

I N T R O D U C T I O N

Introduction

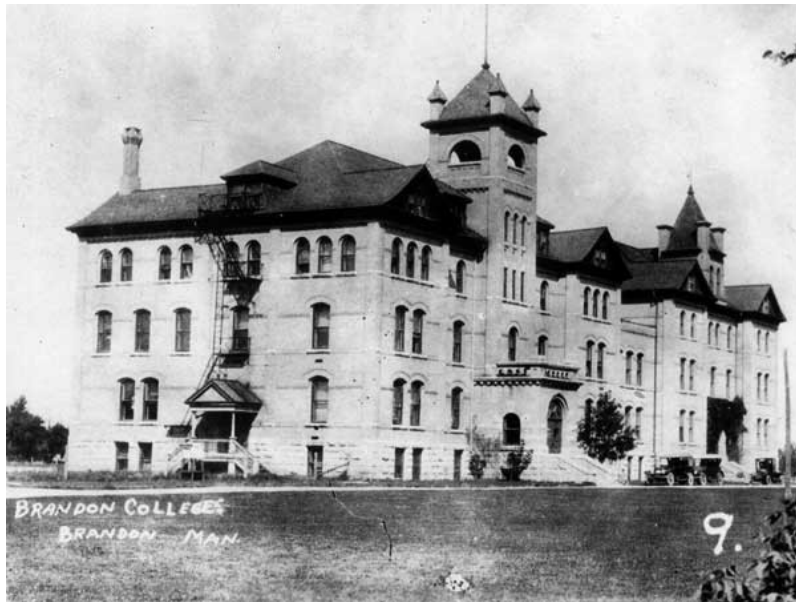
In 1899, **Cypress River brick-maker, James Ruston**, advised his customers that a typical brick house could be built with 15,000 bricks, and at a cost of \$150. This brick total suggests a largish house – something like the American Four-square, then a popular residential type common in cities, towns and on farmsites. It is of course impossible to know how many such houses (and of course many others carried out in other styles) were constructed in Manitoba between 1890 and 1920, the height of brick production in Manitoba – but certainly tens of thousands. And adding in the thousands of commercial buildings, government buildings, churches, schools and industrial structures, it certainly would be reasonable to assume that at least several billion bricks were used to put up the walls of much of Manitoba’s late 19th and early 20th century architectural infrastructure.

Where did so many bricks come from? Certainly a great many came, as did so much building material in early Manitoba history, from the nearby United States – from the well-established brick-making sites at St. Paul, Minnesota, St. Louis, Missouri and Milwaukee, Wisconsin, and any number of smaller communities just across the border in North Dakota. But billions of bricks also came from made-in-Manitoba brick yards. And that story, which stretches from the first attempts at brick production, around 1860, to the final operation, Red River Brick and Tile, at Lockport, which closed in 1990, is a highly significant aspect of the province’s building history.

The following overview of brick production in Manitoba is drawn largely from a major inventory developed for the province’s Historic Resources Branch (HRB) in 2010, by architectural historian Randy Rostecki. That inventory was divided into two sections, one focusing on sites in Winnipeg and St. Boniface (for most of the course of this history its own municipality) and the other on small-urban and rural sites throughout the province. The HRB inventory is buttressed with information from



An illustration from a 1920s Sears catalogue shows a typical American Four-square, a very popular house design seen throughout Manitoba from about 1890 to 1920. Such a house would have required about 15,000 bricks in its construction. (WikiCommons)



Billions and Billions of Bricks

The construction throughout Manitoba of large and architecturally impressive public buildings, like Brandon College and Clark Hall (top left, from 1901 and 1906), would have taken hundreds of thousands of bricks – and that just for the exterior facades. If the building was constructed with interior brick walls as well, the brick values double. And even greater numbers of commercial buildings added exponentially to the brick requirements of the growing province. In Winnipeg, where the warehouse district was a sea of enormous multi-storey brick buildings, like the Ashdown Warehouse of 1895 (below left) the number of bricks required was staggering. Each of the buildings shown here likely required at least a million bricks; extrapolating from that value to the thousands of similar structures across Manitoba would suggest a requirement for several billion bricks. (Images Courtesy Archives of Manitoba)

another data collection, developed in 1992 by Hugh Henry for the Manitoba Museum.

It is important to note that the information in these inventories is as complete as can be expected, given the nature of available documentary resources. Attention to the brick industry was sketchy at best – occasionally covered in newspapers and trade magazines, with some additional content in various federal and provincial government reports. Articles often focused on the quantity of brick produced – as an important marker of success – perhaps with passing mentions of personnel, brick-making technologies, brick quality and prices. But there was no sustained attention to the industry as it developed, and indeed as it became more established and commonplace, the novelty attending its activity gradually subsided, and with it media attention. Nevertheless, as the inventories reveal, there is still sufficient information – brick-making facts and anecdotes, economic and technological developments that affected the evolution of the industry, modest corporate histories – to develop a comprehensive and reliable history of brick production in Manitoba.

