



Historic Barn Exterior
Credit: SBA, 2015

Feasibility Study for the Historic Barn at Battlefield National Historic Site



City of Hamilton

FINAL: June, 2016

SBA Project No. 15084

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EXECUTIVE SUMMARY

In November 2015 Stevens Burgess Architects Ltd. in conjunction with Shoalts Engineering was commissioned by the City of Hamilton – Heritage Facilities and Capital Planning of the Tourism & Culture Division to work with the City on the development of a Feasibility Study for the historic barn at Battlefield Park National Historic Site.

Battlefield Park is set in a rich landscape at the foot of the Niagara Escarpment and is bisected by Battlefield Creek. The site is bordered by King Street West on the north, Centennial Parkway South to the west, a privately held land locked parcel to the south between the park and the railway lands, and the rear yards of residences facing Battlefield Drive to the east. Within the Park, there are distinctly different landscape character areas and public uses. The north and west sections contain the majority of the historic resources and are maintained as manicured parkland. The south and east sections are forested and naturalized.....The site is approximately ... 32.4 acres in size and has many layers of historical and community uses (Shearer, 2011, page 14.). The historic barn is located within the north-west corner of the site, in close proximity to the Nash Jackson House.

Given the importance of the site and the City's commitment to its on-going stewardship the 2016 Feasibility Study for the Historic Barn follows up on several earlier reports commissioned by the City for the site. The 1993 and 2011 Master Plans and the 2007 Reconstruction Report were key in the identification of 2 fundamental criteria for the barn, namely:

- Public Works and their associated staff, equipment and supplies must be moved out of the barn and
- the barn to be restored thereby providing expanded museum opportunities at Battlefield National Historic Park.

The historic barn presently serves as Public Works three season site facility from roughly spring to fall with occasional use of the barn during off season for site festivals/activities. During the initial site visit in the fall of 2015 the gravel floor of the barn was covered in an array of pumpkins in preparation for an upcoming event. The restored barn accordingly is seen as an opportunity for increased educational and programming opportunities on the site as well as supplementing the opportunities afforded within the domestic and finished interiors of the Nash Jackson and Gage Houses.

In consideration of the original fairly light framing combined with no indication within the attic of a central beam, hay-loft equipment or a large opening at either gable end; the belief is that the barn was once open to the rafters. The recommendation is to remove the non-original partitions and finishes thereby opening the space up to the underside of the roof structure and exposing the existing timber framing within the two-storey space. The feasibility study explores 2 relocation scenarios for the barn in addition to leaving the barn in-situ. The final recommendation is that the barn should be restored in-situ given the non-robustness of its construction and the unsuitability of other locations on the site.

The 2011 Master Site Plan stated that *“One of the items that was thoroughly investigated and subjected to a great deal of discussion is the location of the maintenance yard. Alternate locations were considered but it was determined that it is most feasible to retain the maintenance activities on site for economical and logistical reasons (Shearer, 2011, page 105). The present study also posed the question of an off-site versus on-site location for the new facility and came to the same consensus that the upkeep of the site and caretaking component was best served with an on-site facility. Accordingly the current study reviewed possible locations on site to construct the new maintenance building and yard and supports the development of the new facility at the south end of the existing parking lot, thereby making use of the existing parking lot to provide access as well as locate the new facility away from the Nash Jackson and Gage Houses and not within the enactment area.*



Figure i: Historic Barn Interior
Credit: SBA, 2015

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CHAPTER 1: INTRODUCTION

In November 2015 Stevens Burgess Architects Ltd. (SBA) in conjunction with Shoalts Engineering (Shoalts) was commissioned by the City of Hamilton – Heritage Facilities and Capital Planning of the Tourism & Culture Division to work with the City on the development of a Feasibility Study for the historic barn at Battlefield Park National Historic Site within the former Town of Stoney Creek and since amalgamation in 2001, part of the greater municipality of Hamilton.

Battlefield Park is set in a rich landscape at the foot of the Niagara Escarpment and is bisected by Battlefield Creek. The site is bordered by King Street West on the north, Centennial Parkway South to the west, a privately held land locked parcel to the south between the park and the railway lands, and the rear yards of residences facing Battlefield Drive to the east. Within the Park, there are distinctly different landscape character areas and public uses. The north and west sections contain the majority of the historic resources and are maintained as manicured parkland. The south and east sections are forested and naturalized.....The site is approximately ... 32.4 acres in size and has many layers of historical and community uses (Shearer, 2011, page 14.). The historic barn is located within the north-west corner of the site, in close proximity to the Nash Jackson House.

The importance of the Battle of Stoney Creek on June 5-6, 1813 was recognized with a national heritage site designation in 1960 as well as Battlefield Cemetery “Smith’s Knoll”; Gage House “Battlefield House”, Park and Monument; and the Nash Jackson House “Grandview” are designated under Part IV of the Ontario Heritage Act. The Ontario Heritage Trust (OHT) holds a conservation easement on Battlefield Park. Interestingly the Commemorative Integrity Statement, dated July 2002, makes no reference to a historic barn however within the description of *The Designated Place* there is reference to a *frame barn built by the Niagara Parks Commission*.

Given the importance of the site and the City’s commitment to its on-going stewardship the 2016 Feasibility Study for the Historic Barn follows up on four earlier reports commissioned by the City for the site:

- Wendy Shearer Landscape Architect a division of MHBC, AMEC, Dougan and Associates Ecological Consulting and Design, McCallum Sather Architects, *Battlefield Park National Historic Site Master Park*, January 2011
- Tom Murison, *Battlefield Park, Stoney Creek – A Reconstruction c.1830*, Jan. 2007
- Philip Goldsmith and Company Ltd. Architects, *The Jackson House Feasibility Study*, 1998
- Taylor Hazell Architects Ltd., *Battlefield Park Master Plan Study*, 1993

The terms of reference for the preparation of the June 2016 Feasibility Study for the Historic Barn at Battlefield National Historic Site included the following:

- Review of reference and background documentation for the site and structures;
- Review of site and heritage barn in conjunction with Mark Shoalts, heritage structural engineer;
- Meetings with both City of Hamilton Museum and Public Works staff to develop programming and functional needs and proposed locations for the heritage barn and new maintenance building and yard; and
- Development of Order of Magnitude Costed Options for the historic barn and maintenance building and yard.

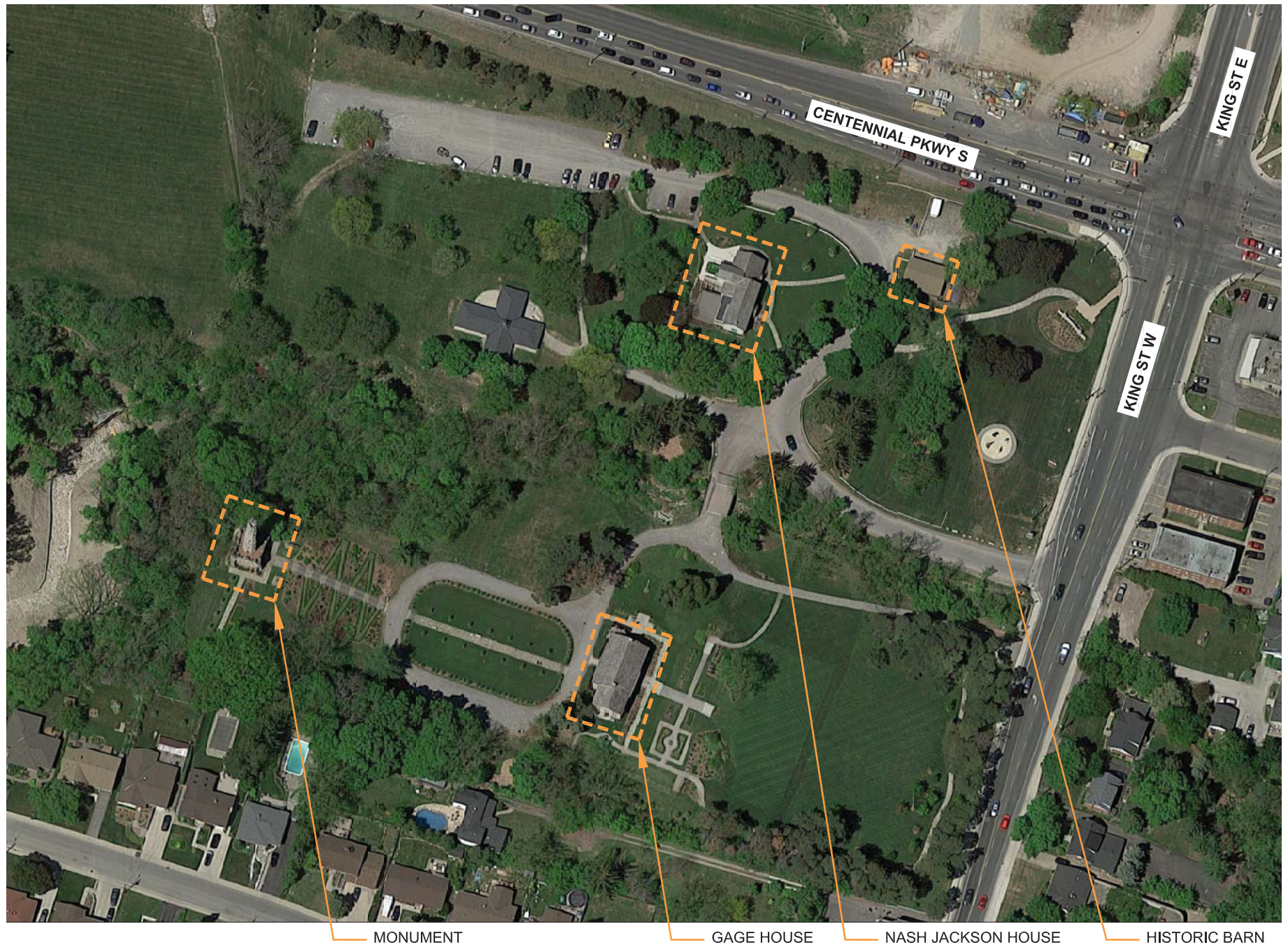


Figure 1: Google Map
Credit: Google Maps, 2015, SBA Annotations, 2016.



