*" (Reber 1924:5; our emphasis). Webster and Krause (1990) have similarly conflated these histories. They claim that Charlevoix had actually visited and described a Native Fort Oola at Niles and did not stop at Fort St. Joseph at the river's mouth. Joseph Peyser's (1992) work, supported by the discovery of French artifacts associated with European-style buildings in Niles, has laid these spurious claims to rest (Nassaney and Cremin 2002; Nassaney et al. 2003). In any event, it is unfortunate that documentary sources are silent on the fate of Fort Miami, why it was finally abandoned, and even exactly where it was located. From the historical descriptions, however, it seems likely that this short-lived fort was established near the mouth of the St. Joseph River.

Various authors have speculated on the precise location of Fort Miami. Morton (1929:12) believed that the fort "was probably on the bluff where the Whitcomb [Hotel] now stands, for that location gave them a view out over the mouth of the River and the Lake and also a certain amount of protection from the Indians." According to Webster and Krause (1990:31), archaeological evidence of the fort may have been found in 1928 or 1929 when workers excavating at the site of the Whitcomb Hotel encountered buried pilings with pointed ends, enclosed in clay beneath a layer of sand. Furthermore, the tops of the posts were burned. The description and provenience of these finds are consistent with material evidence of Fort Miami. Unfortunately, no other archaeological remains were discussed nor collected during these construction activities. Other local historians have suggested that Fort Miami may have been located closer to the river below the bluff given its role as a staging area where access to a waterway for transportation was crucial.

Houses and building techniques embodied material distinctions that ethnic groups often used to mark their social identities. French colonial building styles derive from the half-timbered houses of northwest France that date back to medieval times. Modifications were made in the St. Lawrence River valley, the Great Lakes region, and the Mississippi River valley to accommodate architecture to resource availability, group size, and perhaps most importantly, environmental conditions. For example, Charles Peterson (1965) provided valuable information on French houses in St. Louis and he examined their derivation from and similarities to buildings in France and other French colonies. Buildings in the central Mississippi River valley combined the floor plan of the French–Canadian house (*maison Canadienne*) with porches from the Caribbean to create a new architectural form distinctive of this region [Figures 30 and 31].

Figure 30. The Bolduc House in Ste. Genevieve, Missouri exhibits a double-hipped roof and gallery.

Figure 31. This house found in Normandy, France was built using the poteaux sur sole *method.*

Archaeological studies, historical documents, and standing structures indicate that French colonial buildings were constructed using one of four methods: (1) *poteaux en terre* (posts in the ground); (2) stone masonry; (3) *poteaux sur sole* (posts on a sill); or (4) *pièce-sur-pièce* (squared horizontal timbers) [Figure 32]. Most of these construction methods were used for buildings that served various functions including powder magazines, guardhouses, prisons, warehouses, churches, barracks, commandants' quarters, kitchens, simple dwellings, hen houses, and iron forges. The techniques employed varied from urban to frontier settings and over the duration of the French regime. Structures often left archaeological evidence in the form of fireplaces, postholes, and foundation walls along with the presence of artifacts deposited by their occupants.

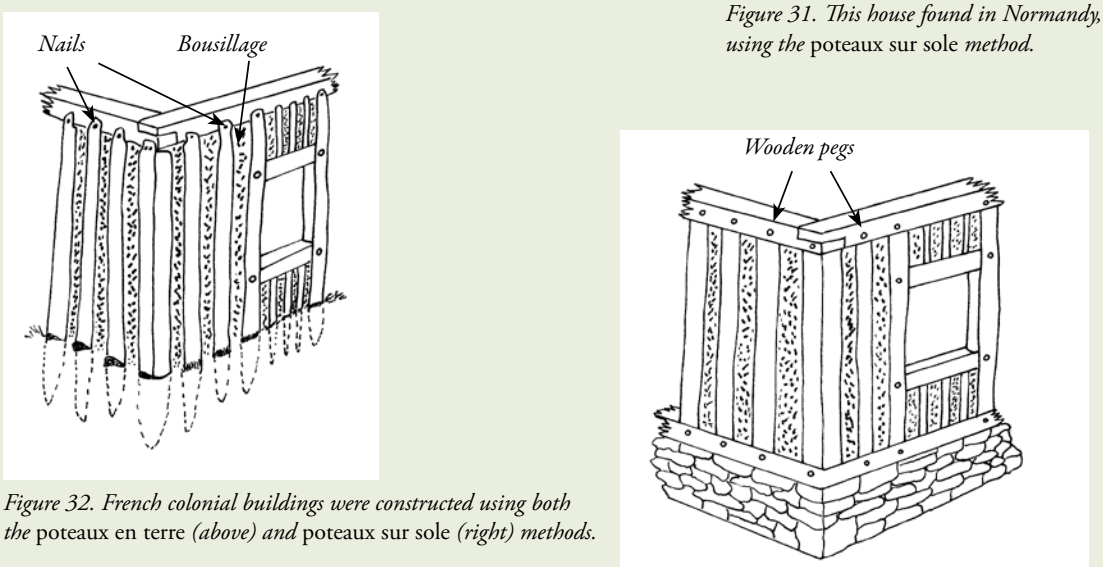


Figure 32. French colonial buildings were constructed using both the poteaux en terre *(above) and* poteaux sur sole *(right) methods.*

Habitations

Many buildings, particularly in frontier settings, were simple *poteaux en terre* structures that were built by setting upright posts within a trench and filling the spaces with *bousillage* (clay and mud mixed with straw, grass, or Spanish moss), then covered with white wash (a mixture of lime and water) to protect the walls from the elements. This type of building was relatively quick and simple to construct, but wooden posts inserted directly into the earth were susceptible to decay from moisture and insects. Sometimes the wall posts would be pegged and nailed into a horizontal wooden sill, which, in turn, sat either on the ground or on a stone foundation using a technique known as *poteaux sur sole* [Figure 33]. This method of construction resulted in a more durable structure, but required more time and skill. In both techniques a mortise and tenon system of timber framing was used [Figure 34]. A plate, or the upper large hewn horizontal timber, was used to frame the top of the structure to match the wall trench or sill at the bottom. To support the plate, an upright post was needed at each corner and beneath the splicings [Figure 35].

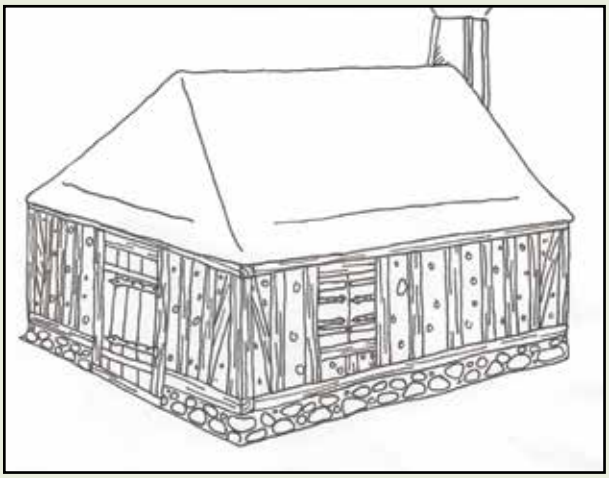


Figure 33. Artist's depiction of a poteaux sur sole *structure at Fort St. Joseph.*

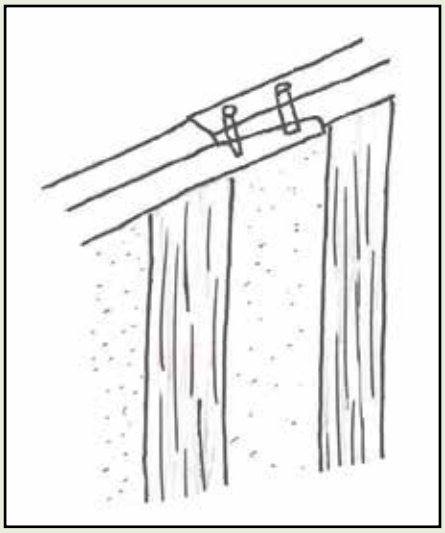


Figure 35. Upright posts are placed beneath splicings in the plate for support.

Stone fireplaces and hearths with stick and clay (wattle and daub) chimneys were often placed at the ends or corners of habitation rooms [Figure 36]. Fireplaces were used for cooking and to warm the home. They also were a source of light in dwellings, allowing for domestic activities such as sewing when natural light was insufficient. Windows made of glass or paper were placed on adjacent sides for cross ventilation. A steep hipped roof, made of either long wooden boards, wooden shingles, or pieces of bark, was common in order to shed rain and snow and divert water from the building's foundations. Attics or lofts within French-style homes were used as sleeping areas and to store dry foods, trade goods, and personal belongings. Structures had either earthen or wooden floors; the latter were typically raised off the ground to keep the wood from rotting. Joists or stones held up the floor boards, which were secured in place by nails or a tongue and groove method.

Figure 34. Larry Horrigan demonstrating French-style construction techniques at the 2015 Fort St. Joseph Archaeology Open House.

In the Mississippi River valley, dwellings were often raised above the ground level and had attached galleries (or covered porches) [Figure 37]. Yearly flooding made it necessary to elevate homes, just as galleries were needed to provide relief from the hot humid summer weather.

Figure 36. Stone fireplaces were used as sources of heat and light in structures throughout New France.

Galleries could be located on one or more sides of a house. Those that wrapped around the entire dwelling provided more options for shade throughout the day when the house became too hot to remain indoors.

The presence of the gallery in these dwellings often resulted in a characteristic double-pitched roof in which the pitch of the gallery roof was not as steep as that of the structure.

These building techniques could be adapted to structures of various size and function. Outbuildings like barns and sheds were constructed using these techniques in the Illinois Country. At Fort Michilimackinac, individuals of higher rank may have occupied slightly larger buildings but they were constructed in similar ways.

Building size also depended upon function; most modest residences typically featured one room containing a fireplace with an additional room, if desired, for storage or sleeping. Some New France inhabitants lived in row houses, like those found at Fort Michilimackinac and Fort Massac [Figure 38]. These were long one-story buildings with three to six interconnected rooms and attics for storage. Row houses were built in the same manner as military barracks, though the former housed settlers and fur traders while the later housed French soldiers. Interior walls were typically narrow partitions in comparison with the sturdy thickness of the exterior walls.

During the expansion of the fur trade at Fort Michilimackinac, row houses were constructed of a similar size and laid out within the fort on a grid system. Historical and archaeological research has revealed that most of the space within the fort was used for civilian dwellings. Fort Michilimackinac contained seven row houses, divided into forty separate dwellings with vegetable gardens often planted adjacent to the buildings. Many of these structures were built of upright posts (the *poteaux en terre* method) and were insulated with *bousillage* covered with bark. Here, soldiers were housed among the fort's inhabitants because there were no separate military barracks present at the fort.

