



Manitoba Heritage Council Report

PHYSICAL DESCRIPTION OF PINE FORT:

CONSTRUCTION METHODS

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The following is a discussion of methods of construction of forts in the period of the triple occupation of Pine Fort, and an attempt to posit a correlation between these methods and those used at Pine Fort. The evidence, as always, is scant, therefore frequently all that can be done is to present the alternatives without comment.

As a basis for comparison, three other descriptions of fort construction were used, these forts are:

Saleesh House, built by David Thompson in Montana in 1809. This was a plains fort, not in the mountains, and in vegetation and climate, Montana is strikingly similar to plains in Manitoba.

Fort Reliance, on Great Slave Lake, built by Captain Black in 1883. While this fort existed at a later date and therefore possibly utilized more sophisticated methods of construction, the basic problem of sealing out a harsh climate is comparable to Pine Fort. Secondly, the construction materials available were similar to those available in the Spruce Woods area.

George Nelson's House, built in 1810 on Yellow Lake in the lower Lake Winnipeg region. This account is the most thorough (see Appendix B) and could possibly be the most useful as a basis for comparison. The descriptions of these forts were taken from their post journals.

Two other North West Company forts are considered in this report: Fort Rivière Tremblante (1791-98) on the Assiniboine River in Saskatchewan and Fort George (1792-1800) on the North Saskatchewan River just inside the eastern boundary of Alberta. Both these forts have been sites of archaeological digs. Those remains which were uncovered have provided the basis for comparison, rather than descriptions by the factors at the time of construction, as is the case with the first forts mentioned.

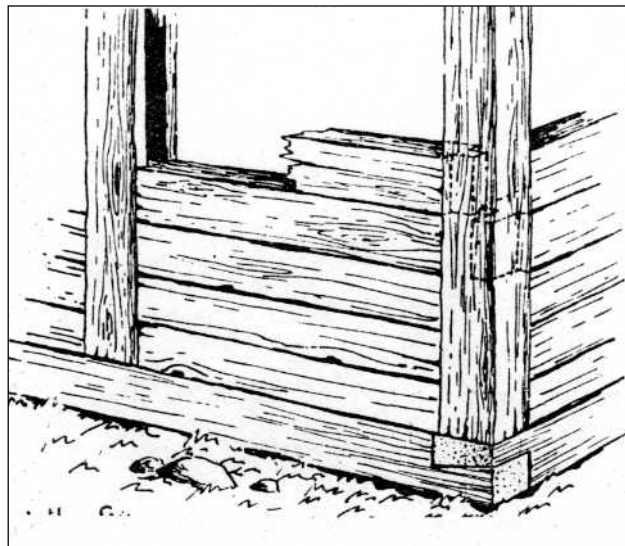
The areas of discussion have been broken down by such categories as walls, floors, and roofs. This seemed to be easier for analysis rather than grouping overall construction methods

fort by fort. If the forts' and factors' names become confusing, it really isn't crucial. The important part is the different forms of construction, not so much where and when.

Cellars – with the exception of temporary structures such as lean-tos, all buildings were built over cellars. One of the buildings excavated at Pine Fort had wooden cribbing for support with vertical pickets. This is considered an unusual form; more common at the time was cross or lattice cribbing.

Walls – the walls of fur forts virtually without exception in the west and north, were erected by the “poteaux sur sole” (posts in the sill) method. This was a traditional French-Canadian form carried over from northern France, where the style was referred to as “colombage”.

The poteaux sur sole technique consisted of horizontal logs¹, usually squared, slid in grooves into position between squared uprights, which were planted by means of mortises into heavy squared logs forming a frame or sill for foundation. The only difference between colombage and poteaux sur sole is that empty spaces between the uprights were filled in France with stone, clay and straw whereas in Canada, wood or wood chips and grass in mud, served the same purpose.



The Nelson fort journal explains the practice of this form²

We build up the two sides of the height required, say five and a half, or perhaps six feet. These are secured by two stakes at each end, as a common rail fence, and braced by a good strong stock, the whole breadth of the house, and notched at each end, to lay on the two sides, to prevent their moving.

The journal further explains that the walls are plastered, both inside and outside. The exceptions to this are the trade and storage areas because some of the plaster could fall and dirty the furs or spoil the meat.

The excavation by Hugh Mackie of Pine Fort and Fort Rivière Tremblante show evidence of chinking being used to fill in the spaces between the logs of an organic mixture which likely contained grass or wood shavings mixed with clay.