CHAPTER 2: SITE CHRONOLOGY AND BACKGROUND

The following partial site chronology has been compiled from *Battlefield Park National Historic Site Master Plan January 2011* and *Battlefield Park, Stoney Creek- A Reconstruction c.1830*:

- 1789 the widow Mary Gage and her two children James and Elizabeth arrive in Upper Canada
- 1792-1795 acquisition of lands by Mary and James Gage
- 1813 War of 1812, Battle: June 5th – 6th 1813
- +/-1820 construction of Gage Store
- +/- 1832 construction of Gage Barn
- 1835 property sold to the Honourable Robert Neilson
- 1899 the Women's Wentworth Historical Society purchased 4.5 acres of the former Gage Farm
- 1910-1913 construction of the Monument is believed to have required relocation of the Gage Barn from the base of monument to its present location at the west side of the site. Status of Gage Store unknown
- 1920 development of the commemorative landscape by Howard and Lorrie Dunington-Grubb
- 1954 area still primarily orchards
- 1960 site is designated a National Historic Site
- 1971 the Niagara Parks Commission (NPC) restores Gage House as a museum
- 1993 restoration of Monument
- 1995 restoration of Gage House
- 1999 Nash Jackson House is relocated to the Park, bandshell is removed
- 2000 Picnic shelter/pavilion added, parking lot moved to current location
- 2007 identification of significance of Gage Barn
- 2012 restoration of Dunington-Grubb landscape

Of specific interest to the present study is *Battlefield Park, Stoney Creek- A Reconstruction c.1830* (Reconstruction Report) which investigated the age, condition, historic context and significance of the frame barn previously simply cited in the Commemorative Integrity Statement as built by the Niagara Parks Commission. The reconstruction came to the consensus that



Figure 2: Gage House and Barn looking North circa 1900s (right side of photo)
Credit: Battlefield Park National Historic Site Master Plan, Jan. 2011, pg. 48.

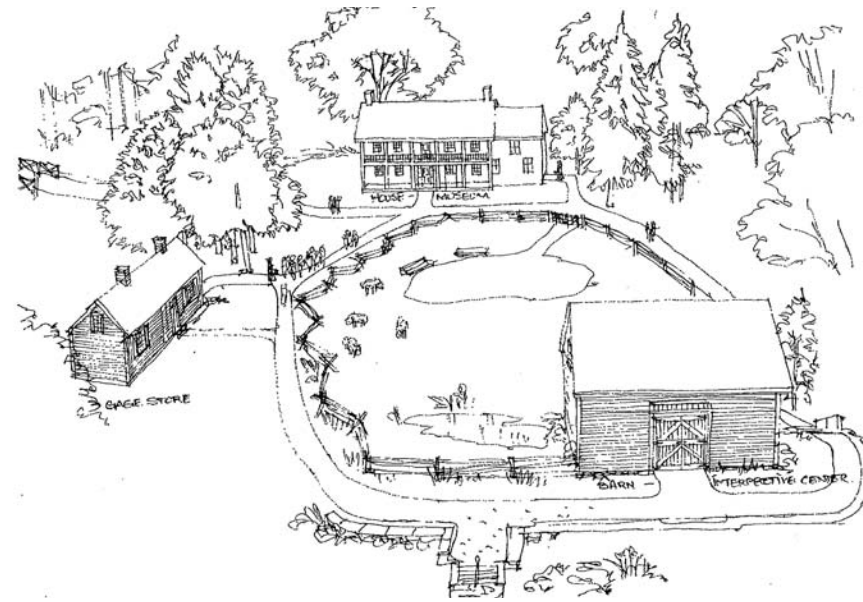


Figure 3: Proposed Restoration of Three Historic Buildings on Original Site
Credit: Battlefield Park Stoney Creek a Reconstruction c.1830, Jan. 2007, pg. 30.

the structure, utilized over the years as a maintenance building for the parks staff, was the barn shown in the early 1900's photograph of the Gage House and Barn. The study also suggests the reconstruction of the Gage farmstead inclusive of the restored barn, recreated store and less formalized garden/orchard between the Gage House and north side of the Monument, staircase and formal hillside gardens. *This would allow for both the General Store and Barn to be re-established on their original foundation sites, where they existed for nearly a century before the monument was built* (T.Murison, 2007, pg. 31.).

Accordingly, the barn is included as a historic structure within the 2011 Site Master Plan and its relocation is shown on the Site Development Master Plan as is the proposed location for the maintenance building and yard. Several Master Plan recommendations related to the scope of the present study are itemized below:

- construction of a new interpretive building and expansion of the parking area;
- relocation of the pavilion;
- relocation and restoration of the barn;
- construction of a new maintenance building and yard;
- creation of a planted berm to mitigate the impact of noise and visibility of the new maintenance building and yard from Centennial Parkway South on the western edge of the park; and
- the undertaking of an archaeological site management plan to ensure that the management of all remaining areas of archaeological potential are actively integrated into all park activities entailing future soil disruption.

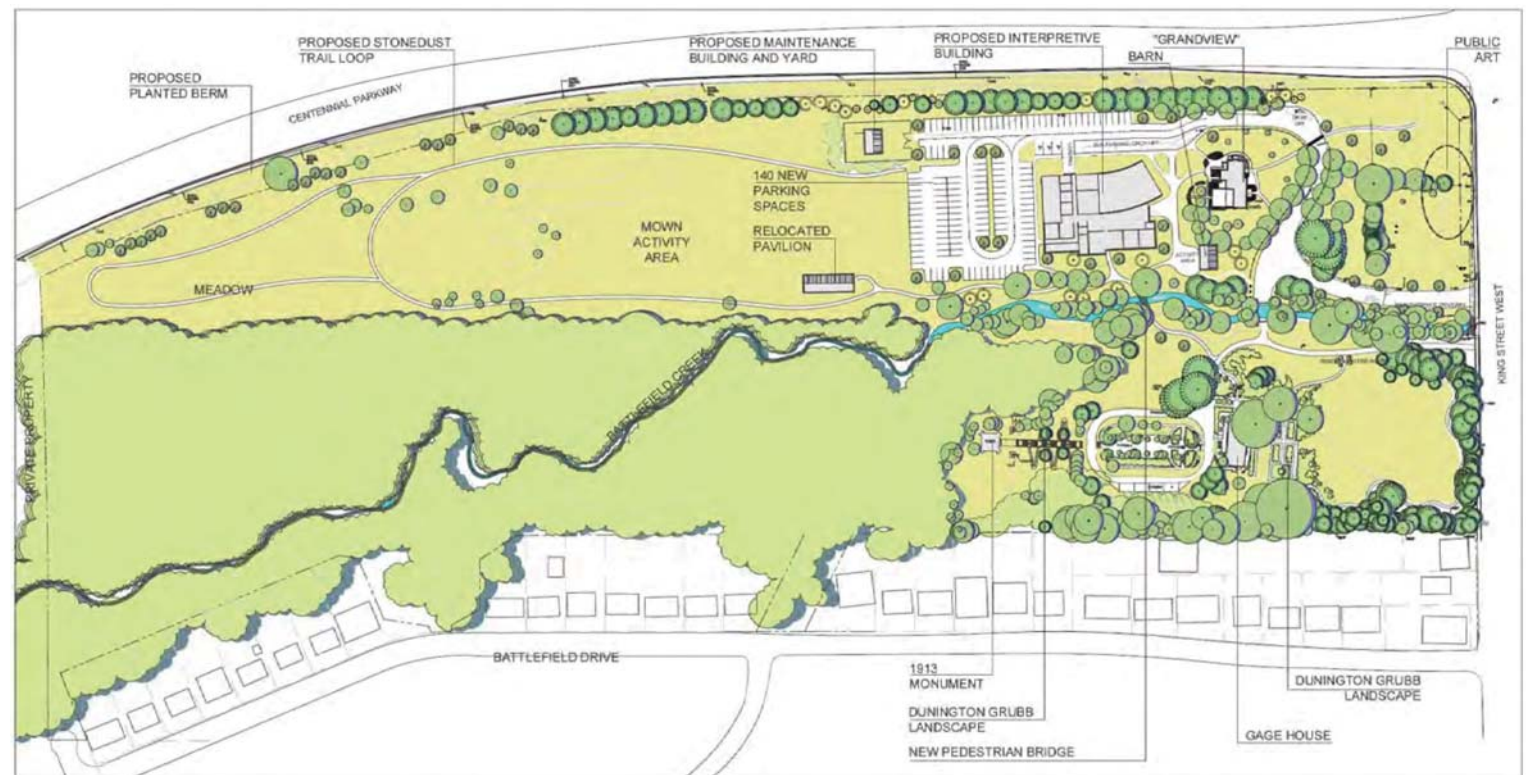


Figure 4: Site Development Master Plan

Credit: Battlefield Park National Historic Site Master Plan, Jan. 2011, pg. 13.



CHAPTER 3: EXISTING BARN

Presently the barn is situated within the north-west corner of the site and diagonally across the roadway from the Nash Jackson House, a structure which underwent relocation as it was moved from the north-east corner of King Street East and Nash Road in 1999 to avoid demolition and preservation of the structure.

The 2007 *Reconstruction of the Site circa 1830* suggested that the barn was part of the 1830's Gage Family farm and that the barn was relocated to its present location with the construction of the Monument in 1910. The second structure, the Gage store, was also believed to have been impacted with the construction and was either lost or relocated. The 2007 report did some preliminary investigation into the nearby properties to see if a structure fitting the overall size, construction and date of the store could be found with no success.

