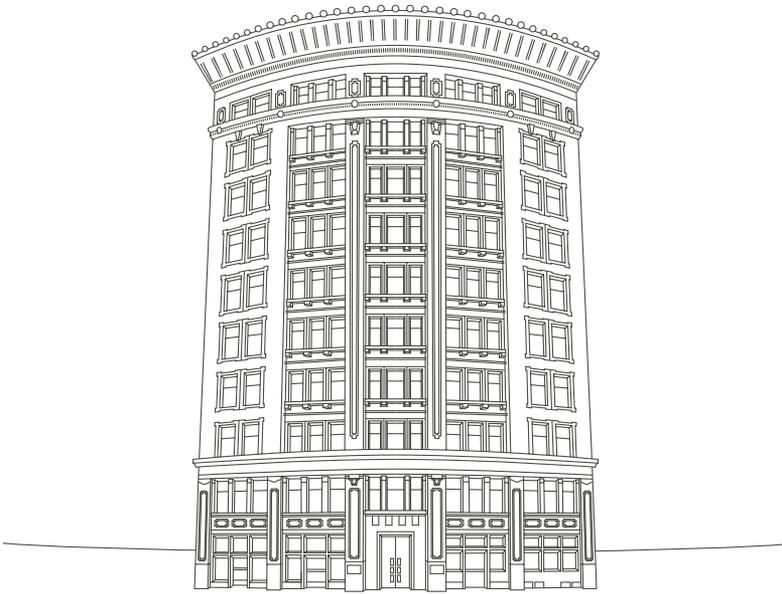




WINNIPEG
ARCHITECTURE
FOUNDATION



WINNIPEG ARCHITECTURE

A Terra Cotta Tour

Gail Perry

WINNIPEG ARCHITECTURE

A Terra Cotta Tour

Gail Perry

Winnipeg Architecture Foundation

Library and Archives Canada Cataloguing in Publication

Perry, Gail

Winnipeg architecture, a terra cotta tour
[electronic resource] / Gail Perry ; editor,
Susan Algie. -- 2nd ed.

Includes bibliographical references.

Electronic monograph issued in PDF format.

Also issued in print format.

ISBN 978-0-9878093-2-2

1. Architectural terra-cotta--Manitoba--
Winnipeg--Guidebooks. 2. Architecture--
Manitoba--Winnipeg--Guidebooks. 3. Historic
buildings--Manitoba--Winnipeg--Guidebooks.
I. Algie, Susan, 1951- II. Winnipeg Architecture
Foundation III. Title.

NA3513.W55P47 2012

721'.044309712743

C2012-905711-8

The Winnipeg Architecture Foundation is a nonprofit, registered charitable organisation dedicated to advancing the awareness and appreciation of Winnipeg's built environment through public education.

For information about Winnipeg buildings, landscapes and architects, please visit winnipegarchitecture.ca.

A downloadable copy of this tour and others is available on the website. For enquiries or to order copies of this guide, please email waf@shaw.ca.

© Winnipeg Architecture Foundation Ltd, 2012.

Research: Gail Perry

Text: Gail Perry, Susan Algie, and Shelley Bruce

Editor: Ken King

Layout and Design: Burdocks Design Studio

Photography & Images: Burdocks Design Studio

Cover Illustration: Royal Bank Tower
(Burdocks Design Studio)

Table of Contents

The Golden Age of Winnipeg & Terra Cotta	7
Terra Cotta in Winnipeg: The Chicago Connection	9
Tour Map	12
Terra Cotta Tour	14
And There Is More Winnipeg Terra Cotta!	47
How was Terra Cotta Made?	49
How was Terra Cotta Fitted to Structures?	51
Advantages & Disadvantages of Terra Cotta	52
Terra Cotta Repair	55
References	56

The Golden Age of Winnipeg and Terra Cotta

Winnipeg's glory days, from about 1895 to 1914, are captured in its heritage buildings. This was a time when mass immigration, record grain prices and the opening of the west combined to make it one of the fastest growing cities in North America. The speed with which Winnipeg's prominent buildings sprouted, their material refinement and the extent and quality of their ornamentation were all attributable to a then common, but now largely forgotten, building material, terra cotta.