Figure 37. The Janis-Ziegler House in Ste. Genevieve was built with an attached gallery raised above ground level.

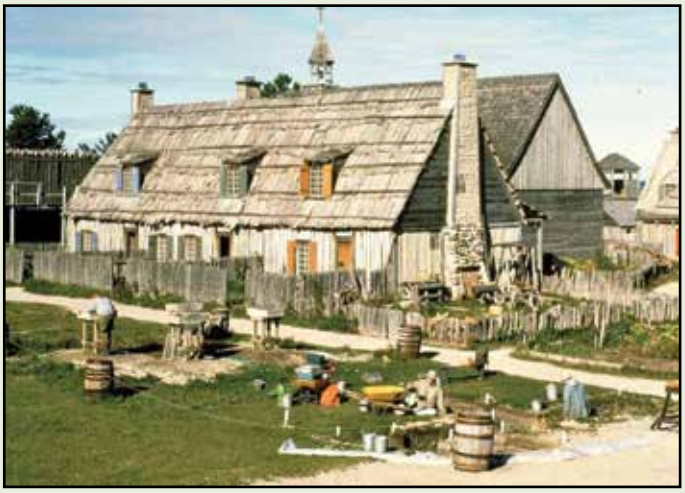


Figure 38. A French row house at Fort Michilimackinac.

Military Barracks

Throughout New France, French soldiers were often housed in military barracks. The barracks were single room structures (e.g., Fort St. Louis) or row houses composed of three to four rooms (e.g., Fort de Chartres, Fort Massac). These buildings were constructed using similar techniques and materials employed for domestic dwellings. In both military and domestic buildings, lofts were used for storage. Historical documents and the presence of military artifacts can be used to distinguish the homes of military officers and soldiers from those occupied by fur traders and French settlers.

At Fort Massac, the wall trenches of two row houses built in the *poteaux en terre* construction technique were identified archaeologically [Figure 39]. The eastern row house, measuring sixty by eighteen feet, was divided into four rooms of equal size, while the western row house (fifty-five by eighteen feet) consisted of three rooms. A steep hipped roof was most likely constructed as archaeologists found post molds along the central axis of each building, indicating the presence of support beams.

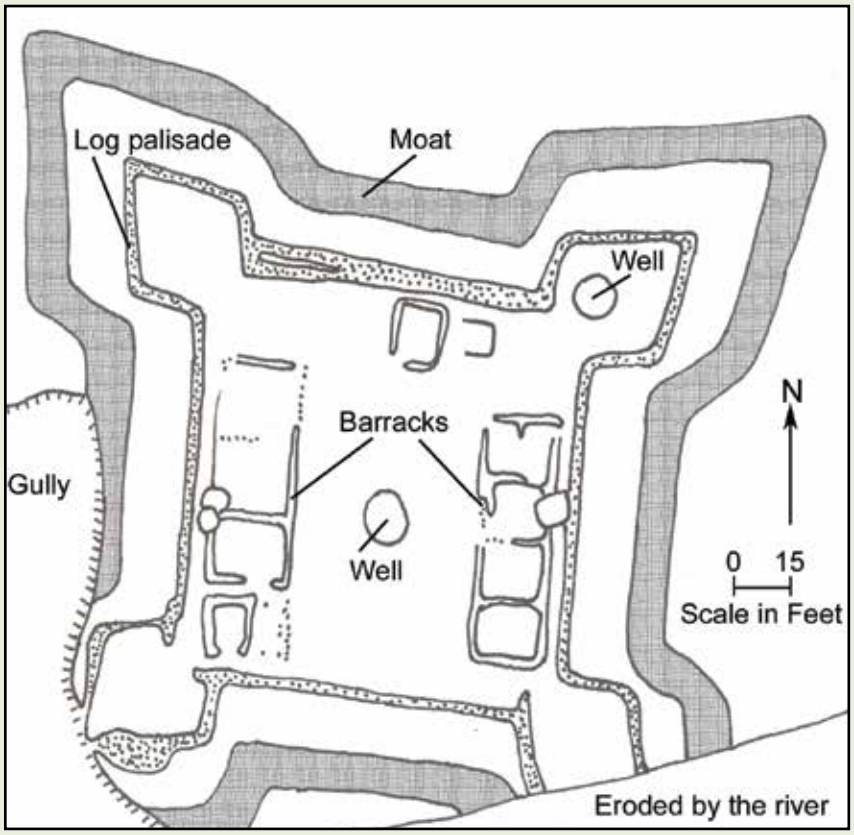


Figure 39. The layout of Fort Massac based on archaeological findings that illustrates the outlines of the barracks.

Officers and soldiers were generally housed in separate rooms and often in separate buildings, as at Fort de Chartres [Figure 40]. The commandant's house—with its iron gates and stone porch—measured eighty-four by thirty-two feet with lofts and cellars for storage. The enlisted men occupied two barrack buildings that were each 128 feet long, oriented north-south. Both the commandant's house and the barracks were built of stone.

Figure 40. Today, the west barracks and commandant's house are represented by stone foundations at Fort de Chartres. An outline of the east barracks is marked by a wooden frame.

24 Commercial and Military Storage Facilities

European demand for North American furs during the sixteenth century fueled exploration, western expansion, and a lucrative commercial trade (Nassaney 2015). Beginning in the seventeenth century, industrial workshops in France and England produced goods that were in demand throughout North America. Structures to store these goods were built at many trading posts, though their appearance and the goods they contained varied somewhat by region.

Trading Storehouses

Some trading posts had specialized buildings devoted to storage [Figure 41]. The size of a storehouse was often related to the volume of trade goods that passed through a site. Some forts like de Chartres and Pontchartrain had large storehouses for commercial goods and military ordnance, while Michilimackinac had a provision store near the north entrance. Research at Fort de Chartres has revealed that its storehouse was ninety by thirty feet in size and two stories high. Smaller forts such as Ouiatenon had a less impressive semi-subterranean storehouse built in the *poteaux en terre* style.

Figure 41. Modern fur trade storehouse along the north shore of Lake Superior in Hovland, Minnesota.

At Montreal, a large urban center, the walls of the King's storehouse were built of stone and covered with wood. The first and second stories consisted of open rooms, while the basement was composed of two vaulted cellars. There was no fireplace in this building, since it was not used as a living space.

The storehouse at Fort Frontenac was built along the west palisade wall, which served as one wall of the building. Archaeological investigations identified the foundations of the east wall in addition to the southern and eastern expansion walls (Bazely 2013). The presence of the expansion walls confirms that the storehouse was added to the south side of the structure, as depicted on a 1726 plan of the fort [Figure 42]. The foundations were made of small, irregular dry-laid stones which rested on the underlying limestone bedrock. Excavations discovered that the inside of the structure was also dug into the earth, providing extra space to store trade goods.

At Fort Pontchartrain, the maps illustrating the fort suggest that the location of the storehouse changed as the fort expanded. Constructed in the *pièce-sur-pièce* style, documentary sources describe the storehouse as being nearly thirty-eight by twenty-two feet with the roof, ceiling, and floor made of thick oak planks. The attic and shelves were used to store goods and the building was kept locked for security.

Although size and construction method varied by location, most storehouses lacked a fireplace but included wall shelves and a basement. Commodities were also stored in traders' houses, basements, attics, or pits. The Crown's storehouses supplied both the fur trade and the military, stowing items such as alcohol, grain, meat, cooking vessels, cloth, clothing, sewing supplies, firearms, and metal tools [Figure 43].

Powder Magazines

Military ordnance like gunpowder and munitions were often kept in specialized storehouses called powder magazines. The ability to dispense powder to French regulars and their Native allies was key to French military strategy. Heavily fortified garrisons often had a more substantial powder magazine to store large amounts of powder and provided maximum security to protect the powder from igniting during an attack.

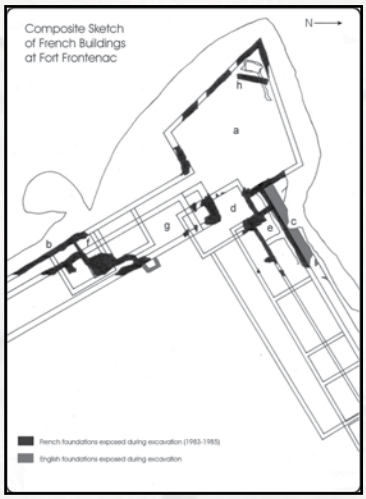


Figure 42. Foundations uncovered during archaeological investigations at Fort Frontenac between 1983 and 1985 include: (a) northwest bastion, (b) west and (c) north curtain walls, (d) logis, (e) trader's quarters, (f) trade store, (g) barracks and (h) terreplein or platform support wall.

Figure 43. Eighteenth-century brass kettle from the vicinity of Fort St. Joseph.

These structures were typically among the smallest, but most substantial, within a fort. The walls of powder magazines were thick in order to support their heavy roofs. Roofs were usually arched and covered with earth and sod for protection from fire and enemy artillery; however, some roofs were made of shingles such as at Fort Tombecbé, Alabama. These buildings lacked insulation because they needed ventilation to prevent a buildup of moisture. At large forts, magazines were built of stone (e.g., Fort de Chartres), while smaller forts used cheaper wood and sod (e.g., Fort Maurepas, Mississippi and Fort Michilimackinac). Wooden magazines lacked *bousillage*, allowing the building to breathe, while stone structures had one or more windows. Although these buildings were generally safe, soldiers and traders still feared living in close proximity in case of accidental explosions.

At Fort Michilimackinac, the powder magazine was located in the southeast corner of the fort near the bastion [Figure 44]. Historical documents indicate that the powder magazine was privately owned. The magazine yielded a significant quantity of trade goods suggesting that it was not only used to hold armaments but also served as a storeroom for traders. Therefore, it was strategically placed near the bastion for additional protection. The structure was not insulated and the roof was made of sod. Junior officers and wealthy traders at Fort Michilimackinac lived in the northwest row house within the palisaded area to shield themselves from the cold northwest winds and the threat that the powder magazine posed should it accidentally explode. Buildings located next to the powder magazine were less desirable places to live.

Figure 45. Reconstructed powder magazine at Fort de Chartres.

Powder magazines were also located in bastions. At Fort Massac, the powder magazine was located within a cellar in the fort's northwest bastion at a safe distance from most of the occupants [Figure 28]. The original powder magazine at Fort de Chartres was located in the southeast bastion, measuring thirty-eight feet long and thirteen feet tall. Its walls were four feet thick, slit with openings for light and ventilation, and rounded at the top to support the arched roof, unlike the reconstructed powder magazine [Figure 45]. The floor of the magazine was below grade and made of stone.

