RIVER ROCK AND FIELDSTONE

BOULDERS ON THE PRAIRIES

DAVD MURRAY

stories from an architectural practice

It is common to see stone piles along Alberta's country roads. They are the result of glaciation, deposited in the soil as the last ice age, the Wisconsin Glaciation, retreated from the western prairies approximately 12,000 years ago. For prairie farmers they have always been a nuisance for ploughing and their removal an annual chore because the winter frosts tend to push underground field stones to the surface.

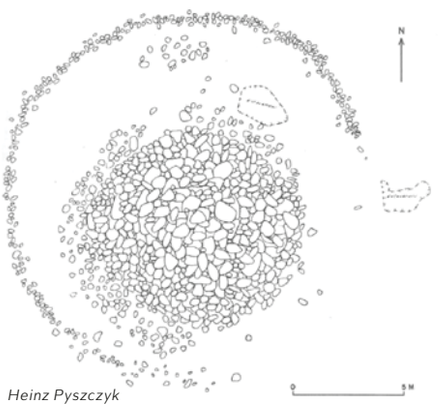
Likewise, when drainage rivers were formed by the melting glaciers, some boulders were left on the land and some made their way into the river beds, accumulating irregularly as the glaciers advanced and retreated, creating the rapids found in the great prairie rivers. I know this from my own experience having a country cabin near the Pembina River that flows from the mountains west of Edmonton and empties into the Athabasca River. The river rocks, driven from the Rocky Mountains by advancing glaciers, are normally hidden in deep river water and not as easily gathered as the stones that appear in quantity in farmer's fields.[1] But for builders both fieldstones and river boulders present an opportunity.

the spiritual life of prairie field stones

For millennia before European settlement, western prairie boulders were used by Indigenous Peoples to mark the spiritual significance of the landscape with medicine wheels.

The Rumsey Cairn, *right,* or 'Indian Stone Pile', near Rumsey in central Alberta was first recorded in 1802 by Hudson's Bay Company explorer Peter Fidler from one of the drawings by Ki oo cus (or Little Bear), of the places important to the Blackfoot. The age of this medicine wheel is uncertain although it may be protohistoric.[1]

An earlier historic Indigenous site, near Bassano Alberta, the Majorville medicine wheel (*Iniskim Umaapi*) provides a record of place where Blackfoot ritual activity links the present with the past, and the past to the future. *Iniskim* (buffalo calling stones) are a central element of Blackfoot ceremonial activity. They are present in exposed bedrock formations underneath the medicine wheel and have been recovered from archaeological excavations at the central cairn. Offerings of sweetgrass, sage, willow, cloth, tobacco, prayer and song symbolically maintain the link of contemporary Indigenous Peoples with their ancestors, and continue to be left at the cairn. Archaeological studies indicate this site has been continuously used for the last 4,500 years, making this one of the oldest religious monuments in the world. Artefacts were deposited in the cairn in an accretional fashion, like layers in an onion, with the oldest materials on the inside and the more recent materials towards the outside. Excavation demonstrates that this sequence of use mirrors other such sites in the area, an indication that the medicine wheel was an element of in-place Plains spiritual culture for millennia.[1]



Heinz Pyszczyk

from the top: drawing of the Rumsey Cairn

: the cairn at the centre of the Majorville Medicine Wheel

: aerial view of the whole Majorville Medicine Wheel. What might be considered vandalism in the initials and dates seen from the air, is a possible continuation of medicine wheel use.

Alberta Culture and Community Spirit, Historic Resources Management

1 Indigenous Peoples did not use river boulders for sweat lodges because the rocks were saturated and would explode in a fire.

2 Brumley, John H, 'Medicine Wheels on the Northern Plains: A Summary and Appraisal'. *Archaeological Survey of Alberta, Manuscript Series Nº 12*, 1988

Lac La Biche Mission Archives

James Dow

field images: David Murray

field stone as building material

My first encounter with field stone as a building material was at the site of the historic Lac La Biche Oblate Mission, established in 1853, 212 km north of Edmonton.