Terra cotta takes its name from the Latin for "baked earth". More specifically, it is a high grade fired clay product. Harder than brick and lighter than stone, terra cotta is capable of taking on any decorative colour or texture and can be cast into crisp, detailed likenesses of architectural and decorative elements. It can artfully be made to look like other building materials, including sandstone, granite and marble.

Architectural terra cotta is still produced today, although mostly for the repair and restoration of historic buildings. After reaching widespread popularity in North America from the late nineteenth century to about 1930, terra cotta was eclipsed by other building materials. The Great Depression saw the closure or decline of many of the terra cotta manufacturers and modern times dictated cheaper and different products.

By happy coincidence, the golden ages of Winnipeg and terra cotta overlapped. As a result, Winnipeg's early building frenzy capitalised on the infinite shades, patterns, finishes and shapes that terra cotta had to offer the city's grand new structures. By other good

fortune, there was generally no later interest in redeveloping these properties. Remarkably, almost 100 years after their construction, most of Winnipeg's terra cotta buildings, all within a concentrated downtown area, are intact and virtually unaltered.

Winnipeg's terra cotta collection is therefore large and essentially complete. It is an unparalleled sampling in North America of the variety, versatility and beauty of this material. This unique collection of terra cotta provides a perspective from which to consider early Winnipeg and the landmarks remaining from that time.



Photo, left: Confederation Building detail (by Burdocks Design Studio), 2012
Photo, top right: Former Union Trust Building detail (by Burdocks Design Studio), 2012
Photo, bottom right: Fairchild Building detail (by Burdocks Design Studio), 2012

Terra Cotta in Winnipeg: The Chicago Connection

Winnipeg, in its heyday, was heralded as “The Chicago of the North”, as much for its architecture as its pride and spirit of boosterism. Chicago had set the style, and the style was closely associated with terra cotta.

Terra cotta had long been used for construction in Europe and eastern North America, but was popularized and refined in Chicago after the Great Fire of 1871. There, terra cotta was used, like brick, as a structural and fireproofing material; like carved stone, when it was cast in the form of flora, fauna and statuary; and — like nothing ever seen before — as surface cladding when used to “fill in” the skeleton frames of skyscrapers, a building form developed in Chicago in the late nineteenth century.

A style, today dubbed “the Chicago School,” developed in that city around this time and terra cotta was ideally suited to it. Buildings of the Chicago School were “modern” in that their underlying structure of columns and beams were not hidden behind “solid” walls but were emphasised in their design. Typically these buildings had three clear horizontal divisions: an identifiable base, several repeating floors and a fanciful attic storey. Terra cotta could be cast into the architectural and ornamental components located at the top and bottom of such structures, and could be used as a surface wall material for the stories in between.

Also, in 1893, Chicago had hosted the acclaimed World Columbian Exposition which featured a Neoclassical “White City” of pavilions, assuring the popularity of Greek- and Roman- influenced architecture. North American architectural taste now favoured white and pastel exteriors, like cream and ivory. Terra cotta could



be produced in these hues, it was cheaper than stone, and it could be cast into repeatable architectural features, such as cornice details.

Both the Chicago School and the Neoclassical were popular styles in turn-of-the-century Winnipeg. They were brought to the city by the demands of fashion and, more directly, by Chicago-trained architects. As an example, John D. Atchison, a prolific architect in Winnipeg at that time, had trained with the Chicago firm of William Le Baron Jenney (who is credited with developing the first iron-framed skyscraper) and had worked on the planning of the Columbian Exposition. Additionally, Winnipeg was well-linked by rail and sea to Eastern Canada, the United States and England where the terra cotta manufacturers (primarily ceramics companies and brickworks), were located.

Terra cotta of the type seen in Winnipeg (glazed, with a fired exterior skin) was not manufactured in Canada. Some terra cotta was produced in Ontario, for example by the Don Valley Pressed Brick Works and firms in the Milton, Beamsville, Brampton and Campbellville, Ontario areas. However, it was an orangey-red product popular in an earlier time.