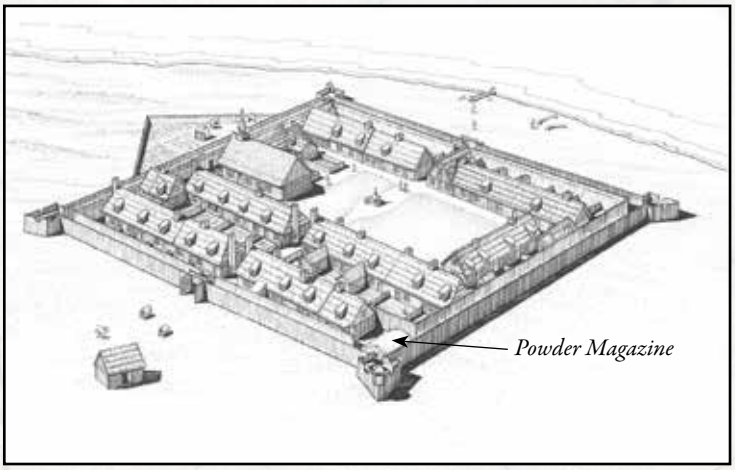


Figure 44. The powder magazine at Fort Michilimackinac was placed in the southeast corner of the fort.

Cellars

Cellars were a common addition to structures throughout New France and were often used to store a variety of items depending on the function of the building. Basements and cellars remain common in buildings today and serve multiple purposes. Archaeological excavations have found cellars in domestic dwellings, trading storehouses, the commandant's quarters, and bastions. Archaeological investigations at Fort Massac located two additional small subterranean cellars in the fort's southeast and southwest bastions.

26 Special Purpose Buildings in New France

Churches, Chapels, and Missions

Ecclesiastical buildings were constructed throughout New France (e.g., Fort Frontenac, Fort Michilimackinac, Fort Pontchartrain, Fort St. Frédéric, Montreal, and Quebec) to serve the inhabitants and the Native Americans who converted to Christianity. Baptismal and marriage records testify to the importance of Christian rituals in daily life. While Christianity may have been reinterpreted on the frontier, some of its core beliefs and values such as those relating to monogamy and religious conversion seem to have survived. Jesuit priests, who were called on to save souls, were among the most devout believers in New France.

Historical research suggests that the first missions, chapels, and churches may have been built crudely using the *poteaux en terre* method. However, archaeological and historical research indicates that many churches or missions in rural areas were built in the *pièce-sur-pièce* method, while those within urban centers often employed stone. The chapel and priest's lodgings at Fort Frontenac were built within a large stone building along the north palisade wall. Religious items were found to the west of the chapel; however, today's street orientation obstructs excavation where the chapel was located [Figure 46]. At Fort Michilimackinac, the Church of Ste. Anne and the priest's dwelling were constructed in the *pièce-sur-pièce* style and covered with boards [Figure 47]. Documentary sources reveal that the chapel and priest's dwelling at Fort Pontchartrain were also constructed in a similar style, measuring thirty-five feet long by nearly twenty-five feet wide. In towns such as Quebec, Trois-Rivières, and Montreal churches were initially built of wood, then replaced with stone, and often expanded and rebuilt as the settlement grew.

Figure 47. Ste. Anne Church at Fort Michilimackinac.

Bake Houses

Specialized bake houses were built at many of the forts and settlements throughout New France, while others employed baking ovens located outside or within multi-purpose buildings. There is little archaeological evidence for the construction style and materials that make up these structures. Historical documents do not offer much information except for their locations at the fort. For instance, bake houses and baking ovens appear on historic maps at Fort St. Frédéric, Fort Frontenac, Fort Michilimackinac, and Fort de Chartres.

The locations of the bake houses and ovens suggest that they may have been used communally. At Fort St. Frédéric, the ovens were located within the massive stone redoubt, among the fort's stores, powder magazine, armory, and quarters for the commandant and garrison [Figure 48]. Historical documents tell us that at Fort Frontenac the bake house was located in a long building that also contained a chapel, provisions for the fort, and the officers' lodgings. At Fort Michilimackinac, the historic Lotbiniere map of 1749 depicts the locations of three bake ovens. One was located in a triangular enclosure along the outside of the west

Figure 46. (a) Location of Fort Frontenac surrounded by landfill and covered by roads and buildings in present-day downtown Kingston, Ontario with the City Hall and marketplace (b) to the south at the location of the 1755 outer defenses.

palisade wall, which also encased an icehouse and the post of the meridian. The remaining two bake ovens were placed outside of the palisade to the south of the land gate [Figure 49]. At Fort de Chartres, the bake house had two ovens and was located in the southeast bastion. Several commercial bakeries competed to serve the inhabitants of the Fortress of Louisbourg, while the King's bakery served the garrison. The King's bakery was finished in 1732 and the four employed bakers were housed on the second floor of the building. The bake houses and ovens at each of these forts served their residents, especially the soldiers who were garrisoned at the site.

Blacksmith Shops

Blacksmiths were employed in large urban centers and at many of the forts and settlements throughout New France. Each blacksmith was taught through an apprenticeship with an established craftsman. Often apprentices would work under multiple blacksmiths to diversify their skills. Blacksmiths provided invaluable skills needed to produce and repair metal objects in colonial communities. Metal objects were used for cooking, gardening, cutting wood, hunting, fishing, trapping, and as architectural hardware. Thus, blacksmiths assisted in supporting the material needs and maintaining the daily life of New France inhabitants.

The remoteness of French forts and settlements would have required blacksmiths to adapt to meet the needs of the communities with limited raw materials on hand. Historical documents reveal that some forges and forge implements like an anvil were imported from France to the interior forts and settlements (Kent 2001:438-465). Successful ironworks, such as at Trois-Rivières (1730), were established during the eighteenth century along water ways. Unfortunately, the frequency of provision shipments to frontier blacksmiths from urban-based suppliers is poorly documented. Studies of blacksmith activities at Fort Michilimackinac by Amy Roache-Fedchenko (2013) suggest that blacksmiths needed to alter common techniques in order to adapt to the frontier conditions that may have prevented the use of preferred materials and manufacturing methods. This resulted in innovation and creativity, which can be identified in the metal artifacts found at these outposts.

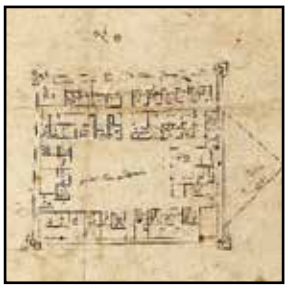


Figure 49. The Lotbinière map of 1749 depicts the bake house within the triangular enclosure along the outside of the west palisade wall at Fort Michilimackinac.

Archaeologists have determined that workshops used by blacksmiths typically consist of areas devoted to work, domestic activities, and storage. The work area, consisting of a forge, anvil base, and possibly a work bench, has been identified from archaeological features indicating a large heat source and areas containing a large concentration of artifacts related to blacksmithing activities. A forge was built with a brick or stone chimney with a platform about waist high where the blacksmith could easily access the heat source [Figure 50]. The floor was usually made of packed earth rather than wood in order to prevent fires.

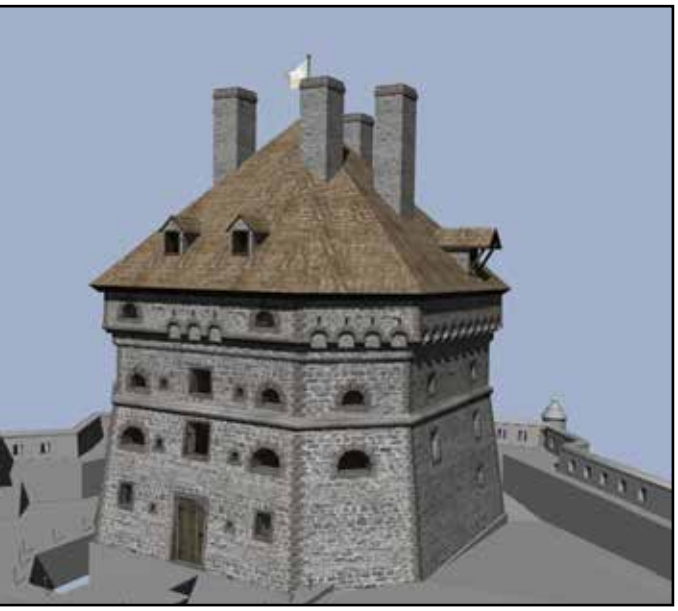


Figure 48. The redoubt at Fort St. Frédéric contained twenty cannons, baking ovens, trading stores, an armory, a powder magazine, a dungeon, and quarters for the commandant and some of the officers.

Figure 51. Three areas (Locus A, B, and C) at Fort Michilimackinac were identified as blacksmith workshops based on excavations and interpretations at the site. Locus D was later determined not to be a blacksmith workshop.

Domestic areas used by blacksmiths would have served as their dwelling and a place to interact with customers. A fireplace would be located within to provide heat as the forge would not be sufficient during the winter. Archaeologically, this area may contain household and personal artifacts similar to those found in other dwellings. Blacksmiths used storage areas for raw iron, repair kits, and metal objects that were discarded, in need of repair, or awaiting delivery to their owners.

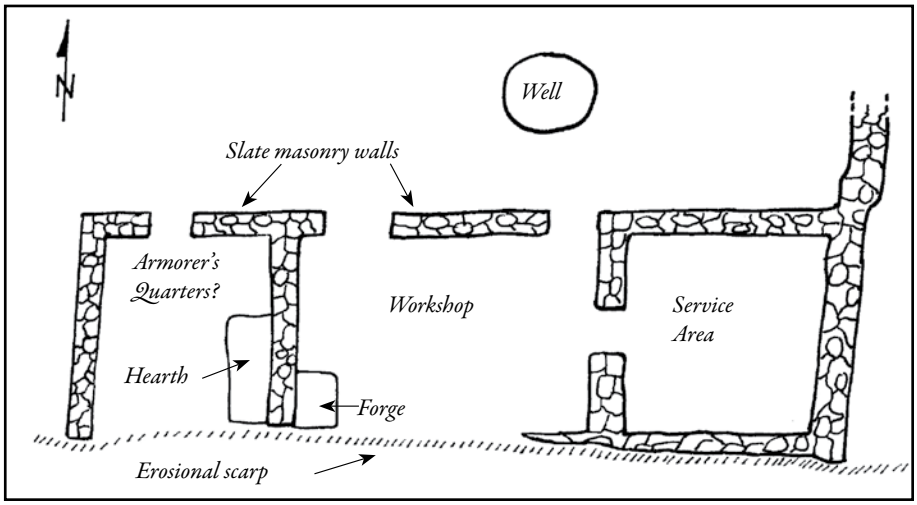


Figure 52. The original three-room plan of Structure 2 at Fort Pentagoet (ca. 1635-1670) was used by the blacksmith.