We always knew that the original late nineteenth century building foundations were made from uncut field stones that would have been collected from the Mission's fields adjacent to their location beside Lac La Biche.

In 2012, I prepared a conservation plan for the entire Lac la Biche Mission site for a Parks Canada-funded conservation study. In the report, I noted that the church's shallow stone foundations, rebuilt after a 1921 tornado, were severely out of alignment and had deteriorated after years of winter frost heave.

Lac La Biche Mission is a designated and protected Provincial and National Historic Site. In consultation with a provincial heritage advisor, it was determined that the most appropriate form of conservation would be to completely restore the uncut stone foundation *in situ*, using the original stones and lime-based mortar materials, with a small amount of cement added to the lime mortar mix to increase durability.[3]

As much as field and river boulders formed the earliest building foundations in the 1800s, by the 1900s the new settlers were looking for a more sophisticated use of field stone as a building material. The first Lac La Biche Mission Convent building, believed to have been constructed substantially from stone as determined from the rock piles at the site, had failed by the 1890s probably due to poor, or unstable, soil conditions. It was evident that the use of stone as a building material would require a solid concrete foundation to become a stable structural building component.

from the top: the nineteenth century Lac La Biche Mission, founded by the Oblates of Mary Immaculate in 1855.

Lac La Biche Church prior to restoration

Testing the depth of the foundation wall and the soil it rests upon.
The Lac La Biche Church foundation, before and after restoration

3 The repair and restoration work were completed in 2014 with the invaluable historic masonry expertise provided by Scorpio Masonry, Edmonton.

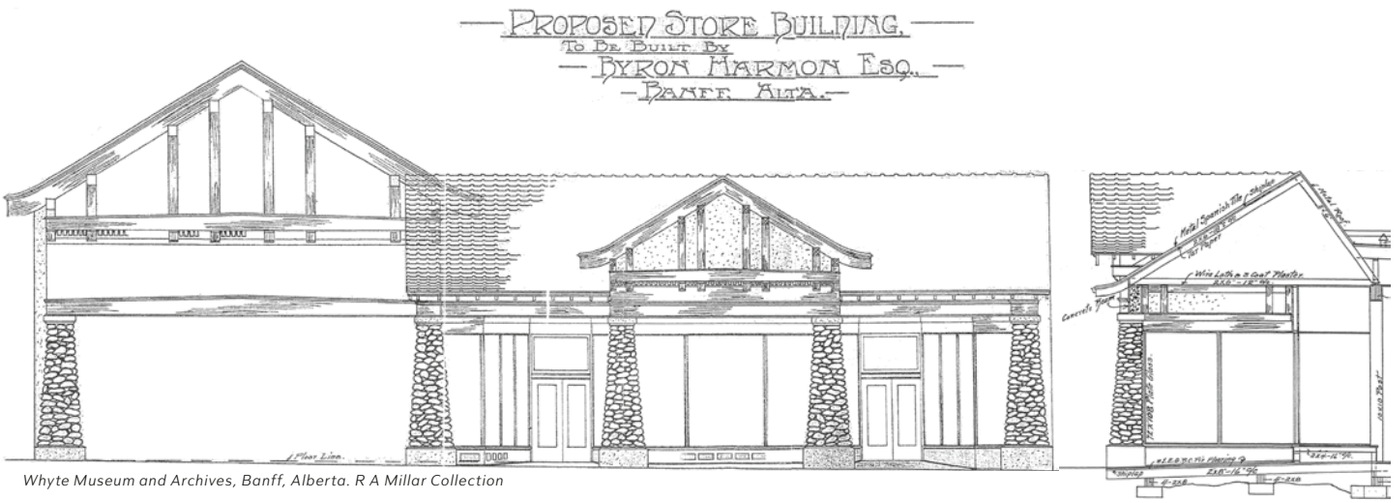
restoring field stone in Banff, Alberta

In 2001, I was engaged to prepare a conservation plan for the restoration and repair of the historic facade of the Harmon Building, known as Harmony Lane, at 111 Banff Avenue in Banff, Alberta. This is a remarkable building completed in 1920 by the famous mountain photographer, promoter and entrepreneur Byron Harmon.