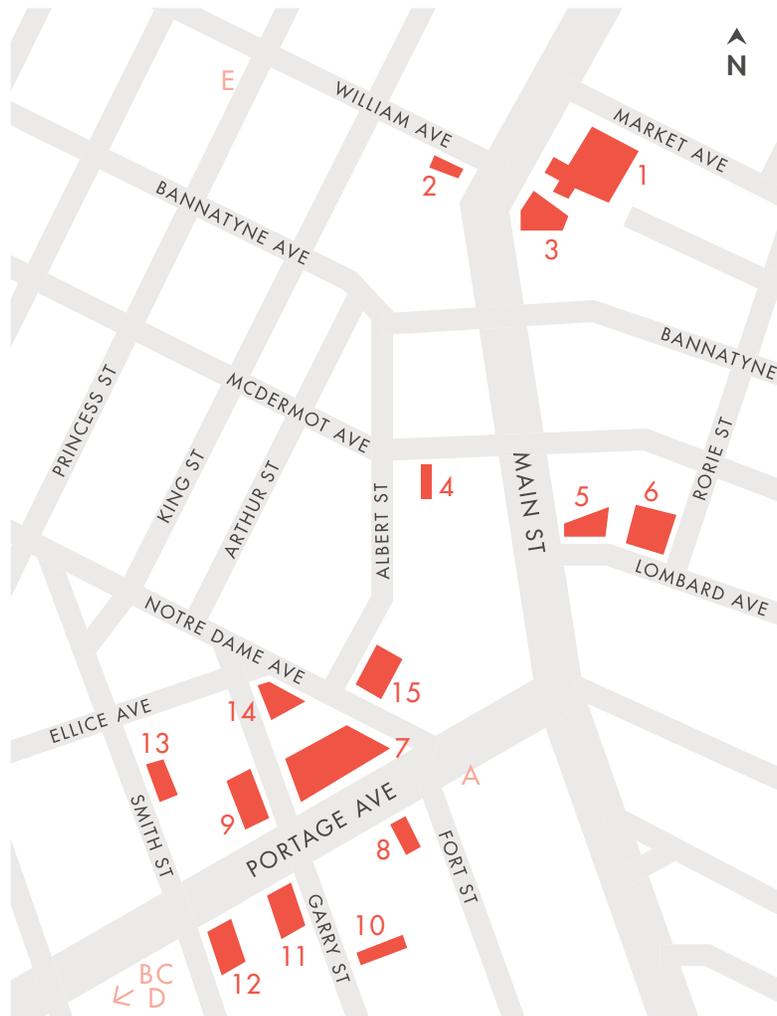
Prominent manufacturers, contemporary to Winnipeg's terra cotta buildings, included the American Terra Cotta and Ceramic Company and the Midland Terra Cotta Company (two of four major manufacturers headquartered in Chicago); Gladding, McBean of San Francisco and Lincoln, California; Atlantic Terra Cotta Company of New York City; and both the Doulton Company and the Leeds Fireclay Company, of England. Terra cotta could be custom ordered for a project from these companies or, by this time, purchased as a stock item from their catalogues. As discussed



in the following tour, it is known that some of these companies supplied terra cotta for Winnipeg structures. Winnipeg's terra cotta structures of the early twentieth century speak of a proud, prosperous city. This tour showcases the work of local architects and contractors, a flourishing and complex terra cotta industry, and countless adept artisans who lived so far from Winnipeg that they likely never saw their work erected. The tour also focuses on the characteristics, uses and benefits of terra cotta as seen in early Winnipeg buildings.

More information on how terra cotta was made and fitted to structures, advantages and disadvantages of terra cotta and the repair of terra cotta follows the tour text. However, you may wish to refer to that information before beginning the tour. Regardless, you will want to direct your attention during the tour to the many colours, textures and overall design of the terra cotta you see.

The route covers 2.5 kilometers (1.5 miles), not counting the extension options noted, which can be comfortably walked in 90 minutes. Binoculars or a camera with a telephoto lens are helpful to better see details which are more or less visible depending on the light of day and season. Stop at the many local shops and eating places along the way. Finally, remember that in most cases, you will be examining private property. Please show consideration.