Amy Roache-Fedchenko (2013) identified three areas within Fort Michilimackinac as blacksmith workshops based on excavations and interpretations at the site [Figure 51]. The first blacksmith workshop, Locus A, was used before 1740 and adjoined the priest's house. Documents suggest that during most of the French occupation at the fort the Jesuit priests controlled the work of the blacksmith and their resources. The workshop building was rectangular and its south wall bordered the north wall of Ste. Anne's Church. A second workshop, Locus B, was used from around 1740 to 1765 and was located just to the north. This workshop was built in the *poteaux en terre* method with a gabled roof. The final workshop, Locus C, was used during the late French and early British periods from 1751 to 1765 and consists of a feature resembling a forge. This workshop is located in a more accessible area near the British barracks, to the east of Ste. Anne's Church.

The objects listed in historical documents and found in the archaeological record indicate that the resident blacksmith completed work for military personnel and to maintain peaceful relations between the French and Native Americans. Native groups often requested the French or English to provide them with access to a blacksmith, suggesting the value they placed on the smith's work.

Fort Ouiatenon excavations have revealed a blacksmithing area represented by a packed earthen floor associated with iron tools, bone, and other artifacts (Tordoff 1980). Three pits were also found in this area; one contained a large amount of clay, ash, and iron oxide staining, while the remaining two contained charred corn cobs. Gun parts, iron tools, and unidentifiable iron fragments were found in all three pits, suggesting the pits were used for refuse from forging activities. Although the remains of a forge were not found, these findings suggest that the area was likely used by a blacksmith. If the cob-filled pits were smudge pits used for tanning hides, then blacksmiths may have conducted a range of activities besides metalworking.

Archaeological remains of a blacksmith's forge and workshop area are well represented at the seventeenth-century French settlement of Fort Pentagoet (Faulkner 1986). The workshop was placed within the central enclosure of a long narrow building along the south curtain wall [Figure 52]. Inside the central room, the forge was built back to back with the fireplace located in the room to the west. Historical documents described the workshop as having half a roof made of shingles to shelter the forge. This type of "open air" forge was common during the seventeenth century. The third room on the eastern end of this long building was only accessible through the center room and does not appear to have had a roof, suggesting it was used as a service area for the blacksmith's workshop.

Resident blacksmiths were often called upon to forge the bars, doors, and architectural hardware such as hinges and locks necessary for various structures including jails that would hold *habitants* or Natives who were acting against the interests of the French crown. Jails were typically found in military posts. Historical documents reveal that Fort de Chartres had a prison with four cells made of cut stone with iron doors.

Blacksmith Antoine Deshêtres

by Loraine DiCerbo

Figure 50. A reenactor at the Fortress of Louisbourg demonstrates the variety of tasks performed by blacksmiths.

My ancestor, Antoine Deshêtres, was a blacksmith and a master gunsmith for the king of France. He spent more than twenty years at Fort St. Joseph, although limited records have been found regarding his life. Deshêtres is thought to have been born between 1700 and 1706 in New England. He married Marie Charlotte Chevalier, daughter of Jean Baptiste Chevalier and Francoise Alavoine, merchants at Fort Michilimackinac and Fort St. Joseph. The fragile transcription of a church register (no longer existing) at Fort Michilimackinac records the marriage of Deshêtres and his wife on what is thought to be October 30, 1729. Most of what is known about Deshêtres derives from his presence at Fort de Chartres, Fort St. Joseph, and his relocation to Detroit.

His time at Fort St Joseph is more thoroughly documented by the baptisms of his children at the fort and the many colonial records listing his service there. Baptismal records exist for his children: Louis on January 26, 1731; Marie Catherine on September 19, 1734; Marie Anne on July 25, 1735; Louis de Gonzague and Antoine Hyacinthe on June 21, 1738; and Suzanne Esther on October 29, 1743.

The earliest known document of his service at Fort St. Joseph is dated August 7, 1739: *Memoires made by the gunsmith Durivage, Michael Bailey and Mr. Dehaitre during the war of the Chickasaws.* Another document, dated July 16, 1742, reports that Deshêtres' presence at the fort involved more than just blacksmith and gunsmith duties; it records the words of the Potawatomis of the St. Joseph River to Governor Beauharnois by which they attempted to correct a version of misinterpreted events when thirty French were killed in the area among the Illinois, along with two additional Frenchmen who were thought to be killed for revenge. The Potawatomis were asking for "Déhestre blacksmith" to travel alone to their village, perhaps to convey an explanation. Various other certificates for payments exist detailing his services throughout the 1740s and early 1750s, such as the one dated May 15, 1746 for supplies ordered by Monsieur de Blainville on the occasion of the Potawatomi uprising.

In 1750, a grant issued by the governor of New France and confirmed by King Louis XV in 1751 announced the availability of property on the South Coast of Detroit (Windsor, Ontario) to increase land development and fortify the area against British incursions. Deshêtres quickly took advantage of this opportunity and received a King's Ration to move his family to Detroit. There, Deshêtres and his wife had two more daughters, Marie Joseph and Jeanne, baptized at Ste. Anne de Détroit on August 29, 1751. Another daughter, Therese, was born April 19, 1752 and baptized a day later. Deshêtres is recorded in the Cicotte Papers regarding the rations received for him and his family from August 3, 1751 through February 3, 1753. By 1760, Antoine and his grown sons were all relocated across the river in Sandwich (Windsor). His son Louis was an interpreter for the Hurons and was given land near them (present day Louis Street is named after him).

Deshêtres died between Feb 6, 1764 (the date of his son Antoine Hyacinthe's marriage) and May 15, 1765 (the date of his daughter Marie Joseph's marriage). His wife died about three years later. Although there is no direct evidence of Deshêtres' ancestry, at least eleven generations claim him as an ancestor.

30 Stone, Clay, Glass, and Iron

"Shipped…lead and nails… meant for the fort at Michilimackinac."
– Paris Council to Francois de Beauharnais, July 31, 1715

Few French structures are still standing from the eighteenth century, though they often contain evidence of the types of structural materials and hardware used in their construction. Evidence of these materials is also available through documentary sources and archaeological remains. For example, investigations at many sites have led to the discovery of various features such as foundation stones, wall trenches, wooden posts, and post molds, as well as copious amounts of architectural debris and hardware.

The French used both local raw materials and imported, manufactured products to construct their buildings. Early explorers and settlers were forced by necessity to employ local raw materials of wood, stone, and clay in their constructions. Through an extensive trade network built by the French in North America, construction materials not locally available such as window glass could be transported from Europe. Blacksmiths made iron hardware like nails, pintles, locks, keys, and hinges for local use.

Local Materials

Wood

In New France, wood was readily available for French inhabitants to construct a variety of buildings, palisade walls, and bastions. An increase in population and skilled labor in addition to the need for permanent architecture in New France contributed to the diversity and complexity of French colonial structures [Figure 53]. The type of wood (e.g., ash, beech, black walnut/butternut, birch bark, cedar, hickory, maple, oak, white pine) was dictated by the type of trees found in the immediate area and its use. Archaeologists often work with paleoethnobotanists to identify the species of wood used in building construction based on its distinctive grain structure.

Figure 53. Found during archaeological excavations, axes like this one were used to cut wood for posts at Fort St. Joseph.

Stone

The French often employed stone to construct buildings and fortifications in addition to wood. Stone could be found along riverbanks, in outcrops, or in glacial till. Suitable sources of stone were readily available in most of New France and different sizes served different purposes. Small foundation stones supported a wooden sill used in the *poteaux sur sole* construction technique. Larger stones were used to form fireplaces that supported wattle and daub chimneys [Figure 54]. The limestone used to construct Fort de Chartres was obtained from nearby outcrops. It was modified to form building blocks of the appropriate shape and size. In contrast, construction stones at Fort St. Joseph likely came from the nearby river and were minimally shaped to form fireplaces, foundations, and walls.

Figure 54. An archaeological field school student carefully excavates a fireplace feature at Fort St. Joseph.

Clay

Clay has been used as a binding agent throughout the ages in architecture. Clay can be shaped by hand to fill a variety of needs. In New France, clay was mixed with mud and straw, grass, or Spanish moss to produce *bousillage* to fill the interstices between upright posts or to form exterior chimneys [Figure 55]. The latter components of the mixture depended on the types of materials available in the area. For example, straw and grass were used in the *pays d'en haut* and the Illinois Country, whereas Spanish moss appeared further south in *la Lousiane* and along the Gulf Coast.

Figure 55. Many pieces of bousillage *have been found during excavation at Fort St. Joseph. The piece on the left demonstrates how this material was packed around rounded posts for insulation. The center and right pieces depict the presence of white wash used to protect the walls from the elements.*

Pierrotage

Similar to *bousillage*, *pierrotage* was a common binding agent used in the construction of buildings, especially in the Illinois Country. *Pierrotage* is a mixture of sand and crushed limestone, resembling concrete, that was used as insulation in walls made of two sets of boards or timbers. While *pierrotage* is a hard mixture, it can settle over time causing the boards to shift as well as easily crumble and deteriorate in areas like the Great Lakes region where there are frequent freeze-thaw cycles. Thus, the use of *pierrotage* was rare due to the extra work required in making the material and its easy deterioration. This technique could easily be replaced by simply using wood, which was abundant in New France.

Imported Materials

Window glass

In the eighteenth century, window glass was made of sand, limestone, and soda, resulting in a bluish or greenish tint. The glass would have been transported across the Atlantic to New France from large production areas in Europe, and taken by canoe to forts and settlements in the interior of the continent. Due to the long journey across turbulent waters, it was practical for glass to have been carefully transported in small panes to prevent breakage in route. Archaeologists can distinguish window glass from container glass by its shape because window glass is flat while container glass is curved [Figure 56]. The presence of hand blown window glass at French settlements and fortifications can provide insights not only on the appearance of its structures, but also on the extent of imported building materials at the site.

Figure 56. Glass sherds from Fort St. Joseph. Note differences between the curved container glass and the flat piece of window glass (bottom right).

Hand-wrought nails

Prior to the advent of machine-cut nails in the early nineteenth century, nails were made by a blacksmith and exhibit a distinctive shape—square in cross-section and tapered on all four sides [Figure 57]. The frequency and style of hand-wrought nails can often reveal their use in the construction of a building because the size and shape of the nail shaft and head can vary depending on its intended purpose.

Figure 57. Hand-wrought nails found at Fort St. Joseph vary in size from 0.5 to 6 inches.

Common nail types are rose head, L-head, T-head, square head, offset head, and large nail head with a small shank (see Stone 1974). The rose head nail is "probably the most common nail type found on eighteenth century sites" (Stone 1974: 229). It has four to five hammer marks on the nail head with either a pointed or flattened shank end and was used for general construction purposes. Larger nails of the rose head type were most likely very useful when nailing hard or thick wood. These nails had a flattened shank which strengthened them and decreased their chance of bending.