Accordingly, if the 2007 report is correct, the present siting of the barn is not original to the farm however as will be discussed within the options the

present location, though seemingly arbitrary in 1910, has been the barn's location on the site for more than one hundred years, and substantially longer than in its original location at the base of the Monument.

The present analysis of the barn questions whether the barn shown in the early photo is indeed the same barn presently on site. Closer examination of the photograph and reconstruction (**Refer to Figures 2 and 3**) has led to the conclusion that the barn presently north of the Nash Jackson House is not the barn in the photograph of the Gage House.

The barn in the photograph has horizontal clapboard siding and it was analyzed quite closely to determine the dimensions of the barn in the photograph. The present barn has much of its original vertical board siding intact under the modern waferboard and board & batten. The type of siding installed on 19th century barns was determined when they were framed: barns to receive horizontal siding were framed with studs between the major timbers to directly receive the siding. **Refer to Figure 5.**

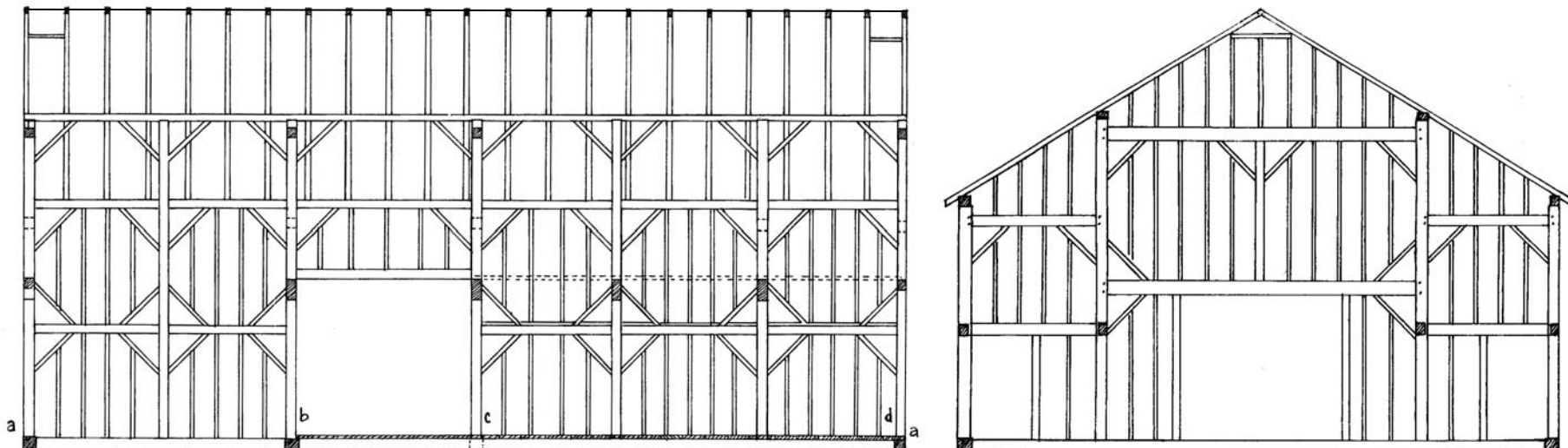


Figure 5: Typical Longitudinal Section (left) and Cross Section (right) of Horizontal Sided Barn
Credit: Arthur, Eric, *The Barn: A Vanishing Landmark in North American*, 1972, pg. 238,239.

Barns to receive vertical board & batten siding had girts and no studs. **Refer to Figure 6.** It is not possible to convert one to the other without leaving evidence; the simplest alteration would be to nail horizontal siding to existing vertical siding, however the existing historic vertical siding shows no nail holes and cannot have been under the siding visible in the photograph. There are no empty mortises in the top plate or the main girt, so studs have not been removed. It is believed that the present building has always had vertical siding. (**Refer to Figures 8-10 illustrating the barn's existing longitudinal and cross sections**). Interestingly enough, the Reconstruction Report contains conjectural sketches of the framing of the Gage Store, which had horizontal siding, and the sketches show studs just as would be required. **Refer to Figure 7.** Barns (and houses) were rarely sheathed in the first two thirds of the 19th century, so the siding is a clear indication of the type of framing to be found.

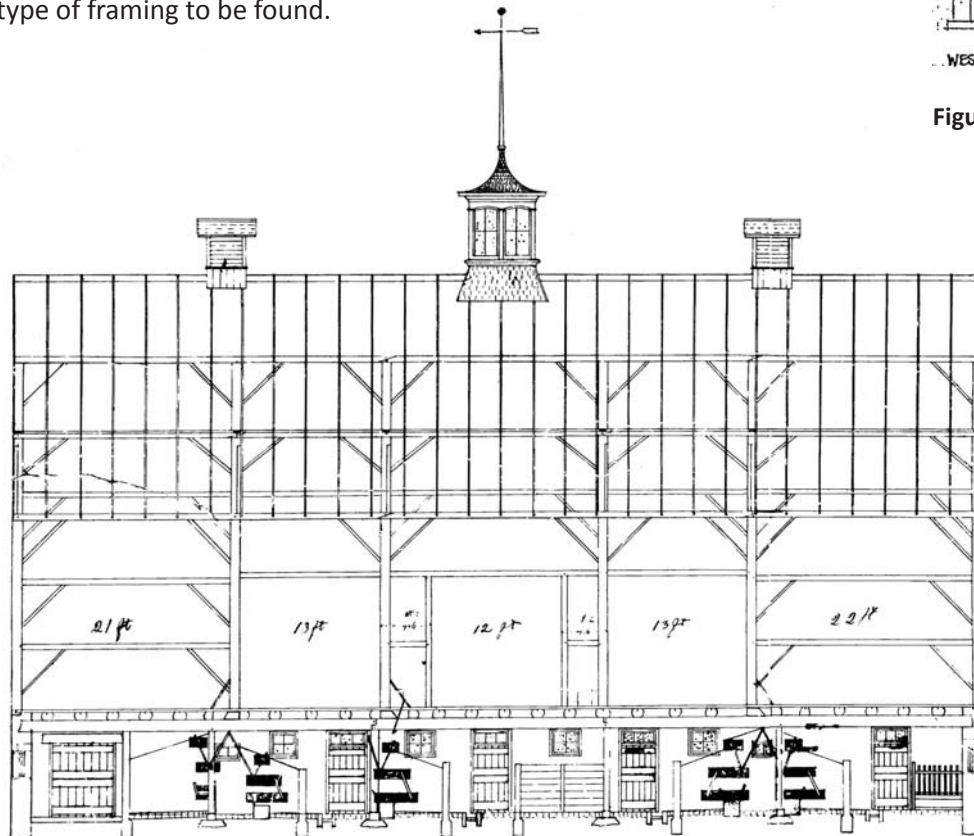


Figure 6: Typical Longitudinal Section (left) and Cross Section (right) of Vertical Sided Barn
Credit: Arthur, Eric, *The Barn: A Vanishing Landmark in North America*, 1972, pg. 236,237.

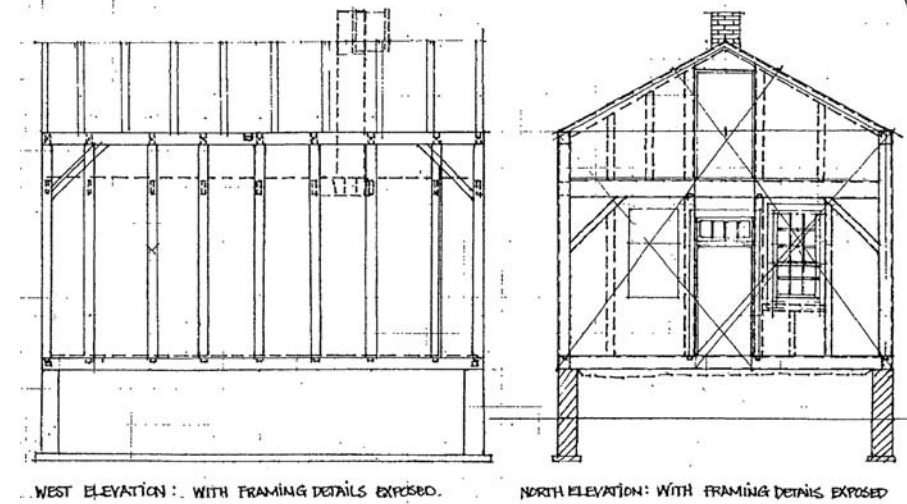
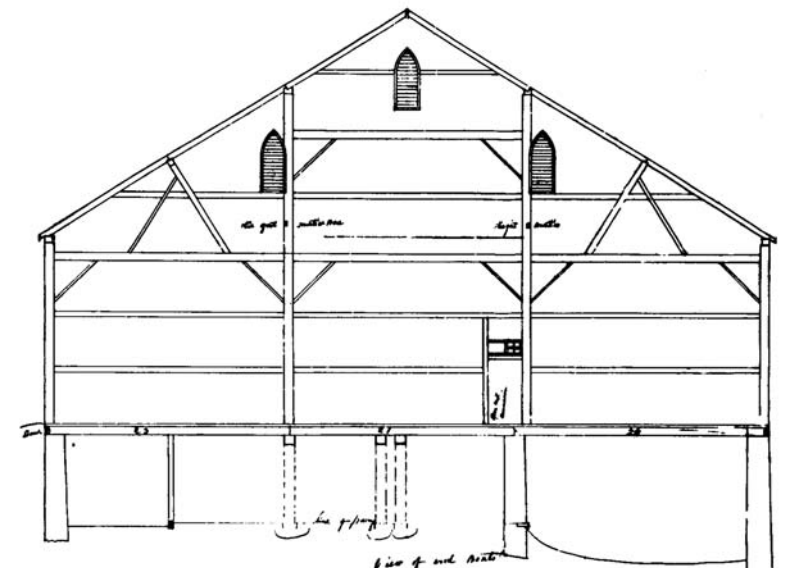


Figure 7: Construction Section details of older portion of J.Gage Store
Battlefield Park Stoney Creek a Reconstruction c.1830, Jan. 2007, pg. 25.