Tour Map

- 1 Crescent Furniture Building Fragment
- 2 Royal Bank Tower
- 3 Confederation Building
- 4 Criterion Hotel
- 5 Former Union Trust Building

- 6 Former Great West Life Building
- 7 Curry Building
- 8 Former North West Trust Building
- 9 Paris Building
- 10 North West Travellers' Building

- 11 Former Bank of Nova Scotia
- 12 Former Birks Building
- 13 Former Marlborough Hotel
- 14 Lindsay Building
- 15 Former Electric Railway Chambers Building

- Additional Sites:*
- A Fragment of the Allan Line of Steamships Building
- B Former Holt Renfrew Building
- C Boyd Building
- D YW/YMCA Building
- E Fairchild Building



1. Crescent Furniture Building Fragment

*Pantages Theatre Plaza at Main Street and Market Avenue, 1928,
Edward Parkinson & James Halley.*

This “serpent panel” is one of many that adorned the now-demolished Crescent Furniture Building (northeast corner of Portage Avenue and Vaughan Street), which has been incorporated into recent downtown construction. The building’s panels were designed by Winnipeg architects and produced by the Midland Terra Cotta Company of Chicago. This panel clearly shows the unique colour possibilities of terra cotta (there are four colours on this panel) and the china-like quality of the heavy glaze. Notice the mottled effect of the rust-and-white-toned background.

Look across Main Street at the former Royal Bank Tower.



2. Royal Bank Tower

500-504 Main Street, 1903-4, Frank Darling & John Pearson.

This is one of Western Canada's oldest steel-framed skyscrapers. Originally the Union Bank Tower, it was, by 1925, the last national bank headquarters in Winnipeg. It is the first of two buildings on the tour designed by Canada's foremost bank architects of the time, the Toronto-based Darling and Pearson. This was a firm known for skillfully combining modern construction with historical styles. The terra cotta on this structure imitates a smooth grey stone and reflects a restrained Renaissance Revival style. It clads the lower two floors and is the material used for the heavy decorative elements around the windows (sills and voussoirs), the building's corners (quoins) and the attic storey with its porthole windows. Ironically, the ornate cornice is made of galvanised steel that was moulded and painted to resemble stone or terra cotta.

From here, look at the Confederation Building.



3. Confederation Building

457 Main Street, 1912, J. Wilson Gray.

Built for the Confederation Assurance Company, this graceful, curved building complements the Royal Bank Tower in stature but represents the next generation of skyscrapers. The building's mid-section, with its expansive windows relative to scant wall area, truthfully reflects its skeletal framework of steel and reinforced concrete. This, together with the building's distinct horizontal division of base, repeating floors and elaborate cornice, makes it a good example of the Chicago School of architecture. With the exception of its polished granite base, the front of the building is clad entirely in a brilliant white terra cotta. The lavish cornice, also made of terra cotta, is the largest in the city and arguably one of the finest to be seen anywhere.

*Go south on Main Street and turn right on McDermot Avenue.
Proceed halfway up the block to the Criterion Hotel found on the left.*