The remaining nails types are thought to have more specialized functions. For instance, T-heads and L-heads were used for finer trim boards, stairways, and flooring, though hand-wrought nails may have been used for a variety of tasks regardless of their style if there was limited availability.

Door and Window Hardware

Various types of iron hardware were needed to secure doors and windows onto frames and to allow them to open and close. A hinge is a flat piece of iron that attaches to the door or window and pivots on a pintle that is anchored to the door or window frame. The flexibility in design and craftsmanship is a result of hand forging, allowing items to reflect local tastes and the ability of the blacksmith. The use of wrought iron also allows repairs or alterations to be made if needed. In North America, early iron hinges were typically surface-mounted types, occurring in a variety of sizes and shapes.

Strap hinges are long and narrow, tapering from the socket to the decorative finial [Figures 58 and 59]. French hinges frequently feature the splayed fishtail on either an untapered or slightly tapered strap or sometimes the bifurcated curved-scroll. Common European finials also include the spear-shaped and the *fleur-de-lis*.

Figure 58. A strap hinge fragment from Fort St. Joseph featuring a splayed fishtail finial for decoration.

Figure 59. A spear-shaped strap hinge from Fort St. Joseph with four hand-wrought nails still attached to the hinge. The nails are bent which most likely results from the house occupant not wanting the nails to stick out beyond the thickness of the door.

Hook and eye latches consist of simple hooks that were fastened onto doors, window shutters, or gates and latched onto metal rings in the frame to keep a door or shutter closed. If separated, they can be difficult to identify in the archaeological record [Figures 60 and 61].

Door latch bars, thumb lifts, and latch bar catches were used to secure doors as well. Door latch bars were horizontally mounted on the door by a nail placed through the bar end that allowed the bar to move up and down. The thumb lifts were hinged on the opposite side of the door and permitted the lifting of the latch bar. Latch bar catches were driven into the door frame to act as a catch for latch bars.

Locks

Private property was often secured in locked buildings, trunks, or chests. There are three types of lock mechanisms: hasp locks, padlocks, and door locks. Hasp locks are typically used on objects with movable lids, such as trunks and chests, but they were also used on doors and gates. These locks can be plain or highly ornamental. At Fort Michilimackinac, archaeology has uncovered both rectangular and "shield" shaped hasp locks.

Padlocks are portable locks. Three varieties of padlocks have been found in French colonial sites that date to the eighteenth century: the half heart, the heart shaped, and the rectangular shaped lock with a pointed bottom [Figure 62]. The half heart lock is a common eighteenth-century type and has been recovered at the Fortress of Louisbourg and Fort Michilimackinac. Remains of the heart shaped lock have been found at Fort Michilimackinac, while the rectangular shaped lock with a pointed bottom occurs at the Fortress of Louisbourg.

Door locks, such as stock locks and rim locks, are permanently fixed to the door and are commonly attached to the door's surface [Figure 63]. Stock locks can only be operated from one side and are nailed or screwed to the door exterior. To accommodate the lock, part of the exterior was cut out. Rim locks consist of a main plate with an iron rim that encloses the lock mechanism. This style of lock can either be made to operate on one or both sides. While door locks are not often found archaeologically intact, their many parts can usually be identified. Keyholes were covered by protective, ornamental shields or plates known as escutcheons that have also been recovered archaeologically [Figure 64].

Figures 60 and 61. Hook (top) and eye latches found at Fort St. Joseph.

Summary

Archaeological and documentary records indicate that a wide range of local raw materials and imported, manufactured goods were used to create building forms in New France. Available technology, cultural practices, and the desired architectural outcomes dictated the use of straw, sticks, clay, wood, stone, glass, and iron, used in various combinations. The cultural interactions that took place in the St. Joseph River valley after the French settled there in the late seventeenth century provide a laboratory to investigate the extent to which the French were able to impose Old World architectural styles on the frontier of empire.

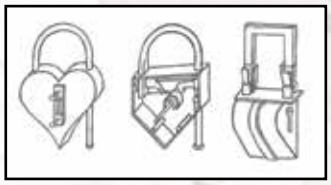


Figure 62. These three varieties of padlocks have been found in French colonial sites that date to the eighteenth century: (l-r) the heart shaped lock, the rectangular shaped lock with a pointed bottom, and the half heart lock.

Figure 63. A portion of a rim lock from the vicinity of Fort St. Joseph.

Figure 64. Keyhole escutcheon found at Fort St. Joseph.

Fort St. Joseph, located near present-day Niles in southwest Michigan, was one of a string of trading posts the French established in the late seventeenth century to secure the interior of the continent by creating alliances with Native groups. Permanent settlements were essential for maintaining those alliances. Fort St. Joseph was a relatively small but intensely occupied mission, garrison, and commercial center for much of the eighteenth century. Despite its importance to French imperial ambitions, no detailed maps, drawings, or descriptions are currently known to exist of Fort St. Joseph. It has become the focus of a long-term, multidisciplinary and collaborative research and service learning project in historical archaeology that is investigating the fur trade and colonialism in southwest Michigan and retrieving archaeological evidence for the physical appearance of the fort. The Fort St. Joseph Archaeological Project, which began in 1998, was established as a community partnership between Western Michigan University and the City of Niles. Investigations conducted regularly since 2002 have provided information about interactions between the French and Native peoples and material remains of several buildings that were built and occupied in the eighteenth century on the frontier of New France [Figure 65].

Figure 65. Students in the 2016 WMU archaeological field school at Fort St. Joseph unearth the remains of a foundation wall.

French Jesuits were granted a tract of land for their mission in the 1680s in the area that became Fort St. Joseph [Figures 66 and 67]. In 1691, Governor General Louis de Buade, Comte de Frontenac of New France sent Augustin Legardeur de Courtemanche with a dozen soldiers to the St. Joseph River to build and command a fort. Its location was near the critically important St. Joseph–Kankakee River portage [Figure 68]. From this strategic location, French settlers participated in commercial, military, and religious activities among local Miami and Potawatomi groups for nearly a century (1691–1781).

By the early eighteenth century, the post supported a commandant, a small garrison of ten to fifteen officers and soldiers, a blacksmith, an interpreter, a priest on occasion, and up to fifteen additional households. French survival on the edge of empire was dependent upon close cooperation with their Potawatomi and Miami allies. While the fort never became a strong military post, it played an important role during the Fox and Chickasaw Wars and was a vibrant commercial center.

Figures 66 and 67. Religious artifacts such as this medallion (left) and cilice provide evidence for the presence of French Jesuits at Fort St. Joseph.

Archaeological investigations have revealed architectural evidence associated with several buildings that once stood on the site. Other buildings may lie under water due to the enlargement of a dam in the 1930s or beneath an early twentieth century

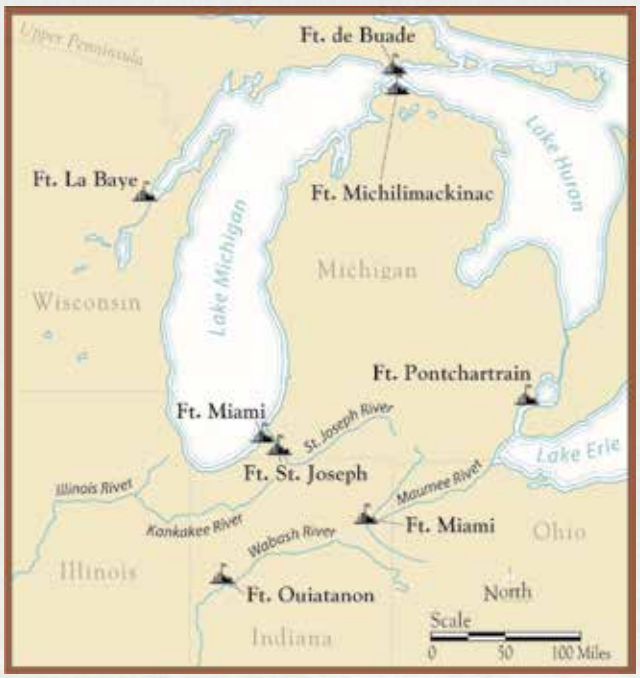


Figure 68. This map illustrates Fort St. Joseph's strategic placement near the St. Joseph-Kankakee portage.

Lieutenant Dietrich Brehm, a British cartographer, provided a brief description of Fort St. Joseph in 1761.

Fort St Joseph is made of Oak Stokados, about 7 years ago rebuilt, in a pretty good order, but no Plattforms in the Bastions or any part of it. there is no House for a officer, who has taken a Privat House, in which the Priest used to live; four Familys live hier, have a little Land improved. and rise some wheet, but are obliged to sent to Detroit to be grainded (cited in Widder 2013: 251).

Figure 69. Voyageur reenactors unload their canoe filled with trade goods.

Figure 70. A reenactor shows off a prized fur.

landfill. Archaeology is essential for reconstructing the appearance of the fort's built environment because so few documentary sources exist.

One account suggests that Fort St. Joseph was defended by a wooden palisade with an entrance gate on the north and south sides, enclosing the homes of the commandant and his soldiers along with storage buildings needed for the fur trade. Apparently, the palisade was not especially secure. In 1695 the Iroquois were able to put their guns through its gaps and shoot into the fort. If the attackers were able to get that close to the palisade it is likely that there were no platforms in the bastions (wall projections) for defensive fire. No archaeological evidence of any military fortifications or a powder magazine have been found thus far.

Fort St. Joseph played a major role in the fur trade by providing European manufactured goods in exchange for furs trapped and processed by the Natives. It ranked fourth in terms of volume of furs traded among all of the posts in New France in the mid-eighteenth century [Figures 69, 70, and 71]. While a storehouse has not been found archaeologically at Fort St. Joseph, it is likely that some buildings at the fort were used to store trade goods and furs.

A payment voucher indicates that Commandant François-Marie Picoté de Belestre ordered the construction of a jail in 1750. The Crown paid the fort's blacksmith Antoine Deshêtres to provide the necessary ironwork and a lock for a ten- by eight-foot square cut stone building—essential hardware to secure this type of structure [Figure 72]. Material evidence is needed to determine if the jail was actually constructed.

Figure 71. Lead seals once attached to bolts of cloth provide evidence of the importance of cloth in the fur trade at Fort St. Joseph.

Documents report that in 1753 the fort contained "fifteen huts which the owners call houses" (Brandão and Nassaney 2006:65). This account is consistent with a 1780 census of the French inhabitants' removal from the fort. The census specifies that fourteen households, totaling about forty-five settlers, were evacuated.

Furthermore, the historical record reveals some information on the occupations and identities of a few of Fort St. Joseph's inhabitants including religious and military personnel, an interpreter, a blacksmith/gunsmith, voyageurs, and both French and Native women. While this information does not indicate the locations of the structures present, it suggests that a dispersed settlement pattern probably existed at the fort with some structures located outside the palisade. In all likelihood, the fort would have served as a refuge in the event of an attack.