There were at least 190 brick-making operations active in Manitoba over the 130 years of the industry’s activity in the province. Many of these – about 90, thus nearly 50% of the total – were short-lived, productive only for a year or so. Others were more successful, many enduring for at least a decade. And a handful, about 20, were substantial, industrial in scale, each turning out high-quality bricks for 25 or more years.

The following overview has been organized according to four distinct periods, reflecting the evolution that attended the industry:

- Pioneer Era: 1860 – 1880
- Development Era: 1881 – 1896
- Consolidation Era: 1897 – 1917
- Modern Era: 1918 – 1990

The Pioneer era was marked by the first attempts at brick-making, generally in the new City of Winnipeg and in small urban and rural areas north and south of the city along the Red River. Yards were small and brick-making technologies were typically rudimentary, with modest outputs.

The Development era was defined by the explosive growth of Winnipeg and then of many other new communities across southern Manitoba, opened for settlement and development by the extension of the Canadian Pacific Railway across the province by 1883. With enormous demand for substantial buildings, brick-making became a very sophisticated enterprise, with many of the typical technologies of the industry employed by dozens of start-ups.

The Consolidation era marked the height of the brick industry in Manitoba, with a great number of operations, a major increase in production and quality, and distribution of product across western Canada. Certain of the operations from this period became the most active and productive brick-making sites in the province.

The Modern era, which followed the cataclysm of World War I, coupled with the downturn of building construction projects that had actually begun before the war, saw many Manitoba brick operations wiped out. Only a few of the most substantial yards survived, with a few new additions, taking the industry up to 1990, when the last operation closed, and the history of brick making in Manitoba drew to an end.

An introduction to brick manufacturing, “Context: Brick-making in the 19th Century” precedes the sections dealing with the four distinct periods of brick-making in Manitoba. This piece provides the necessary background describing the kinds of processes, equipment and machines, and activities that defined work on nearly any 19th-century brickyard.

The two inventories noted above are presented in separate documents attached to this overview study, along with a third appendix that highlights key facts, claims and

general observations that provide more clarity to the subject:

- Appendix 1: Winnipeg & St. Boniface Operations
- Appendix 2: Small Urban & Rural Operations
- Appendix 3: Statistics & Charts

A Note on Chemical and Physical Properties of Clay, Shale and Brick

Manitoba's geological history has made the province an excellent source of clay and shale deposits, the essential ingredients for brick production – clay the predominant material, usually used in so-called soft-mud production; and shale for the less common dry-press method. Composed of soft, loose, earthy material, clay forms as a result of the weathering and erosion of rocks containing the mineral group feldspar (known as the “mother of clay”) over vast spans of time. Commercially, the most important clays are known as kaolin and bentonite, and reports of the provincial Department of Mines contain many entries about bentonite deposits in Manitoba, and specifically on those best suited for brick clay, which is common in beds across the south.

But it is not just any clay that is suitable for brick production. The first requirement is that the clay must be plastic – that is, it must be capable of being moulded and to maintain its shape after moulding. Moreover, good brick clays must have a delicate balance of constituents – silica, alumina, iron oxide, magnesia, lime and alkalis. More or less than the required amount of any of these constituents results in poor brick clay. It is for this reason that, in the inventories that accompany this report, one sees numerous raw clay samples being sent to eastern Canadian and American laboratories for testing before a brick yard was established.

When clay layers are compacted under pressure, and lose their water content, they gradually become shales. Shale deposits, which are very common in south-central Manitoba, can be brought into the preferred plastic condition for brick-making



Clay deposits, like these shown on the Mineralogy Messageboard, can be hard to detect, undistinguishable from other land formations.

through crushing and grinding and mixing with water. Several of the more advanced and sophisticated yards in Manitoba relied on shale for their brick production.

The transformation of clay and shale into brick requires high heat. During this “burning” process, carried out in a kiln, water is first driven off, followed by any organic material. Once the shaped clay or shale reaches the desired temperature, about 1000 °C, the silica minerals begin to melt and fuse. Any iron oxide in the clay will actually flow, enabling the silica and alumina to fuse even more tightly, adding considerably to the hardness and strength of the final brick. At higher temperatures still, further melting occurs with, effectively, glasses being produced. Bricks that are heated beyond 1000 °C, are more brittle but are almost impervious to water. One of the major skills of the brick-maker was knowing how to achieve these results.

By the time brick-making was taken up in Manitoba, it was well known that a wide variety of brick colours could be attained, depending on the clay or shale source, and on the potential to add other ingredients to attain a desired colour. Almost all clay and shale deposits in Manitoba produce a yellowish or light grey brick. But red and pink bricks were actually much more sought after, and another skill of the brick-maker was knowing what additions to make to the primary material mix, and in what proportions. The key additive was iron oxide, which was available in red and black variations. The colouring effect of iron oxide depended very much on the atmosphere and temperature in the kiln: when fired below 1020 °C the resulting brick would have a deep red colour; and when fired to at least 1100 °C the brick would be darker and brownish. Slight variations were possible with careful attention to the firing temperatures.



Shale beds, like this one in the Pembina Valley near Manitou, are quite obvious in the landscape – with layered sediments and unstable layering. This image shows black shale interbedded with layers of cream-coloured bentonite beds. (Courtesy Kathryn Lapenskie, Manitoba Geology)