Roof – Fort Reliance had a roof formed of single slabs which slanted down from a ridge pole to form eaves. The gaps were filled in by a mixture of dry grass, clay and sand which was beaten down between the slabs and then coated with a thin layer of mud.³

David Thompson's Saleesh House had a roof of small split logs, filled with long grass worked together with mud. This "answered tolerably well for Rain, but the Snow in melting found many a passage."⁴

Nelson's fort had a roof of straight poles slanted to approximately a 45° angle to the walls. The joists between the roofing were plastered and then covered with grass to a depth of about one foot, and four or five inches of mud were thrown on top "to prevent its being blown off, also as a preventative against fire."

Fort Rivière Tremblante had a similar sod roof, a mixture of grasses and mud.⁵ The farmer who homesteaded the present Snart Site recalled that the log cabins just north of the Pine Fort remains had sod roofs⁶ so it seems likely that the fort used the same method, although none of it now remains.

Floors – floor joists, flooring and chinking (most likely a clay and sand mixture) were uncovered at Pine Fort. The materials await analysis, and Mackie does not postulate a specific method of construction.

The floor of the Saleesh House was made of split logs fitted with the round side downwards, and notched so as to be especially firm. The logs were then smoothed off by a small axe, or adze.

Nelson's fort had wood which was squared and "dobbed off with an edge", to form the flooring when good wood was not available. The journal makes no mention of construction techniques when good wood was available.

Fireplace and Chimney – Pine Fort has thus far yielded two fireplace sites. These were made of limestone and chinked a good deal to fill in the drafts caused by the irregular stone. As was fairly common, one of the fireplaces was a double one. Both Fort George and Rivière Tremblante had a double fireplace.

David Thompson writes that

our chimneys were made of stone and mud rudely worked for about six feet in height and eighteen inches thick, the rest of layers of grass and mud worked round stone poles inserted in the stone work, with cross pieces, and thus carried up to about four feet above the roof; the fireplace is raised a little, and three to four feet in width by about fifteen inches in depth.⁷

George Nelson explains that this experience is to make the chimney of stone when possible, but most commonly of earth made into mortar and wrapped in grass. The wood is cut into lengths of about 2 ½ feet and set upright in the chimney so that it burns well and gives off maximum heat. This was a real concern, because the fireplace was the only source of heat and would have to warm a large area. For example, in Fort George, a building with 1,850 square feet of floor space was heated by only two fireplaces at opposite ends of the building.⁸ The fireplaces in Pine Fort both appear to have been near, or part of, the north walls.

Interior – George Nelson's journal notes several interior features. The doors were made of wood slabs, split and then squared. The door was secured by a wooden latch and a

leather thong to raise it from the outside. An artifact analysis of Pine Fort may assist in determining whether leather or metal straps were used to hold its doors in place.

The beds were constructed of “two posts, at the head and foot with a stick fixed one in the post and one in a sugar hole (when we have such an article) or forced into one of the chinks of the house.”

The windows were carefully fit with the thinnest parchment skin available. For want of such skins, Thompson used paper but this was too brittle to be used permanently.

Stockade – Pine Fort had a double stockade with two raised bastions at opposite corners during its second occupation (1785-1894). This was about ten feet in height, and likely contained loop holes for guns. Alexander Henry, in describing the construction of the stockade at Pembina, just south of Pine Fort, wrote of “Oak stockades 12 feet long.”⁹

Nelson summed up fur forts in general when he wrote in 1810, “We did not make places”. Pine Fort was constructed with maximum efficiency and minimum elaboration, with an eye more to function than design. The Aboriginals frequently brought in freshly killed buffaloes for trade, and the skins and meat would likely be tended to within the palisade walls so perhaps a lean-to or shed answered for this purpose.

Because it was a supply depot, there must have been considerable storage space for food, canoes, supplies, etc., as well as storage for pelts and trade items.

There are no clues so far as to routine fort areas such as the garden, ice house, and the shelter for the horses. As previously mentioned, there is convincing evidence of a blacksmith’s shop, but no forge has been uncovered. Perhaps the completion of the excavation of Pine Fort will solve some of its many mysteries.

Endnotes

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- ¹ Marius Barbeau – “The House That Mac Built” in *The Beaver*, December 1945, p. 10.
 - ² George Nelson Papers – Toronto Central Library, Rare Book Collection.
 - ³ Barbeau, *op. cit.*, p. 13.
 - ⁴ *Ibid.*, p. 11.
 - ⁵ Hugh Mackie, *Pine Fort*, Manitoba Museum of Man and Nature, p. 38.
 - ⁶ G.S. Johnson, 1935, in the D.A. Stewart Correspondence, P.A.M.
 - ⁷ Barbeau, *op. cit.*, p. 11.
 - ⁸ *Fort George*, Provincial Museum and Archives of Alberta No. 5, 1971.
 - ⁹ D.A. Stewart Papers, P.A.M.