Harmon was an ardent advocate for a rustic 'National Park Style' architecture for Banff; the use of uncut field stones for his building façade is an important factor in the design evolution of this mountain town. Both river stones and field stones would have been readily available to Banff's masons; in this case natural stone was both aesthetic and structural.

Byron Harmon died in 1942; by the 1960s his son Don decided that the building needed updating. The original, elegantly tapered stone columns were covered and straightened with cut and shaped fieldstone, a more 'modern' look.

When Byron Harmon's granddaughter Carole Harmon and her children Sebastian and Julia Hutchings, became the owners after Don Harmon died in 1997, Carole's vision was to have this building protected as a significant historic resource. It was recognised in 2001 as the first municipal historic resource in Banff under the Alberta Historical Resources Act. The building façade was restored to its earliest configuration, uncovering the original tapered fieldstone columns along Banff Avenue.

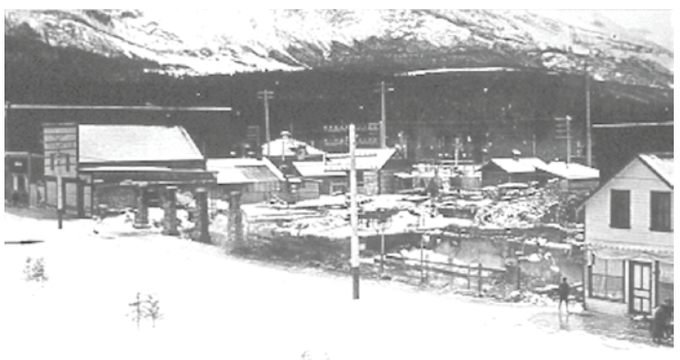


Whyte Museum and Archives, Banff, Alberta. R A Millar Collection

above: the street elevation of the Harmon Building, and above *left:* a section through the wing. These working drawings were prepared for Byron Harmon by Calgary CPR architect, R A Millar. The original 1914 building, with the 5 structural field stone columns along the facade, was constructed by Byron Harmon as a movie theatre and designed by Chicago architect Harvey Wright. When the theatre burned down in January 1917, *right*, the structural stone columns across the front were the only part left standing. By July 1917, part of Millar's design for the new building had been built and occupied; the rest of the building was completed by 1920

below: Harmon's in 1914, before it burned down.

below right: Banff Avenue and the Harmon Building after restoration in 2004



courtesy of Shannon Angell

Carole Harmon

conserving field stone buildings

A 1920s example of split-face fieldstone as a building material is the Keillor Farmstead. An early Edmonton doctor and a captain in World War I, Frederick Anson Keillor returned to Edmonton in 1918 and private practice as a doctor and surgeon, purchasing from the City a 61 acre parcel of farmland in the North Saskatchewan River valley for a working farm. By 1920 he had constructed a large log cabin, and in 1929 built a separate stone house and a stone summer kitchen attached to the cabin. For Dr. Keillor, an advocate of the health benefits of outdoor activities, the use of log and stone was purposely rustic, a look used for national and provincial parks throughout Canada.

The log cabin had already been restored in 2017; in 202 I I was engaged as the conservation architect for the restoration of the Stone House and Summer Kitchen, both significantly deteriorated. Work started in 2022. The project was primarily to restore a fine example of fieldstone masonry; my goal, in association with Spectacle Architecture, was to complete the restoration with the expertise it would take to accomplish this.

In both buildings the foundations had failed causing severe deterioration of the solid stone walls. The foundations of both needed to be replaced before the stone walls could be repaired. The Stone House was lifted *in situ* and a new concrete basement constructed underneath. Unlike the Stone House, the Summer Kitchen was in worse shape and had to be completely dismantled in order to lay a new supporting concrete slab on grade.