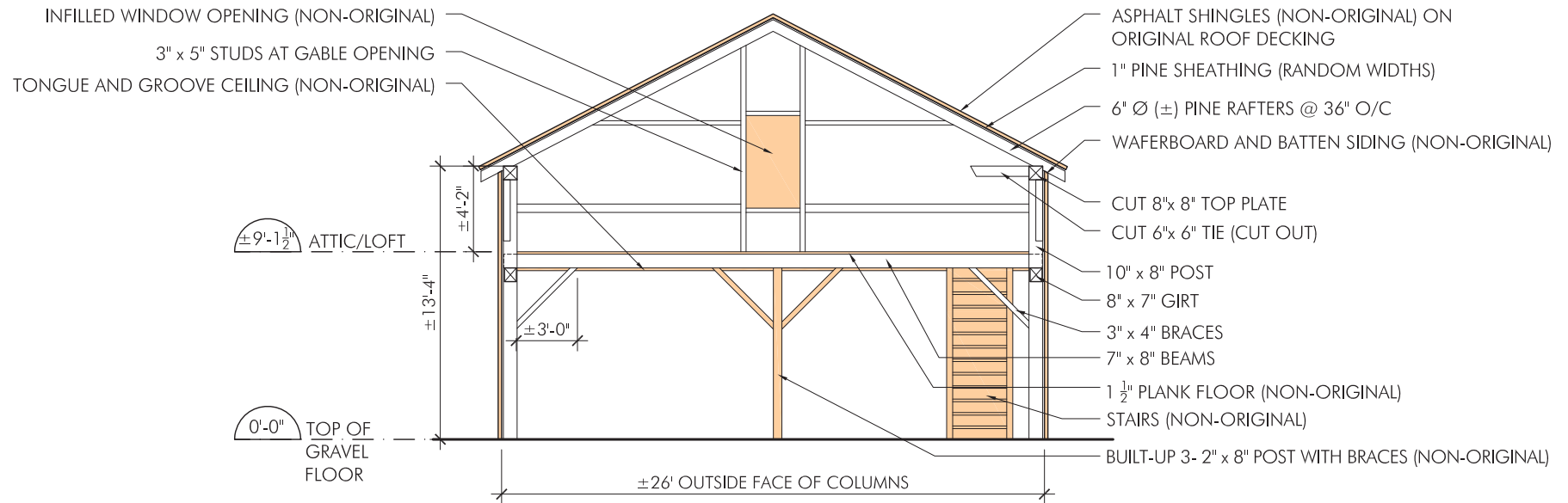


Figure 10: Existing Cross Section looking North showing Built-up Post and Stair
Credit: SBA and Shoalts, 2016

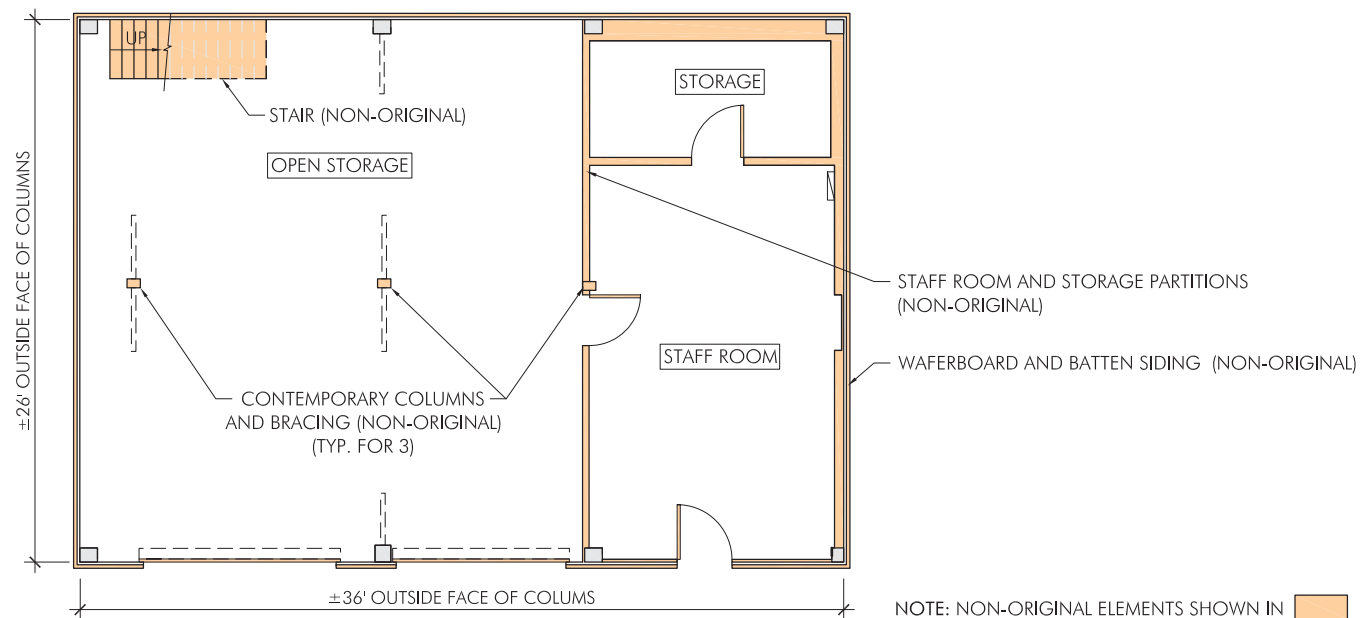


Figure 11: Existing Floor Plan , , Scale 1/8" = 1'-0"
Credit: SBA and Shoalts, 2016



The approximate overall dimensions of the timber framed barn are 26'-5" wide by 36'-3" long by 13' high to the peak of the asphalt shingled gable roof. The original vertical boards, as noted earlier, can be seen from the attic, **(Refer to Figures 12 and 13)** and appear to have been clad in painted waferboard with vertical battens. The West Elevation has two overhead metal garage doors and a single metal man door. On the south gable an opening for a previous door within the Staff Room has been infilled with plywood and painted to match the remaining exterior. The east elevation is similarly clad however it is adorned with a Barn Quilt* which is signed by the Women's Art Institute of Hamilton.

The north gable, facing King Street West, is surrounded by wood fencing to minimize visibility into the exterior yard, primarily used by the Museum for storage of site paraphernalia such as cedar poles used to create temporary event fencing. Two additional sheds wrap the north-west corner and are used by Parks. It is understood that yard storage for mulch, topsoil and landscape materials normally would occur adjacent to the west elevation. However given that the reviews were completed during the winter there would have been no on-going site landscaping and maintenance.

**Barn Quilts typically are eight-foot square painted replicas of actual fabric quilt blocks installed on the exterior of a barn to tell a story. Barn quilts are most popular within the "Barn Quilt Trails", a movement which began in the United States in the early 2000's where maps for various communities have been created to allow for the public to discover and read the stories associated with a particular barn quilt.*

The barn quilt that is installed on the east elevation of the Battlefield Park heritage barn displays the British and American flags, a design proposed and created by the Women's Art Association of Hamilton, who's first and founding president was Sara Calder. The intention of the barn quilt is to commemorate the conflict that took place on the site 200 years ago and the resulting years of peace afterwards (The Hamilton Spectator, April 10, 2013). According to the Ontario Barn Quilt Trails website, the barn quilt at Battlefield National Historic Site is not included on the Brant County and Brantford Quilt Trail.



Figure 12: Attic looking North
Credit: SBA, 2015.



Figure 13: Attic looking East
Credit: SBA, 2015.



Figure 14: West Elevation of Barn with Nash Jackson House in the Background
Credit: SBA, 2016.



Figure 16: North Elevation and Fenced Storage Area
Credit: SBA, 2016.



Figure 15: South West Corner of Barn
Credit: SBA, 2015.



Figure 17: East Elevation and Barn Quilt
Credit: SBA, 2016.

The ground floor of the barn is presently used by the City's Public Works' Department as the site's maintenance and storage facility in combination with the museum's occasional use of the ground floor for special site events.

Roughly two-thirds of the ground floor is used for storage of the parks' vehicles from the end of April to end of October with access from 2 overhead garage doors on the west side. This area has a gravel floor which extends to the exterior yard. The remaining southern end of the barn has been roughly divided into one-third for miscellaneous parks' storage and two-thirds for a staff room with access either directly to the exterior through a single man door or via the vehicular open storage area. Both of these areas have concrete floor slabs. The internal two-thirds/ one-third layout follows the original timber framing with 3 uneven bays. **(Refer to Figure 11: Existing Floor Plan)**. The Murrison report contained an interesting analysis about the uneven bays with an entrance bay, 2 stalls on the south side and a larger area on the north for carriages. Given the light framing of the barn, the present thoughts are that it may have been used for fruit storage.

An internal concrete block was built within the storage area and it is thought to have been done to address the storage of combustible products including gasoline for the mowers and trimmers. This area appears to be vented.

The attic/loft space is currently accessed by a steep open riser wood stair with simple handrail in the north-east corner of the floor plan and the loft is presently used by museum staff for miscellaneous storage. The loft floor is a very light timber frame and the loft, if original, was not intended for the storage of very much material. It is very likely that there never was any floor, only the very few beams that still are present.

The original timber framing is not clearly visible on the ground floor and three contemporary 3-2" x 8" built up posts with diagonal bracing were introduced at some point. The thoughts are that this structural work was done to address the loading of the attic floor above. In addition the original timber sill plates no longer exist and at some point may have been cut out once they had rotted.



Figure 18: Open Storage looking North
Credit: SBA, 2015.