Figure 72. A reenactor at the 2016 Fort St. Joseph Archaeology Open House demonstrates how blacksmiths work iron to produce a variety of materials.

Archaeological Evidence

Recent archaeological investigations of Fort St. Joseph have been oriented towards recovering evidence of architectural remains to ascertain the size, function, and methods of construction in use at the site. Information collected thus far, along with associated artifacts, suggests the presence of several habitation structures along the St. Joseph River. Site inhabitants viewed their homes as shelters—places to sleep, conduct domestic activities, and store goods. They constructed these dwellings in accordance with their needs and cultural practices. The types of structural materials (wood, stone, *bousillage*, *pierrotage*, glass) and architectural hardware (nails, pintles, hinges, latch hooks) found at the fort can tell archaeologists how people constructed their buildings, what materials they used, and what messages the builders aimed to communicate about the occupants. To date, excavations have located a series of five fireplaces, which have been interpreted as elements of residential structures.

Two of the fireplaces are associated with postholes and stone foundations, providing insight into their size and orientation. These two buildings appear to be approximately fifteen by twenty-two feet in size and were built using a combination of the *poteaux en terre* and *poteaux sur sole* methods. This is consistent with the size and style of French houses elsewhere in North America.

Figure 73. This fireplace (Feature 2) is located along the northeast wall of House 1.

Figure 74. This partially exposed foundation wall and associated posts (Features 17 and 18 respectively) are remains of the southern wall of House 1 at Fort St. Joseph.

House 1 appears as a fireplace along the northeast wall with a stone foundation and two upright posts along the southeast wall. The fireplace is comprised of large stones (ten to twenty inches) and opens to the southwest inside the structure [Figure 73]. The foundation is at least thirty-two inches long, consisting of smaller stones (four to six inches) that rest on top of one another in a linear orientation. A larger stone (nearly thirteen inches) was placed underneath some of the stones, perhaps to fill in a low-lying area or to provide additional structural support [Figure 74]. The extent of this foundation is unknown as it has not yet been fully exposed.

The two upright wooden posts appear to be in line with the stone foundation and are interpreted as comprising the southeastern wall of the structure. The large post (six inches in diameter) may be a load bearing corner post located about three and a half feet south of the fireplace. A soil core was taken and used to determine that it extends to a depth of just over two feet below the fireplace (Figure 75).

The smaller post (four inches in diameter) is located immediately southwest of the larger post, perhaps to provide additional support. It appears to be over a foot deep. Evidence of the north and west walls have not yet been identified.

Southwest of House 1 lies another stone fireplace associated with a stone foundation wall and hewn board. Together, these features make up House 2 and are formally similar to House 1. The fireplace is also located along the northeast wall and opens to the southwest of the structure [Figure 76]. It consists of large stones (ten to twenty inches) and is approximately five by seven and a half feet in size. The partially exposed foundation wall is at least thirty-five inches long, consisting of smaller stones (four to six inches) that rest on top of one another in a linear arrangement along the southwest wall. A hewn board (forty-five inches long and five inches wide) was found aligned with the wall immediately to the south [Figure 77].

Figure 75. A soil core is often used by archaeologists to examine the types of soil beneath the ground surface. This technique can be used to obtain a soil sample or explore what might be expected in future excavation.

Figure 76. The Feature 10 fireplace, defined by large stones and deposits of burnt soil, is associated with House 2 at Fort St. Joseph.

Its location suggests that it may be a plate or sill, perhaps for a door since it is directly across from the fireplace. An ash pit found where the northwest wall is thought to be located may suggest the presence of a window where the residents could dispose of ash buildup from the fireplace. Recent excavations have revealed a large bone midden (trash deposit) south of the structure, possibly representing accumulated debris immediately outside the house wall.

The size, orientation, and other formal similarities between House 1 and House 2 suggest that these habitations conform to a regular template derived from French-Canadian building traditions as observed in other regions of New France [Figure 78; Table 1]. The clustering of similar buildings paral-

Figure 77. Beam (hewn board) unearthed during excavation, possibly a plate or sill.

lel to the river and their associated contents suggest that this residential precinct may represent a few of the huts mentioned earlier that sheltered fur traders as observed by the English prior to deportation. Further work is needed to examine the attributes of other structures on the site to determine the range of variation in size, orientation, and method of construction.

An examination of the personal adornment items (i.e., buttons, cufflinks, garment hooks, buckles, jewelry, glass beads, and wampum) found in association with

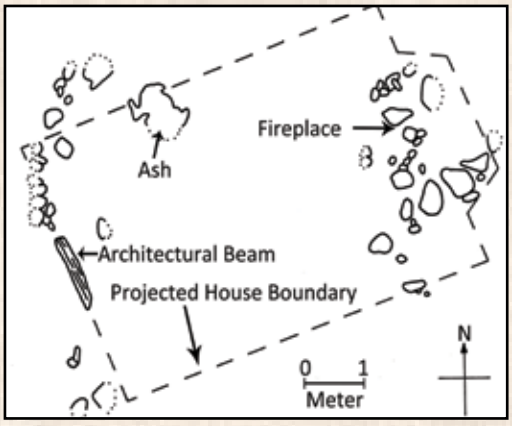


Figure 78. Archaeological plan view of House 2 at Fort St. Joseph.

these proposed buildings suggests that these domestic structures were occupied by families comprised of French fur traders, their Native and French-Canadian wives, and their *métis* children (offspring from blended marriages, usually Native women and French men). Calcined bone (heavily burned and mineralized) fragments found scattered near the fireplaces indicate that cooking was done inside the structures. Small seed beads concentrated in front of the fireplace in House 1 are evidence that embroidering occurred there, taking advantage of the fire as a source of light and heat.

Table 1. Fireplace features and their architectural attributes and associations.

Fireplace Features	Location	Orientation	Feature Size	Fireplace Stone Sizes	Associated Foundation Wall	Associated Posthole(s) and Hewn Boards
Feature 2 (House 1)	Northeast wall	Opens to the southwest	4.5 by 7.8 feet	10 to 20 inches	Feature 17: At least 32 inches long, 4 to 6 inch stones resting on and around one larger stone (12.5 inches)	Feature 18, Posthole 1: 6 inches in diameter; 28 inches in depth Feature 18, Posthole 2: 4 inches in diameter; 15 inches in depth
Feature 10 (House 2)	Northeast wall	Opens to the southwest	5 by 7.5 feet	10 to 20 inches	Feature 24: At least 35 inches, 4 to 6 inch stones	Hewn Board: 45 inches long by 5 inches thick
Feature 14	Northeast wall	Opens to the southwest	5 by 7.2 feet	10 to 25 inches	Undetermined	Undetermined
Feature 20	North wall	Oxidized soil is located to the south	At least 4.6 by 7.5 feet	4 to 25 inches	Undetermined	Undetermined
Feature 6	East Wall	Oxidized soil is located to the east	At least 4.5 by 6 feet.	10 to 25 inches	Undetermined	Undetermined

Local and Imported Materials

At Fort St. Joseph, the French used both locally available raw materials and imported manufactured goods to construct their buildings using traditional Old World techniques. The archaeological record documents the use of wood, stone, clay, and sand in their construction. Wood was sourced from the immediate area to construct walls, sills, and roofs. The hewn board in House 2 has been identified as white pine (*Pinus strobus*). The stone used in the foundations and fireplaces was most likely from the St. Joseph River. Clay—mixed with mud and straw or grass to produce *bousillage*— served as a binding agent to fill the interstices of upright posts and to form chimneys. Some pieces also exhibit evidence of whitewashing (see Figure 55).

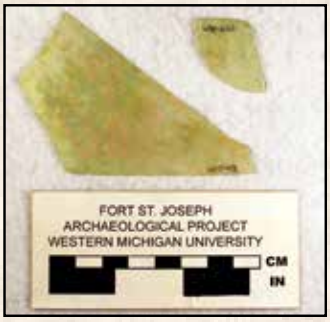


Figure 79. Window glass fragments found at Fort St. Joseph.

Some materials like glass and iron were being produced in Europe and were transported along extensive trade networks that the French grafted onto pre-existing Native exchange systems. Light green, flat glass fragments found in excavations at Fort St. Joseph provide evidence for the use of glass windows [Figure 79]. French and English glass makers were producing both broad and crown glass for window panes and these types of glass have been found at many other eighteenth-century sites (e.g., Fort Michilimackinac, Fort Ouiatenon, Old Mobile).

Broad glass was produced when heated, amorphous glass was blown by a glassworker into a rough cylinder form, then cut open along its length and laid flat while the glass was still hot and flexible. Crown glass was also blown by a glassworker but into a spherical shape, then cut on the side away from the glassworker, and spun into a flat disk. Margaret Brown (1971) has analyzed the glass from Fort Michilimackinac and suggests that window glass may have been imported as small precut panes and then cut again for specific use at the fort. The presence of window glass at the site provides evidence for the ability of the *habitants* to obtain this fragile and potentially costly commodity.

French-style buildings required various types of iron hardware like hand-wrought nails, pintles, locks, and hinges that resident blacksmiths were capable of producing. Although it is unclear as to whether the raw iron ore or the finished iron hardware was transported to Fort St. Joseph, the presence of a blacksmith at the fort indicates that the hardware could have been forged on site. Payment records from 1739 to 1752 reveal that someone who could forge metal and repair guns lived at the fort and baptismal records further indicate that a blacksmith, Antoine Deshêtres, resided there as early as 1731. While the forge has yet to be discovered, archaeological evidence of gun repair appeared as a large cache of more than 100 gun parts, including 22 gun cocks, 29 breech plugs, 22 frizzens, two lock mechanisms, related flintlock hardware, and other metal artifacts which was designated Feature 4 [Figure 80]. This feature also contained other miscellaneous metal artifacts including pieces of cut brass, a tinkling cone, and a 30-derniers (double sol) coin, minted in France from 1709–1713 for use in overseas colonies [Figure 81]. The assemblage of gun parts located in this cache is consistent with what we would expect to find in a gunsmith's repair kit and may represent a blacksmith's workshop.

Figure 81. 30-derniers (double sol) coin, minted in France from 1709-1713.

Figure 80. Flintlock hardware and ammunition recovered from Fort St. Joseph include: 1. gun cock, 2. honey-colored French gunflint, 3. vise screw, 4. lock plate with frizzen, 5. breech plug, 6. main spring, 7. serpentine sideplate fragment, 8. trigger guard, 9. musketballs, and 10. lead shot.

