

# TYNDALL STONE

## CANADA



Student residence, University of Saskatchewan, Saskatoon. The first floor has rustic finish from slabs split along bedding plane-parallel stylolites. Second to fourth floors are split-face blocks. Decorative courses are sawn parallel to bedding.

## The stone from Manitoba

Brian R. Pratt  
Graham A. Young

Tyndall Stone is a unique, slightly porous, fossiliferous limestone with distinct dolomitic mottling (sometimes called “tapestry”), which has been widely used in Canada, especially western Canada, since the early part of the 20th century. It ranges from light grey with darker grey mottles to cream-coloured with brownish mottles.

It has been used as cladding and for decorative elements for numerous iconic buildings, such as the legislative buildings of Saskatchewan and Manitoba.

It is durable and performs well in a northern climate, although it can be damaged by salt spread on adjacent sidewalks. While the specific properties of the stone are present only in a single area northeast of Winnipeg, Manitoba, there is no prospect of reserves being exhausted in the foreseeable future.



Surface sawn parallel to bedding showing bioclastic packstone (light) with dolomite mottles (dark) related to burrows.

### **Petrography**

Dolomitic limestone; bioclastic wackestone to packstone (biomicrite)

### **Geological setting**

Paleozoic – Late Ordovician- Red River Formation- Selkirk Member; Williston Basin of Laurentia

### **Occurrence**

NE of Winnipeg, Manitoba, Canada

## **Petrography**

Tyndall Stone is a fossiliferous bioclastic packstone and locally wackestone (in the Dunham limestone classification scheme). The biomicrite matrix appears churned and is rich in crinoid ossicles, along with calcareous green algae, bryozoans, gastropods, ostracods, and other fossils.

Macrofossils are abundant and diverse. Common fossils include receptaculitids, tabulate and rugose corals, stromatoporoid sponges, nautiloids, and planispiral and conical gastropods, and there is a range of rarer fossils such as brachiopods and trilobites.

Many of the fossils reach unusually large sizes in comparison with their correlative counterparts elsewhere. The matrix is riddled with burrows: large horizontal forms and multiple generations of smaller ones. Dolomite replaces the burrow infills and the adjacent matrix, producing the distinctive, interconnecting mottles.

## Location and geology



Tyndall Stone is extracted from a quarry complex belonging to Gillis Quarries Ltd. in the village of Garson, 37 km northeast of Winnipeg, Manitoba. It comprises a 6–8 m interval in the lower part of the massive-bedded, 43 m thick Selkirk Member of the Red River Formation.

This horizontally-bedded unit is Late Ordovician (Katian) in age (approximately 450 million years old) and was deposited in the Williston Basin of central North America, or Laurentia, part of the shallow epicontinental sea that covered most of the craton.

## Quarries

Blocks of Tyndall Stone weighing 6–8 tonnes are extracted after being cut vertically with either a circular saw or a belt saw mounted on tracks.

After aging the stone is taken to the nearby finishing plant and cut to the sizes and with the finishes specified for each individual construction project.

These can include large slabs sawn parallel to bedding, typically with a rubbed or slabsawn finish for exterior and

interior cladding; blocks with a split face perpendicular to bedding mainly for exterior walls; varicoloured rustic finish from splitting parallel to bedding for exterior walls; floor tiles with a honed finish; and various machine-shaped decorative elements.

Blocks of Tyndall Stone are occasionally selected by stone carvers and sculptors.



Gillis Quarries Ltd. in operation, showing front-end loaders, sawn grid, and circular and belt saws.



Manitoba Legislative Building, Winnipeg, photograph taken ca. 1925. Image credit: PC013424, Prairie Postcards Collection, courtesy of Peel's Prairie Provinces, a digital archive of University of Alberta Libraries.

## Architectural and cultural impact

Besides the legislative buildings of Saskatchewan and Manitoba and part of the interior of the Centre Block, House of Commons in Ottawa, Tyndall Stone has also been used for many government buildings such as post offices, court houses, train stations, museums, concert halls, art galleries, schools, universities, hospitals and city halls, and many commercial buildings such as banks, department stores, office buildings, hotels and residential buildings. Early in the 20th century, common architectural styles were Beaux Arts and Neo-classical, sometimes with Romanesque touches. Some were constructed in the Art Deco style in the 1930s, although the Depression saw a reduction in commercial building in Canada. Modernist style was popular in the 1950s and 1960s. There were occasional forays into Brutalist and Contemporary classical styles in the latter part of the 20th century, and Châteauesque, Collegiate Gothic, and Expressionist styles in the 21st century. Use as cladding

### Main reference

Pratt, B.R., and Young, G.A., 2023, Heritage Stone 9. Tyndall Stone, Canada's first global heritage stone resource: geology, paleontology, ichnology and architecture: Geoscience Canada, v. 50, p. 17–51.

is still common, although in recent years different sizes and finishes have been mixed in ashlar for exterior walls, lending attractive texture.

The indoor use of Tyndall Stone tile is expanding. During most of the 20th century, cladding that had large visible fossils tended to be avoided because they interrupt the visual homogeneity.

Nowadays, however, the striking fossil content is accepted and even celebrated, such as with feature walls where spectacular fossils are displayed.

Commercial and government buildings made with Tyndall Stone in the first decades of the 20th century comprised a major and distinctive part of the centres of prairie cities during their early growth phase.

These buildings are still in good condition, and while some have been repurposed, many are quite monumental and lend a sense of permanence. Most of the older buildings have been designated as heritage properties.

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**Editors**

Angela Ehling, Federal Institute for Geosciences and Natural Resources (BGR), Berlin, Germany  
Gurmeet Kaur, Panjab University, Chandigarh, India  
Patrick N. Wyse Jackson, Trinity College Dublin, Ireland  
JoAnn Cassar, L-Università ta' Malta  
Eliane Aparecida Del Lama, Universidade de São Paulo, Brazil  
Tom Heldal, Geological Survey of Norway

**Map design**

J. K. Rätz / Federal Institute for Geosciences and Natural Resources (BGR), Berlin, Germany

**Illustration (Page 16), Paintings (Pages 18, 118, 190)**

J. K. Rätz & Aaron Selassi Rau, Germany

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