Figure 19: Staff Room looking East
Credit: SBA, 2015.



Figure 20: Open Storage Looking East
Credit: SBA, 2015.

CHAPTER 4: STUDY PARAMETERS

Heritage Parameters

The importance of the Battle of Stoney Creek on June 5-6, 1813 was recognized with a National Heritage Site Designation in 1960 as well as Battlefield Cemetery “Smith’s Knoll”; Gage House “Battlefield House”, Park and Monument; and the Nash Jackson House “Grandview” are all designated under Part IV of the Ontario Heritage Act.

The Ontario Heritage Trust (OHT) holds a conservation easement on Battlefield Park. The Commemorative Integrity Statement, dated July 2002, makes no reference to a historic barn however within the description of *The Designated Place* there is reference to a *frame barn built by the Niagara Parks Commission*. The subsequent Reconstruction Report in 2007 suggests that this barn is the historic barn from the Gage farm era.

One key objective of National Historic Sites *is to ensure the commemorative integrity of the national historic sites by protecting and presenting them for the benefit, education and enjoyment of this and future generations, in a manner that respects the significant and irreplaceable legacy represented by these places and their associated resources.*

In keeping with this objective the study looks at relocating Public Works out of the barn and restoring the barn for educational and interpretive programming as well as a special event venue.

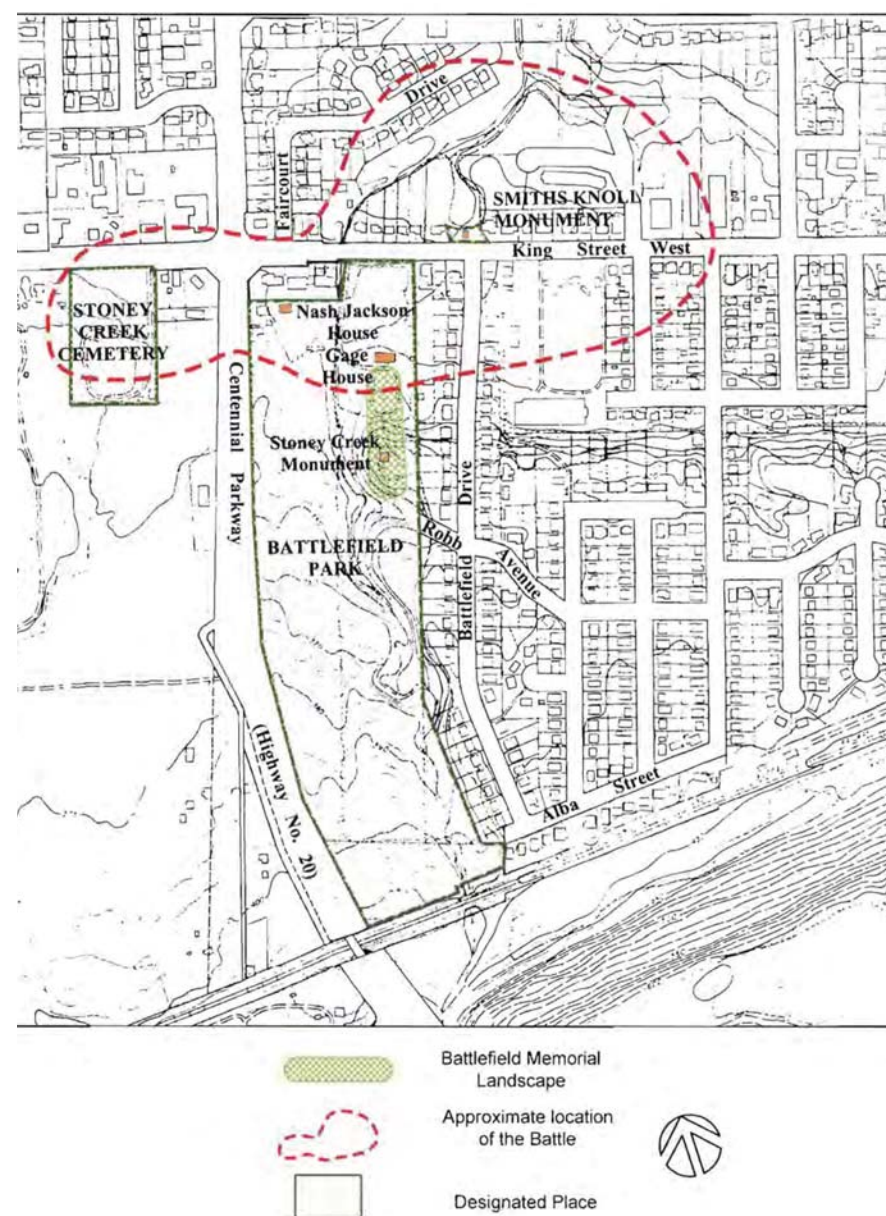


Figure 21: Battle of Stoney Creek, National Historic Site of Canada, Designated Place
Credit: Battlefield Park National Historic Site Master Plan, Jan. 2011, Appendix B.

Niagara Escarpment Parks and Open Space System (NEPOSS) Parameters

Battlefield Park National Historic Site is located within the Niagara Escarpment Parks and Open Space System (NEPOSS). NEPOSS is a linear system of over 130 parks and open spaces owned/managed by public bodies or conservation authorities. NEPOSS is based on public lands acquired to protect significant areas and features along the Niagara Escarpment.

The Niagara Escarpment Plan (NEP) requires that zoning be applied in all parks within its jurisdiction. Zoning identifies and provides the recognition of park features and serves to delineate areas on the basis of their different management requirements. **Figure 22** illustrates the Niagara Escarpment Parks and Open Space System Park Zoning Plan for Battlefield Park NHS.

Two primary NEPOSS zones must be considered within the scope of this study:

- Development Zone (D1): barn is presently within this zone,
- Development Zone (d3): proposed zone for new maintenance building and yard and,
- Historical Zone (H): proposed zone for relocated barn

The **Development Zones** are defined within the Site Master Plan to include the facilities and services to support the interpretive area and recreational activities, picnic areas, maintenance facilities zone, the maintenance building, and public art area.

The **Historical Zone** includes significant cultural heritage (archaeological, built heritage and cultural heritage landscape) resources which require management that will ensure the long term protection of the significant cultural heritage values, i.e. Battlefield House (Gage House), Grandview (Nash Jackson House), Monument Hill and the commemorative landscape of the north-east side of the Park. If the barn were to be relocated it would be within the Historical Zone.

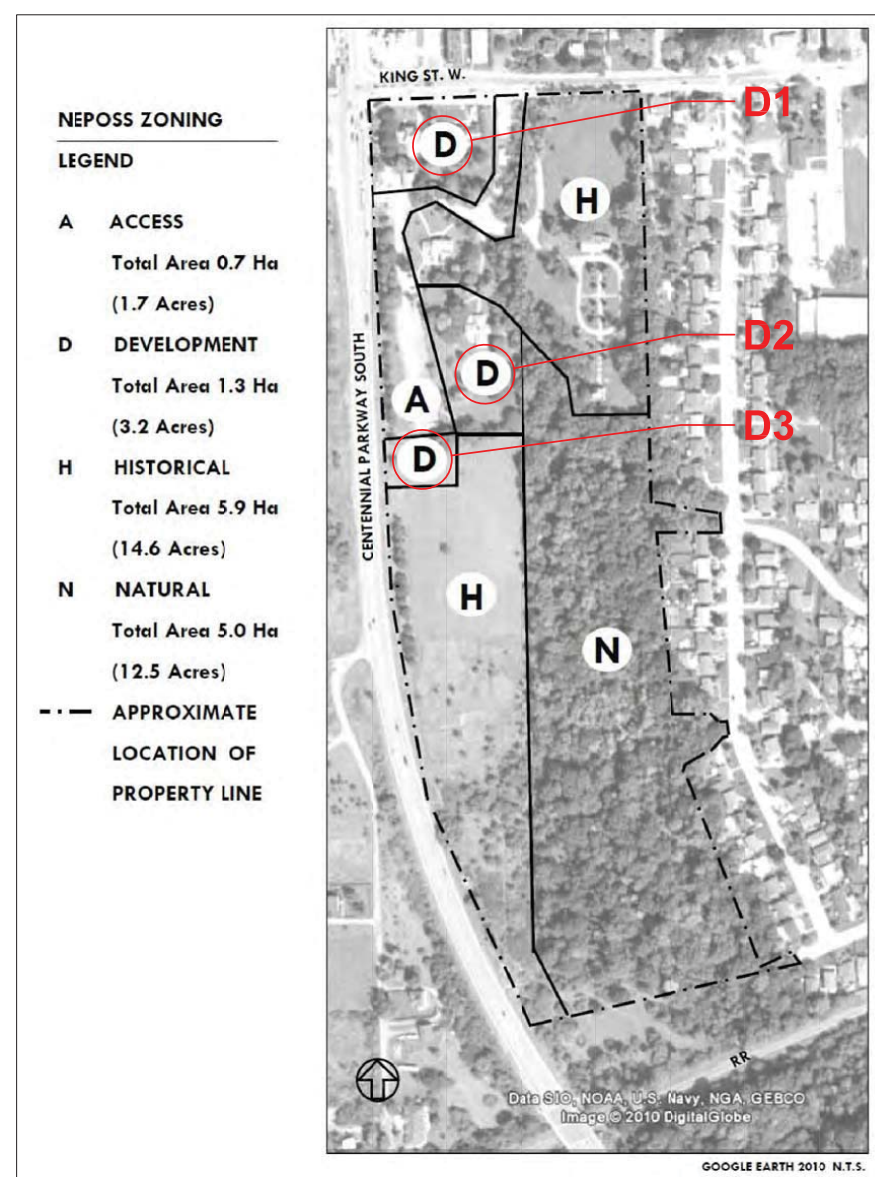


Figure 22: Battlefield Park National Historic Site, NEPOSS Park Zoning Plan
Credit: Battlefield Park National Historic Site Master Plan, Jan. 2011, pg. 33.