Another large metal cache was found approximately thirty-five feet southwest of Feature 4. This cache, Feature 19, contained two ax heads, lead sprue, an iron chisel, a gun cock, a brass butt plate, a lead whizzer, a gun lock, iron screws, hand-wrought nails and nail fragments, lead shot, and unidentifiable iron and copper alloy fragments. This cache may represent an area where items were placed for future repair or reuse by

the resident blacksmith. While it is difficult to discern if these objects are contemporaneous with those found in Feature 4, both assemblages are indicative of metal working at the site.

In addition, approximately 2,000 hand-wrought nails and nail fragments have been found at the site thus far. Nail types recognized include rose head, L-head, T-head, large nail head with a small shank, square head, and offset head [Figure 82]. It is not surprising that the most common

Figure 82. The most common nail type found at Fort St. Joseph are rose-head nails with pointed shanks.

type found at Fort St. Joseph was the rose head with a pointed shank end. Lyle Stone (1974: 231) discussed the popularity of this type of nail for general construction. The spatial distribution of nails across the site indicates that a significantly greater density of nails occurs in the vicinity of House 2 than with the other four buildings. This suggests not only that this house may have been built with more nails, but also that its occupants could afford this added expense. Overall, the large quantity of nails found at Fort St. Joseph adds further evidence that the inhabitants were constructing permanent residential structures that required nails to firmly secure upright posts to the structures' sill and plate.

Architectural hardware such as hinges, pintles, hook and eye latches, latch bar catches, keys, keyhole escutcheons, and locks have also been found at Fort St. Joseph. Some of these specimens were recovered in controlled excavations, while others are from local collections made in the early twentieth century from the vicinity of the fort and are likely associated with the European-style buildings we have unearthed.

Through archaeological work on the site, several pieces of hardware have been found relating to locks as well as those involved in securing windows, doors, and gates. Items relating to locks include two keys and two lock fragments [Figures 83 and 84]. The two keys recovered were from the same excavation unit, near the proposed House 4. Both keys may have been used in padlocks due to their small size and the absence of notches on their blades. One of the lock pieces has not been identified by type due its fragmentary state, however the top of the keyhotle is present. The other fragment is part of a lock spring used in rim door locks.

Figures 83 and 84. Keys recovered from Fort St. Joseph.

Hardware related to securing windows, doors, and gates include three

Figure 85. Iron staples like this one were used as keepers for door latch bolts.

staples, one hook and two eye latches, two iron hinge strap elements from self-contained hinges, one strap hinge and four fragments, and two complete pintles and three pintle frag-

Figure 86. An incomplete self-contained iron hinge uncovered at Fort St. Joseph.

ments [Figures 85, 86, and 87]. The staples uncovered may have been used as keepers for door latch bolts, although they may have also

Figure 87. This iron pintle was anchored to a door or window frame, allowing a hinge to pivot.

been repurposed for other functions. The hook and eye latches were used to secure doors, shutters, or gates. The iron strap hinge fragments may have been used for attaching shutters to window frames or gates to a post, which are consistent uses for self-contained hinges. The pintles would have been secured by driving or imbedding the shank into a wooded frame; none of the pintles require nails and screws for attachment. The strap hinge and hinge fragments were probably used on doors due to their large size. The complete strap hinge recovered from the site has a spear-shaped finial with four nails present in each of its nail holes [Figure 59]. The nails were bent, perhaps against the back of a door that would have been about one and a half inches thick.

Charles Hulse described many of the artifacts found at Fort St. Joseph in his 1977 Master's thesis, including several pieces of hardware found by local collectors in the fort vicinity. These items are now kept at the Fort St. Joseph Museum in Niles, MI and the History Museum in South Bend, IN. Hulse identified several iron hinge and pintle elements, two iron hook and eye sets in addition to three eyes, five iron latch bar catches, twelve keys, one brass keyhole escutcheons, four iron keyhole escutcheons, thirteen rectangular shaped hasp locks, two shield shaped hasp locks, one rim lock, and seven lock fragments [Figures 88 and 89]. Many of the hardware pieces that Hulse identified are similar to those found at Fort Michilimackinac.

Summary

Although we have only begun to identify and investigate architecture at Fort St. Joseph, the evidence recovered thus far derives from buildings with domestic functions as opposed to barns, jails, powder magazines, storehouses, or other special purpose buildings. Fort St. Joseph's inhabitants constructed these dwellings to serve their needs using familiar techniques honed in the Old World. It is clear from the archaeological remains uncovered at the site that European-style building techniques were employed to construct these habitation structures that likely housed French fur traders and their families. Archaeological remains (segments of foundation walls and wooden posts) demonstrate the use of the *poteaux en terre* and *poteaux sur sole* construction methods. The types of structural materials (wood, stone, *bousillage*, *pierrotage*, glass) and architectural hardware (locks, nails, pintles, hinges, latch hooks) found at the fort and among its buildings provide evidence that the use of European materials and construction styles was important to the inhabitants of these buildings.

The material remains recovered at the fort stand in marked contrast to the more ephemeral structures that Natives constructed and used in the region and reflect different cultural practices related to settlement and land use in New France. For instance, the habitants of Fort St. Joseph actively chose to import foreign materials such as glass and iron hardware for their permanent dwellings rather than go without these items or substitute other materials that could be found in the vicinity of the fort. Choices employed in building techniques and selecting materials convey messages about culture and social identity. Some decisions are deliberate as agents select certain styles, techniques, and materials to actively assert cultural values, whereas others may be the unconscious outcomes of enculturation since birth. Therefore, by examining the material remains at Fort St. Joseph, archaeologists gain insights not only about the types of buildings located at the site and the construction techniques and materials used, but also on the identities of those who lived in these dwellings and how they expressed their culture through daily activities.

Figures 88 and 89. A shield-shaped hasp lock (top) and latch bar catches from the vicinity of Fort St. Joseph. These items resemble those found at Fort Michilimackinac.

40 Lessons Learned and a Vision for the Future

Archaeological evidence of structural remains provides important clues to the ways people constructed their buildings, the types of raw materials they used, and how they lived their lives. Building forms were influenced by intended function and can provide information about the identities of their makers and users. From the Atlantic Ocean to the Mississippi River valley and from the Great Lakes to the Gulf of Mexico, the French and Natives designed shelters of varying forms to provide security and protection from the elements and intruders. The seemingly ephemeral houses of Native horticulturalists and the permanent habitations of European settlers were both accommodations to their political, economic, and social formations. These building styles demonstrate the variety of possibilities that humans developed to fill their needs and remind us that divergent cultural traditions can co-exist.

Documents and standing structures provide some information on the mundane practice of sheltering New France. Archaeology can reveal tangible evidence of the architectural styles that existed in the St. Joseph River valley and elsewhere in the late seventeenth century in the form of artifacts (e.g., hand-wrought nails, window glass, door and window hinges, keyhole escutcheons, bousillage, and pierrotage) and associated features (e.g., fireplaces, foundations, and wooden posts). The French constructed permanent habitations that testify to ways of living on the landscape that diverged from their Native allies and foreshadowed English and American settlement in the years to come. Historical archaeology demonstrates that despite the close social, political, and economic relationships between Natives and newcomers throughout New France, architecture was a relatively conservative aspect of culture that people retained to express different ways of being and living, even in a multi-ethnic society. It reminds us that people can be different and still get along.

Figure 90. Western Michigan University Archaeological Field School students discuss excavations at Fort St. Joseph in 2011.

Babson, Jane (1968). The Architecture of Early Illinois Forts. *Journal of the Illinois State Historical Society* 61: 9-40.

Bazely, Susan M. (2013). Fort Frontenac, Kingston, Ontario, Canada. In *The Archaeology of French and Indian War Frontier Forts*, edited by Lawrence E. Babits and Stephanie Gandulla, pp. 191-215. University Press of Florida, Gainesville.

Brandão, José António, and Michael S. Nassaney (2006). A Capsule Social and Material History of Fort St. Joseph and Its Inhabitants (1691-1763). *French Colonial History* 7: 61-75.

Brazier, Jennifer (2013). The Development of the Architectural Styles of New France. *Le Journal* 29(3): 2-9.

Brown, Margaret K. (1971). Glass from Fort Michilimackinac: A Classification for Eighteenth Century Glass. *Michigan Archaeologist* 17(3-4): 97-215.

Chartrand, René (2010). *The Forts of New France: The Great Lakes, the Plains, and the Gulf Coast 1600-1763*. Osprey, Oxford.

Cremin, William M., and Dale W. Quattrin (1987). An Archaeological Survey of the Middle St. Joseph River Valley in St. Joseph County, Michigan. *Archaeological Report* 17. Department of Anthropology, Western Michigan University, Kalamazoo, MI.

Crompton, Amanda J. (2012). The Historical Archaeology of a French Fortification in the Colony of Plaisance: The Vieux Fort Site (ChA1-04), Placentia, Newfoundland. Ph.D. dissertation, School of Graduate Studies, Memorial University of Newfoundland, Newfoundland.

Cunningham, Wilbur M. (1961). *Land of Four Flags: An Early History of the St. Joseph Valley*. William Eerdmans Publishing Company, Grand Rapids, MI.

DiCerbo, Loriane (2011). Antoine Deshêtres. *Le Journal* 27(4): 13-14.

Edwards, Jay (1986). French. In *America's Architectural Roots: Ethnic Groups that Built America*, edited by Dell Upton, pp. 62-67. Preservation Press, Washington, DC.

Ekberg, Carl J. (1985). *Colonial Ste. Genevieve: An Adventure on the Mississippi Frontier*. Southern Illinois University Press, Carbondale.

Evans, Lynn L. M. (2013). Michilimackinac, a Civilian Fort. In *The Archaeology of French and Indian War Frontier Forts,* edited by Lawrence E. Babits and Stephanie Gandulla, pp. 216-228. University Press of Florida, Gainesville.

Farah, Lelia Marie (2011). *Food Paths, Architecture and Urban Form: A Case Study*. Ph.D. dissertation, School of Architecture, McGill University, Montreal.

Faulkner, Alaric (1986). Maintenance and Fabrication at Fort Pentagoet. *Historical Archaeology* 20(1): 63-94.

Fisher, Charles L., and Paul R. Huey (2013). Style Wars in the Wilderness: The Colonial Forts at Crown Point. In *The Archaeology of French and Indian War Frontier Forts,* edited by Lawrence E. Babits and Stephanie Gandulla, pp. 174-190. University Press of Florida, Gainesville.

Gums, Bonnie L. (2002). Earthfast (*Pieux en Terre*) Structures at Old Mobile. *Historical Archaeology* 36(1): 13-25.

Gums, Bonnie L., William R. Iseminger, Molly E. McKenzie, and Dennis D. Nichols (1991). The French Colonial Villages of Cahokia and Prairie du Pont, Illinois. In *French Colonial Archaeology: The Illinois Country and the Western Great Lakes*, edited by John A. Walthall, pp. 85-122. University of Illinois Press, Chicago.