To faithfully reconstruct and restore the fieldstone walls of these buildings, they were carefully documented by both the architects and eventually the stonemasons. These documentation photos, along with careful sorting and storage of the stones, allowed the masons to accurately replicate the locations and orientation of the original stones.

The Dr Keillor Farmstead Stone House and Summer Kitchen were designated as a municipal historic resource by the City of Edmonton in October 2022.

Lynn Leenheer

The farmstead in the North Saskatchewan River parkland *circa* 1950.

Whitemud Equine Learning Centre Association, Edmonton

The Keillor family in front of the summer kitchen attached to the cabin.

David Murray

The scope of this project is seen in the completed restoration in 2024. The Stone House is on the left, the Summer Kitchen, attached to the log cabin, seen behind it, is on the right.

David Murray

The failure of of the Summer Kitchen 1929 foundation meant that the stone walls had started to collapse. Complete re-building was necessary.

The kitchen was documented in photos and drawings and the roof was removed intact before the stone walls were dismantled. All materials were saved and stored for reconstruction. The roof was repaired and then re-attached when the walls were complete.

all images this page: David Murray

above: large photographs of the original walls were the guide for the exact re-laying of the original field stonesl. The new framing replaces the original interior partitions and the lining of the stone walls.

middle right: all the log ends for both the Stone House and the Summer Kitchen were replaced and fitted into the original log rafters.

right: in the completed reconstruction of the Summer Kitchen a new at-grade concrete foundation was constructed, and replacement interior partitions were built before the stone walls were rebuilt. The weathered log ends were all replaced and finally the repaired original roof was re-attached.

A page from Scorpio's manual on Masonry Restoration showing their traditional stonework tools.

all images David Murray

Skilled Scorpio Masonry stonemasons rebuild the walls exactly as the documentation before de-construction indicates.

the conservation of expertise

There is almost no record of who the first Alberta masons were who worked in stone. It is an ancient skill and many masons brought their expertise to Alberta as immigrants. The fine restoration work that was accomplished at Lac La Biche and later at the Keillor farmstead was provided by Scorpio Masonry from Edmonton.

Over the years, I have worked with Scorpio's specialist masons who have the skills to work with the cutting , splitting and setting of stone. On many historic projects I have counted on the skills of their tradesmen. Mike Ambrosic, founder of Scorpio Masonry, was actually trained as a tool and dye maker in Yugoslavia, came to Canada in 1961, then went through an apprenticeship program in Moose Jaw working for Pockar Brothers Masonry. He then went on to be the site foreman on numerous Alberta masonry projects before starting Scorpio Masonry.

Chris Ambosic, Mike's son writes:

> Fieldstone masonry is very much an artisan skill that is slipping away. The last new field stone project we did was in Saskatchewan in 2006, the University of Saskatchewan Kinesiology Building. We harvested large dolomite boulders from farmers around Saskatoon, sent them to Edmonton for cutting and splitting, all by blades and hydraulic splitting.[2]

2 In northeastern Alberta and east-central Saskatchewan, dolomite outcrops are found in shield-marginal lowlands.

Photographic documentation of the stonework was important to the restoration. The left side of this photo of the Stone House shows the deteriorated stonework (compared to the right hand side of this wall, due to the failing foundation.

A new, deeper, more functional basement was constructed under the Stone House. The process is that the building was set on girders and lifted *in situ*, and the basement build underneath. The deteriorated stone work was then repaired.

conserving historic building materials

The heritage value of the Keillor buildings is associated with both the intangible history of Dr. Keillor and the tangible building materials, including the windows, doors and log-supported roof, all of which were fully restored. The Keillor fieldstone construction stands out as the most prominent of the building materials and was also the most challenging to restore convincingly. Historic stone construction in Alberta is relatively rare. The Keillor buildings remain some of the best examples of stone construction in Alberta. □

DAVID MURRAY is an architect in Edmonton specialising in the conservation of historic buildings and their materials, in both Alberta and the Northwest Territories. Each project has benefited from the expertise of masons and carpenters, as well as the support of enlightened municipal and provincial heritage programs.