Ontario Building Code Parameters

Historic Barn

Occupancy (Existing):	Group F, Division 3 – Industrial Occupancy (Storage Garage) with ancillary office space
Occupancy (Proposed):	Group A2 – Assembly *
Building Area (Existing):	+/- 960sf (+/- 90m2)
Building Area (Proposed):	+/- 960sf (+/- 90m2)
Gross Floor Area (Existing):	+/- 1920sf (+/- 180 m2)
Gross Floor Area (Proposed):	+/- 960sf (+/- 90m2) - no access to attic
Building Classification: (Existing)	OBC 3.2.2.78. Group F, Division 3, up to 2 storeys
Building Classification*: (Proposed)*	OBC 3.2.2.28. Group A, Division 2, 1 storey
Construction permitted:	Combustible or non-combustible construction used singly or in combination
Sprinklers required:	No
Number of streets facing:	1

***Public Heritage Building** as per OBC, 2012 Building Code Compendium, means a **heritage building** where the occupancy in whole or in part includes viewing of the building by the public provided that displays in it are limited to those relevant to the heritage significance of the building.

Appendix A, page 5, clarifies that the definition of **Public Heritage Building** addresses smaller heritage buildings that are to be made available to the public for viewing as examples of an architectural period or periods in the past, depicting how our forebears lived, worked or played, and what artifacts, objects or clothing were in use at that time. These buildings are not considered museums as such, and therefore would not be subject to the more stringent requirements of assembly occupancies for that use.

Maintenance Building and Yard

Occupancy (Proposed):	Group F, Division 3 – Industrial Occupancy (Storage Garage) with ancillary office space
Building Area (Proposed):	+/- 1600sf (+/- 150m2)
Gross Floor Area (Proposed):	+/- 1600sf (+/- 150m2)
Building Classification: (Proposed)	OBC 3.2.2.78. Group F, Division 3, up to 2 storeys
Construction permitted:	Combustible or non-combustible construction used singly or in combination
Sprinklers required:	No
Number of streets facing:	1

Heritage Building as per OBC, 2012 Building Code Compendium, means a building
(a) that is designated under the Ontario Heritage Act, or
(b) that is certified to be of significant architectural or historical value by a recognized, non-profit organization whose primary object is the preservation of structures of architectural or historical significance and the certification has been accepted by the chief building official.

Appendix A clarifies that the definition of Heritage Building facilitates acknowledgement and acceptance of the significance of such a building through creditable means.

Though OBC 3.2.2.28 is not overly restrictive the City may want to consider whether the barn would qualify as an OBC defined Heritage Building to avoid adherence to the more stringent OBC assembly requirements.

Programming and Functional Parameters

Historic Barn

Programming Parameters:

- Educational programming of the space to illustrate/reflect early 19th century farming chores such as: milling grain, building fences, planting, timber/wood construction etc.
- Educational programming and exhibit panels/ interactive displays to tell the story of the early settlement years of Stoney Creek, the Gage Family, the story behind the barn including its construction and how to date a barn.
- Opportunities for additional harvest-time activities occurring at the annual Apple Festival such as: preserving food for winter, cider pressing, etc.
- Opportunities for inclusion of role playing activities such as: what is a farmer, etc.
- Opportunities for display of farm implements and hand tools and how they were used.
- Expanded use of the barn to include for special events such as: barn weddings, musical presentations, 19th century country dances, and story-telling.

Functional Parameters:

- Inclusion of heating and electricity.
- Alternate location to be sourced to accommodate pine poles/temporary fencing and miscellaneous materials used for events. Removal of existing sheds and outdoor fenced storage area.

Maintenance Building and Yard

Programming Parameters:

- Not applicable

Functional Parameters:

- New structure to accommodate Public Works staff and equipment
- New structure to be used seasonally from end of April to end of October to correlate with maintenance of site grounds.
- New structure to be located within locked and fenced storage compound to minimize thefts. Minimum 8ft high chained link fence. Visibility from Centennial Parkway to be minimized.
- Storage compound: storage of topsoil, mulch, firewood, bark etc.
- Staff: minimum 6 staff with lockers for storage of personal affects.
- Staff Area: inclusion of heating and air conditioning, no requirement for phone or IT line (cell phones), small desk and filing cabinet.
- Seasonal water line for washroom.
- Equipment: 2 mowers (+/- 6ft wide by 7ft deep), Gator (+/- 5ft wide by 8ft deep), Jacobson or tractor (+/- 8ft wide by 20ft deep), vented fuel storage cabinet with hood to outside. Small tools: locked and caged storage area (approximately 72sq. ft.), access from equipment area.
- Overhead doors for equipment: min. 10ft. wide by 10 ft. high
- Man doors into Staff Area and from Staff Area into Equipment Storage
- Concrete floors with direct/flush outdoor access.

CHAPTER 5: HISTORIC BARN PROPOSED OPTIONS

The earlier 1993 and 2011 Master Plan studies and 2007 Reconstruction Report were key in the identification of 2 fundamental criteria within the development of future options for the barn, namely:

- Public Works and their associated staff, equipment and supplies must be moved out of the barn. This will require the design and construction of a new maintenance facility and associated yard within the site; and
- the barn to be restored thereby providing expanded educational and programming opportunities within the museum experience at Battlefield National Historic Park.

The following three options explore 2 relocation scenarios for the barn in addition to leaving the barn in-situ. All three are based on the 2 fundamental criteria identified above. Refer to **Chapter 6** for discussion regarding the siting and design for the new maintenance building and yard.

The barn presently serves as a Public Works three season facility from roughly spring to fall with occasional use of the barn during off season for site festivals/activities. During the initial site visit in the fall of 2015 the gravel floor of the barn was covered in an array of pumpkins in preparation for an upcoming event. The restored barn accordingly is seen as an opportunity for increased educational and programming opportunities on the site as well as supplementing the opportunities afforded within the domestic and finished interiors of the Nash Jackson and Gage Houses.

As discussed within **Chapter 3** the beauty of the existing timber framed barn is hidden under contemporary painted wafer board and batten siding, asphalt shingled roof, a series of overhead and man door openings. With the exception of the Barn Quilt on the East elevation the barn is surrounded and masked by a maintenance yard and building access on the west side and a fenced in storage compound, complete with storage sheds on the north elevation. The south gabled end faces the Nash Jackson House. Destructive investigations were not completed so it is unsure what the state of the existing timber boards is and whether existing battens still exist beneath the newer siding. The order of magnitude costing within **Chapter 7** has allocated budgets for new siding, wood trim and cedar shingled roofing.

In likewise fashion the timber framed structure is not easily visible on the interior of the ground floor due to the contemporary ceilings, columns, walls, doors, layers of paint and miscellaneous Public Works furnishings and equipment. It is only from the attic where little has been done to the timbers that the barn can be appreciated for what it was and could be.

In consideration of the original fairly light framing combined with no indications within the attic of a central beam, hay-loft equipment or a large opening at either gable end; the belief is that the barn was once open to the rafters. The thoughts are that the steep stair (site investigation indicated that the adjacent beam has been relocated) was a later addition complete with the 1½" plank flooring, tongue and groove ceiling and built-up posts in order to provide storage within the attic. The restoration proposes the removal of these new elements thereby allowing the existing timber frames, posts, girts, cedar pole rafters and vertical timber framing to be exposed. The central tie beam, believed to have been cut to allow for easier access to the southern half of the attic from the stairs, is to be replaced with salvaged timber to match the original.

There has been some discussion regarding the present openings framed within the gable ends. Both at one point may have been windows, though the one at the south end has been reframed at some point into a door. Though it is not believed that they are original, the thoughts are to include for new wood windows within the existing openings, in keeping with a simple barn, in order to address natural light into the barn and minimize the need for artificial lighting. **Figure 23** illustrates the concept of removing the existing, non-original ceiling, walls and stairs and exposing the original timber framing within a simple one storey space.

As discussed within Options 1 and 2 the barn will be moved or lifted within Option 3. All three options will require a new reinforced slab on grade foundation and the reinstatement of the previously lost timber sill plates. The option for the inclusion of a stone curb and new timber floor has been costed for all options. The intention is that the barn will primarily remain a three season structure with allocated allowances to address electrical and heating requirements.