Hart, James L. (2013). Forts on the Frontier: Adapting European Military Engineering to North America. In *The Archaeology of French and Indian War Frontier Forts*, edited by Lawrence E. Babits and Stephanie Gandulla, pp. 17-51. University Press of Florida, Gainesville.

Hulse, Charles A. (1977*).* An Archaeological Evaluation of Fort St. Joseph: An Eighteenth Century Military Post and Settlement in Berrien County, Michigan. Unpublished M.A. thesis, Michigan State University, East Lansing, MI.

42 References Cited and Further Readings

Idle, Dunning (2003). The Post of the St. Joseph River during the French Regime 1679-1761. Fort St. Joseph Museum, Niles, MI. (Originally completed in 1946, Ph.D. dissertation, Department of History, University of Illinois, Urbana).

Kalm, Peter (1937). *Peter Kalm's Travels in North America.* Edited by A.B. Benson. Wilson-Erickson, New York.

Keene, David (1991). Fort de Chartres: Archaeology in the Illinois Country. In *French Colonial Archaeology: The Illinois Country and the Western Great Lakes*, edited by John A. Walthall, pp. 29-41. University of Illinois Press, Chicago.

2014 War and the Colonial Frontier: Fort de Chartres in the Illinois Country. In *The Archaeology of French and Indian War Frontier Forts*, edited by Lawrence E. Babits and Stephanie Gandulla, pp. 229-239. University Press of Florida, Gainesville.

Kent, Timothy J. (2001). *Ft. Pontchartrain at Detroit: A Guide to the Daily Lives of Fur Trade and Military Personnel, Settlers, and Missionaries at French Posts*. Silver Fox Enterprises, Ossineke, MI.

Kerr, Ian B (2012). An Analysis of Personal Adornment at Fort St. Joseph (20BE23), an Eighteenth-Century French Trading Post in Southwest Michigan. M.A. thesis, Department of Anthropology, Western Michigan University, Kalamazoo, MI.

Kimball-Brown, Margaret (1991). Documents and Archaeology in French Illinois. In *French Colonial Archaeology: The Illinois Country and the Western Great Lakes*, edited by John A. Walthall, pp. 78-84. University of Illinois Press, Chicago.

Kornwolf, James D. (2002). France in North America, 1562-1763. In *Architecture and Town Planning in Colonial North America,* vol. I, pp. 185-376. Johns Hopkins University Press, Baltimore, MD.

Mann, Robb (2008). From Ethnogenesis to Ethnic Segmentation in the Wabash Valley: Constructing Identity and Houses in Great Lakes Fur Trade Society. *International Journal of Historical Archaeology* 12(4): 319-337.

Moogk, Peter (2002). *Building a House in New France: An Account of the Perplexities of Client and Craftsmen in Early Canada*. Fitzhenry and Whiteside, Markham, Ontario.

Morton, J. S. (1929). *Reminiscences of the Lower St. Joseph River Valley*. The Federation of Women's Clubs, Benton Harbor, MI.

Nassaney, Michael S. (2002). Colonial Architecture in the North American Mid-continent. Unpublished manuscript on file in the Department of Anthropology, Western Michigan University, Kalamazoo, MI.

2008 Identity Formation at a French Colonial Outpost in the North American Interior. *International Journal of Historical Archaeology* 12(4): 297-318.

2015 *The Archaeology of the North American Fur Trade*. University Press of Florida, Gainesville.

Nassaney, Michael S., and José António Brandão (2009). The Materiality of Individuality at Eighteenth-Century Fort St. Joseph: A Mission-Garrison-Trading Post Complex on the Edge of Empire. In *The Materiality of Individuality: Archaeological Studies of Individual Lives*, edited by C. White, pp. 19-36. Springer Press, New York.

Nassaney, Michael S., and William M. Cremin (2002). Realizing the Potential of the Contact Period in Southwest Michigan Through the Fort St. Joseph Archaeological Project. *The Wisconsin Archaeologist* 83(2): 123-134.

Nassaney, Michael S., William M. Cremin, Renee Kurtzweil, and José António Brandão (2003). The Search for Fort St. Joseph (1691-1781) in Niles, Michigan. *Midcontinental Journal of Archaeology* 28(2): 107-144.

Nassaney, Michael S. (editor) (1999). *An Archaeological Reconnaissance Survey to Locate Remains of Fort. St. Joseph (20BE23) in Niles, Michigan*. Archaeological Report No. 22, Department of Anthropology, Western Michigan University Kalamazoo, MI.

Pendery, Steven R. (2010). A Survey of French Fortifications in the New World, 1530 -1630. In *History of Warfare, vol. 60: First Forts: Essays on the Archaeology of Proto-Colonial Fortifications*, edited by Eric Klingelhofer. Brill Academic Publishers, Boston, MA. Accessed October 30, 2014. ProQuest ebrary.

Peterson, Charles (1965). *Colonial St. Louis: Building a Creole Capital*. The Patrice Press, Tucson, AZ.

Peyser, Joseph L. (editor and translator) (1978). Fort St. Joseph Manuscripts: Chronological Inventory and Translations. Manuscript on file in the Zhang Legacy Center, Archives and Regional History Collections, Western Michigan University, Kalamazoo, MI.

1992 *Letters from New France: The Upper Country*. University of Illinois Press, Chicago.

Priess, Peter J. (2000). Historic Door Hardware. In *Studies in Material Culture Research*, edited by Karlis Karklins, pp. 46-95. Society for Historical Archaeology, California, PA.

Quattrin, Dale W., and William M. Cremin (1988). A Possible Sweatlodge at the Schilling Site (20KZ56), Kalamazoo County, Michigan. *Midcontinental Journal of Archaeology* 13(1): 29-39.

Reber, L. Benjamin (1924). *History of St. Joseph*. St. Joseph Chamber of Commerce, St. Joseph, MI.

Roache-Fedchenko, Amy S. (2013). *Technological Adaptation on the Frontier: An Examination of Blacksmithing at Fort Michilimackinac, 1715-1781*. Ph.D. dissertation, Graduate School, Syracuse University.

Starbuck, David R. (2011). *The Archaeology of Forts and Battlefields*. University Press of Florida, Gainesville.

Stelle, Lenville J. (1992). History and Archaeology: The 1730 Mesquakie Fort. In *Calumet and Fleur-de-Lys*, edited by John Walthall and Thomas Emerson, pp. 265-307. Smithsonian Institution Press, Washington, DC.

2008 The 1730 Fox Fort: Historical Debate and Archaeological Endeavor. *The Wisconsin Archeologist* 89(1-2): 86-97.

Stelle, Lenville J., and Michael L. Hargrave (2013). Messages in a Map: French Depictions of the 1730 Meskwaki Fort. *Historical Archaeology* 47(4): 23-44.

Stone, Lyle M. (1974). *Fort Michilimackinac, 1715-1781: An Archaeological Perspective on the Revolutionary Frontier*. The Museum, Michigan State University, Lansing, MI.

Thurman, Melburn D. (1984). *Building a House in 18th Century Ste. Genevieve*. Pendragon's Press, Ste. Genevieve, MO.

Tordoff, Judith Dunn (1980). *Excavations at Fort Ouiatenon, 1974-76 Seasons: Preliminary Report*. The Museum, Michigan State University, Lansing, MI.

Upton, Dell (1986). Introduction. In *America's Architectural Roots: Ethnic Groups that Built America*, edited by Dell Upton, pp. 7-15. Preservation Press, Washington, DC.

Walthall, John A. (1991). French Colonial Fort Massac: Architecture and Ceramic Patterning. In *French Colonial Archaeology: The Illinois Country and the Western Great Lakes*, edited by John A. Walthall pp. 42-64. University of Illinois Press, Chicago.

Webster, Mildred E., and Fred Krause (1990). French St. Joseph, 1690-1780. Copies available at the Maud Preston Palenske Memorial Library and the Heritage Museum and Cultural Center, St. Joseph, MI.

Widder, Keith R. (2013). *Beyond Pontiac's Shadow: Michilimackinac and the Anglo-Indian War of 1763.* Michigan State University Press, East Lansing, and Mackinac State Historic Parks, Mackinac Island.

44 Acknowledgments

The production of this booklet was a collaborative effort. This booklet began as a series of informational panels entitled "Seeking Shelter from the Storm: Eighteenth Century Architecture in New France" that was the theme for the 2015 Summer Archaeology Lecture Series and the Fort St. Joseph Archaeological Project's 2015 Open House. Initial research on the subject and the creation and design of the panels was carried out by members of the WMU Anthropology in the Community class (ANTH 5030) in Spring 2015 (Kaitlin Burton, Jenna Combs, Erika Loveland, Kyle Moerchen, Lakenia Payne, Joseph Puntasecca, Stephen Staten, and Devon Yurko) under the direction of Michael S. Nassaney. The text of those panels has been revised, supplemented, and edited by Erika K. Loveland (Anthropology graduate student), Michael S. Nassaney (Professor of Anthropology, WMU and Principal Investigator, Fort St. Joseph Archaeological Project), and other individuals associated with the Project.

We wish to thank the following individuals who both reviewed earlier drafts of the text and provided additional material or text which was used in the booklet: Amélie Allard, Christina H. Arseneau, José António Brandão, Erica A. D'Elia, Loraine DiCerbo, Brian Dunnigan, Lynn L.M. Evans, Robert Myers, and Keith Widder. Jason Glatz (Maps coordinator, Waldo Library, WMU) kindly created and patiently revised a map for this booklet.

Thanks to the many photographers associated with the project who have provided photographs of excavations, artifacts, and reenactments from Fort St. Joseph, including: Stephanie Barrante, Austin George, Brock Giordano, Jessica Hughes, John Lacko, and Genevieve Perry. We also thank John Cardinal (Anthropology and History Undergraduate Student, WMU and 2014-2016 Fort St. Joseph Museum Intern) for providing his illustrations as well as photographs of artifacts and reenactors from Fort St. Joseph.

We appreciate the work of Cheri Bales on booklet layout and design. Publication of this booklet was made possible by the Society of Colonial Wars in Michigan, the General Society for Colonial Wars, the Quebec Government Office in Chicago, the French-Canadian Heritage Society of Michigan, the WMU College of Arts and Sciences Discovery and Dissemination Award, and the Fort St. Joseph Archaeological Project, a partnership between Western Michigan University and the City of Niles. We are grateful to the members of the Fort St. Joseph Archaeology Advisory Committee, the City of Niles, WMU College of Arts and Sciences, and the local community for their ongoing support of our research on the history and archaeology of New France.

If you would like to keep updated with the Project, please visit our website at www.wmich.edu/fortstjoseph, like us on Facebook, follow our blog at fortstjosepharchaeology.blogspot.com, and search "fsjarchaeology" on Instagram!

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Figure 52: Adapted from Faulkner (1986: Figure 5). Redrawn by Michael S. Nassaney.
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