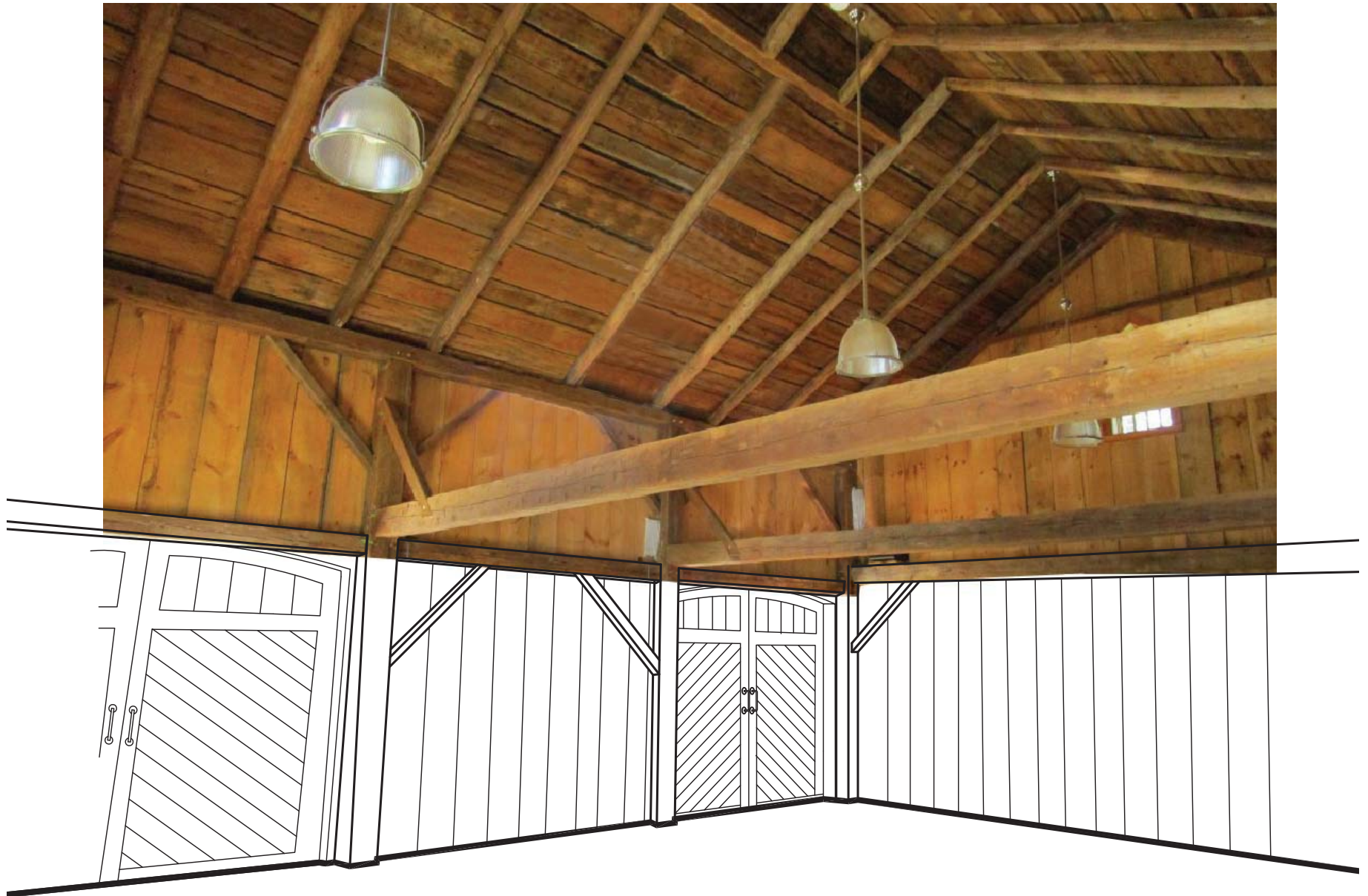


Figure 23: Interior of Exposed Timber Framed Barn
Credit: Mark Shoalts, 2016, Annotated by SBA 2016

Option 1: Proposed Relocation and Restoration of Barn as per 2007 Reconstruction Report

The 2007 Reconstruction Report suggested that the barn is an early 1830's structure from the site and that *the barn was probably constructed as a stable and carriage house for the use of the Gage family, but was altered soon after construction to allow it be used with the General Store as a more mercantile operation* (Murison, 2007, page 28). The subsequent construction of the Monument in 1913 required the relocation of the barn from its location at the base of the monument to its present location at the west side of the site. The long standing use of the barn as a Public Works maintenance and storage facility was clearly discouraged in both the 2007 Reconstruction Report and the 2011 Site Master Plan and that sentiment is echoed today.

In 2007, the restoration and creation of the Dunington-Grubb landscape at the base of the monument had not been completed as well it is suspected that it had not been envisioned at that point. Accordingly the 2007 analysis proposed the relocation of the historic barn to its original location south east of the Gage House and that the lost Gage Store be recreated as the third structure within the enclosed courtyard; thereby creating *additional opportunities to depict life at the Gage House in a complex context, with store and barn, fences, perhaps a blacksmith* (Murison, 2007, page 27). **Refer to Figure 3.**

Opportunities:

- Expanded educational and programming opportunities within the restored barn.
- Expanded interpretation of life at the Gage farm and commercial enterprise in the 1830's within the proposed site reconfiguration inclusive of the restored barn and recreated store.
- Expanded understanding of the construction and timber framing of 1800's barns.
- Uninterrupted sightline to the Nash Jackson House and site from the north-west corner of the site.
- Removal of the barn and associated unattractive storage sheds, fenced open storage and storage yard. Improved overall aesthetics of site at highly visible corner of the site.

Discussion:

Since this option was conceived almost ten years ago the east side of the site and south of Gage House, has been transformed with the restoration and creation of the originally uncompleted Dunington-Grubb heritage landscape. Accordingly the proposed recreation of the Gage House farmstead and store would destroy a critical cultural heritage landscape component within a defined Historical Zone (refer to earlier discussion of NEPOSS Zoning in **Chapter 4**). In addition though the present analysis of the barn supports the belief that the present structure is typical of early barns, it questions whether the present barn is the barn associated with the Gage House.

Moving the existing barn would also be a structural challenge because of the loss of the original timber sill plates. The plates would have to be replaced in situ before moving the barn, or temporary plates and ties would be required. Temporary works tend to leave permanent scars on a building and should be avoided (timbers must be bolted to the existing posts to permit lifting of the building and to prevent spreading of the frame). Moving the barn should be considered as a last resort in order to save it, not as a desirable part of restoring it. Accordingly the proposed barn relocation would be questionable.



Figure 24: Option 1: Proposed Relocation of Barn as per 2007 Reconstruction Report
Credit: Google Maps, 2015, SBA Annotations, 2016.



Option 2: Proposed Relocation and Restoration of Barn as per 2011 Site Master Plan

The 2011 Site Master Plan expanded upon the earlier 1993 Master Plan Study with several key elements identified within the Development Plan for the West Side of the Site. These included the following:

- New interpretive building complete with an expanded parking lot.
- Relocation of the existing pavilion.
- Relocation of the barn to the east side of Grandview/ Nash Jackson House.

Since the completion of the 2011 Site Master Plan the overall sense from meetings held during the course of this feasibility study is that the construction of a new interpretive building, complete with additional parking spaces, and the relocation of the existing pavilion southward into the enactments area, are not budgeted for nor are City priorities for the site.

Opportunities:

- Expanded educational and programming opportunities within the restored barn.
- Expanded understanding of the construction and timber framing of 1800's barns.
- Uninterrupted sightline to the Nash Jackson House and site from the north-west corner of the site.
- Removal of the barn and associated unattractive storage sheds, fenced open storage and storage yard. Improved overall aesthetics of site at highly visible corner of the site.

Discussion:

The Nash Jackson House was moved to the site in 1999 from the north-east corner of King Street East and Nash Road in order to preserve it and due to its association with the Gage Family. It was suggested in the Reconstruction Report that the barn was moved in 1910 to avoid its demolition with the construction of the Monument and that the barn was not given much consideration of its importance to the site nor the selection of its new location.

Given that both of these structures do not appear to have any former associations with each other, the relocation of the barn from the north-west corner of the site does not re-establish any earlier building groupings, contrary to the intention of Option 1. The relocation of the barn will also affect access to the pavilion and will be in close proximity to the creek and associated vegetation. In addition, the proposed relocation of the barn would be within a defined Historical Zone (refer to earlier discussion of NEPOSS Zoning in **Chapter 4**).

As noted in Option 1, moving the existing barn would also be a structural challenge because of the loss of the original timber sill plates. The plates would have to be replaced in situ before moving the barn, or temporary plates and ties would be required. Temporary works tend to leave permanent scars on a building and should be avoided (timbers must be bolted to the existing posts to permit lifting of the building and to prevent spreading of the frame). Moving the barn should be considered as a last resort in order to save it, not as a desirable part of restoring it. Accordingly the proposed barn relocation would be questionable.



Figure 25: Option 2: Proposed Relocation of Barn as per 2011 Master Plan
Credit: Google Maps, 2015, SBA Annotations, 2016.



Option 3: Restoration of Barn in-situ

The third option under consideration is the restoration of the barn in its present location. As per Options 1 and 2, this option also relies on the removal of Public Works from the building and the creation of a new maintenance building and yard elsewhere on the site as discussed in Chapter 6.

Opportunities:

- Expanded educational and programming opportunities within the restored barn.
- Expanded understanding of the construction and timber framing of 1800's barns.
- Improved sightline to the barn and site from the north-west corner of the site with the restoration of the barn and removal of the unattractive storage sheds, fenced open storage and storage yard. Improved overall aesthetics of site at critical highly visible corner of the site.

Discussion:

Existing documentation confirms that the barn has been in its present location for a fair period of time. If the barn is indeed the barn from the Gage farm, then the barn has been in its present location since +/- 1913 or roughly one hundred years. If this theory is disproved, the barn has minimally been in its present location since 2002, when it was cited as the *frame barn* built by the Niagara Parks Commission within the Commemorative Integrity Statement. Presently the barn is located within an area of change or Development Zone 3 as per NEPOSS Zoning.

As compared to the proposed relocation of the barn within Options 1 and 2 this option is desirable from the viewpoint of the building because there would be less stress on it and less potential for damage to the frame. Replacing the sill and either replacing the original wood floor or pouring a complete reinforced concrete floating slab are relatively easy to accomplish without moving the building. The building should be stripped down to only the materials to be retained prior to lifting. Cribbing and steel beams are required to lift the building straight up; the nature of a timber frame permits it to be supported at the loft level and the posts can hang below to be repaired before the sill is replaced. (Sill, plate, bottom plate, sill beam, and others are all used and are interchangeable terms). The tie beam between the top plates at the approximate centre of the building should be replaced after the building is sitting on its new foundation, however, it should be temporarily replaced with a nylon strap until that time to prevent splaying of the walls during the repairs.

The concerns, identified within both Options 1 and 2, regarding the structural implications required to move the structure given that the structure presently has no sill plates, was not robustly constructed and the siting of the barn would not be applicable within this option. The barn would remain in its present location. Accordingly the proposed restoration of the barn in-situ is desirable.



Figure 26: Option 3: Restoration of Barn in-situ
Credit: Google Maps, 2015, SBA Annotations, 2016.



CHAPTER 6: NEW MAINTENANCE BUILDING AND YARD

Based on the reviewed documents and its mention within the Site's Commemorative Integrity Statement as a *frame barn built by the Niagara Parks Commission*, the barn has long been used for storage and maintenance of the site. The 2011 Master Site Plan stated that "*One of the items that was thoroughly investigated and subjected to a great deal of discussion is the location of the maintenance yard. Alternate locations were considered but it was determined that it is most feasible to retain the maintenance activities on site for economical and logistical reasons* (Shearer, 2011, page 105).

The present study also posed this question to both the Museum and Public Works Stakeholders with the same consensus that the upkeep of the site and caretaking component was best served with on-site facilities. Accordingly the current study reviewed possible locations on site to construct the new maintenance building and yard and only one location addressed both site and budgetary constraints.

This report supports the development of the new facility at the south end of the existing parking lot, thereby making use of the existing parking lot to provide access as well as locate the new facility away from the Nash Jackson and Gage Houses and not within the enactment area. In keeping with the 2011 Site Master Plan the suggestion is to increase the density of the existing foliage along the western edge following Centennial Parkway as well as benefit from several existing trees to minimize the visibility of the new structure from the north and east sides. The facility will be bordered along the south edge by the existing swale.

The concept is to break down the massing of the new wood framed facility into two elements/volumes according to their functional and spatial requirements. The staff facilities are proposed to be located along the east side within a smaller heated and air conditioned volume, complete with a single unisex washroom and staff lockers, in order to provide additional staff visibility of the site as well as take advantage of this smaller scaled element facing the park.

The unheated storage garage complete with 2 overhead doors is located in the larger volume along the west side and accessed directly through a locked gate and within the fenced in storage yard. Bulk exterior storage, inclusive of topsoil, mulch and bark, is easily accessible along the southern edge and may require additional consideration of the fencing and screening required along this side. A large roof overhang along the south roofline is proposed to address the need for covered storage and is envisioned as an area for the Museum's storage of pine poles and miscellaneous materials used for events.



Figure 27: Proposed New Maintenance Building and Yard
Credit: Google Maps, 2015, SBA Annotations, 2016.



NEW MAINTENANCE BUILDING AND YARD LOCATION



LEGEND

- FENCE
- 20 FT. DIAMETER MOUND (TOPSOIL/MULCH/BARK)
- STAFF ENTRANCE
- VEHICULAR ACCESS/ENTRANCE

Figure 28: Proposed New Maintenance Building and Yard Site Plan (Not to Scale)
Credit: Google Maps, 2015, SBA Annotations, 2016.



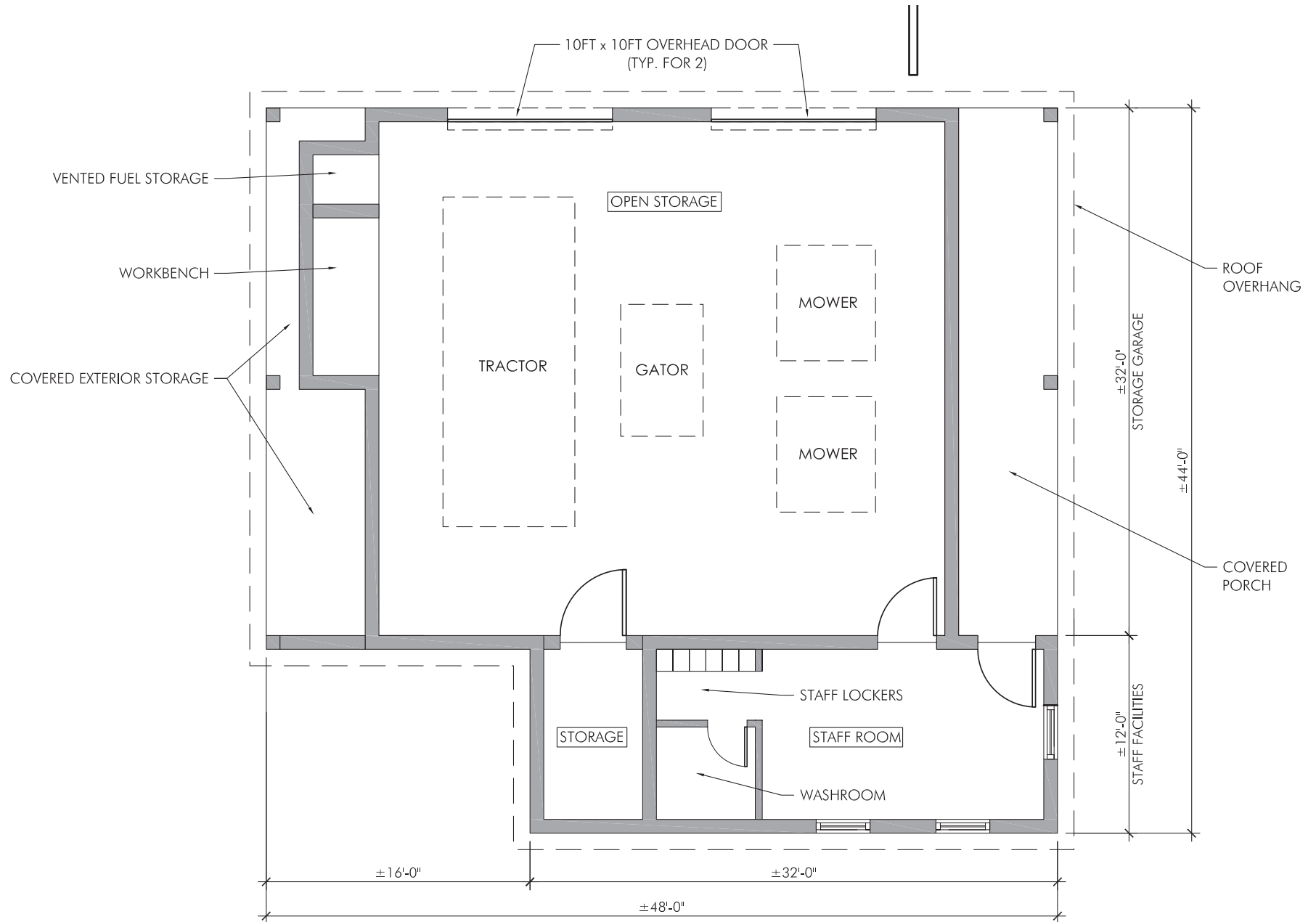


Figure 29: Proposed New Maintenance Building Floor Plan (Scale 1/8" = 1'-0")
Credit: SBA, 2016.

CHAPTER 7: ORDER OF MAGNITUDE COSTING

Within Options 1 and 2 the costs for bracing, securing, reinforcing, and lifting the barn are the same and the minor difference in distance travelled relatively trivial. Accordingly the same moving cost has been used.

Option 1: Proposed Relocation and Restoration of Barn as per 2007 Reconstruction Report

Option 2: Proposed Relocation and Restoration of Barn as per 2011 Master Plan

Necessary preparation of barn prior to moving	10,000
Move barn	10,000
Reinforced slab on grade (\$10/sq. ft.)	10,000
8" high stone wall on slab on grade/ on which to sit the barn (replication of an original stone foundation)	5,000
<u>Sitework Allowance (assumes no relocation of services)</u>	<u>15,000</u>
Relocation Sub-total:	50,000
Selective demolition/removals	5,000
New sill, tie beam and miscellaneous repairs	7,500
New roof	15,000
New siding, trims, doors	15,000
New wood floor	10,000
Miscellaneous	5,000
Removal/Cleaning of paint from ground floor timbers	12,000
Electrical Allowance	10,000
<u>Mechanical Allowance (in floor hydronic heating)</u>	<u>10,000</u>
Restoration Sub-total:	89,500
Relocation + Restoration Sub-totals	139,500
<u>Contingency @ 30%</u>	<u>41,850</u>
TOTAL *	\$181,350

Order of Magnitude Cost for Options 1 or 2: \$200,000*

*The following items are not included within the Order of Magnitude Cost: allowance for General Contractor Overhead and Profit; allowance for Construction Contingency; Design/Consultant Fees; Permits; Escalation Factors and all Taxes.

Option 3: Restoration of Barn in-situ

Selective demolition/removals	5,000
Lifting and lowering of barn	5,000
New sill, tie beam and miscellaneous repairs	7,500
Reinforced slab on grade (\$10/sq. ft.)	10,000
8" high stone wall on slab on grade/ on which to sit the barn (replication of an original stone foundation)	5,000
New roof	15,000
New siding, trims, doors	15,000
New wood floor	10,000
Miscellaneous	5,000
Removal/Cleaning of paint from ground floor timbers	2,000
Electrical Allowance	10,000
Mechanical Allowance (in floor hydronic heating)	10,000
Sitework Allowance (assumes no relocation of services)	8,000
Restoration Sub-total:	117,500
Restoration Sub-total	117,500
Contingency @ 30%	35,250
TOTAL *	\$152,750

Order of Magnitude Cost for Options 3: \$160,000*

* The following items are not included within the Order of Magnitude Cost: allowance for General Contractor Overhead and Profit; allowance for Construction Contingency; Design/Consultant Fees; Permits; Escalation Factors and all Taxes.

New Maintenance Building and Yard

New construction area (1600sf) (\$120/sq. ft.)	192,000
simple slab on grade, wood framed, wood sided	
Sitework Allowance (assumes no relocation of services, fencing, landscaping)	15,000
New Building Sub-total:	207,000
New Building Sub-total	207,000
Contingency @ 25%	51,750
TOTAL *	\$258,750

Order of Magnitude Cost for New Maintenance Building and Yard \$270,000*

* The following items are not included within the Order of Magnitude Cost: allowance for General Contractor Overhead and Profit; allowance for Construction Contingency; Design/Consultant Fees; Permits; Escalation Factors and all Taxes.

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