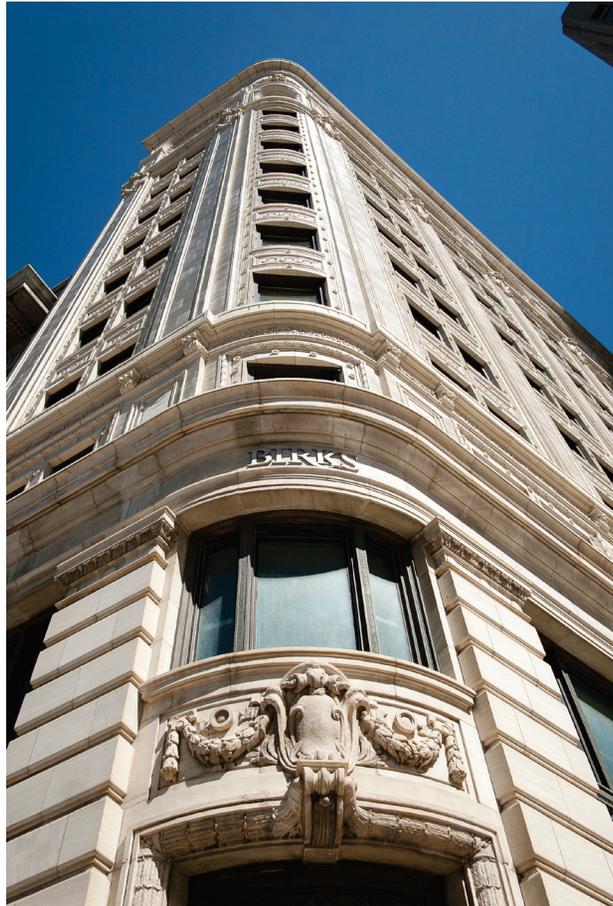


4. Criterion Hotel

214 McDermot Avenue, 1903, H.S. Griffiths.
Terra cotta added in 1915.

This stretch of McDermot Avenue was once Winnipeg's "Newspaper Row", and was home to several newspaper and magazine publishers. The Criterion was a very popular drinking establishment for this clientele. In 1915, bright terra cotta tiles and column capitals of red, green, white, blue and brown, were added to the building's rough-faced limestone front. The tile design is strongly reminiscent of the ornamental style of architect Louis Sullivan, a founder of the Chicago School. Until 1976, the Criterion continued to serve as a modest hotel, with its original 30 private rooms and furniture, common bathrooms, interior light wells and terra cotta-adorned lobby. Today, passers-by can still delight in the detail spilling from the tiles, a lush foliage intertwined in geometric shapes.

Retrace your route to Main Street, and turn right until you face, across Main Street, the former Union Trust Building.



5. Former Union Trust Building

191 Lombard Avenue, 1912, John D. Atchison.

Built for Toronto's Union Trust Company, this building is unique in a number of ways. Its trapezoidal footprint commands Main Street and Lombard Avenue and, at twelve stories, it is the tallest of Winnipeg's early skyscrapers. Also, it is the first of five buildings on this tour designed by John D. Atchison, who trained and worked as an architect in Chicago when skyscraper technology and style were being developed. This steel and concrete structure is of the Chicago School style. Grey marble from the Kootenay Quarries of British Columbia is used on the lower two floors while gleaming white terra cotta from the American Terra Cotta Company of Chicago covers the remainder of the facade. The original terra cotta cornice was removed in 1953. It was replaced with the present, simpler cornice in 1985. Constructed from glass fibre reinforced concrete, it was cast from the cornice moulds used for the restoration of the Robert Fletcher Building at 1181 Portage Avenue.

From here, you can also observe the second structure behind this one: the former Great West Life Building.



6. Former Great West Life Building

*177 Lombard Avenue, 1909-11, John D. Atchison.
Four stories & exterior terra cotta added in 1922.*

This Beaux-Arts Classical building was built for the Great West Life Assurance Company, an international company still headquartered in Winnipeg. The Beaux-Arts style, with its Greek and Roman motifs, sets this structure apart from the city's large number of Richardsonian Romanesque buildings (typically buildings with heavy arched windows and rough-faced stone), most of them located in the Exchange District. Structurally, this building is composed of steel girders and beams encased in terra cotta. Its exterior is divided into three stories of Kootenay marble, four stories of smooth ashlar and one storey, at the top, of terra cotta. The result is a very dignified, elegant building. The minimal exterior terra cotta was produced by the American Terra Cotta Company of Chicago.

Continue south on Main Street and turn right on Portage Avenue. Proceed to the Curry Building which stretches between Notre Dame Avenue and Garry Street on the north side of Portage Avenue.

7. Curry Building

233 Portage Avenue, 1915, John D. Atchison.

The two-storey Curry Building appears to be a granite structure but is really clad with an exceptional quality of terra cotta that closely mimics granite. Texture and colour (beige accented with splashes of black and grey) contribute to the illusion but so does the apparent 'stone carving' that abounds on the building. At the top there is a lacy parapet. The spandrels (horizontal panels between the first-and-second storey windows) have a similar delicate look. Columns are dressed with winding "double twisted" ribbons which, alternately, show a plain then floral pattern. Above each pair of columns, nestled in the leafy decoration, are the heads and shoulders of what appear to be scribes. The result of these details is a cathedral-like Gothic-inspired design. Interestingly, this handsome structure was meant to be the base for a further seven stories. Plans for the addition, announced in 1928, were delayed a year only to have the Depression cancel the plans altogether.



Photo, top: Curry Building front (by Burdocks Design Studio), 2012
Photo, bottom: Curry Building column detail (by Burdocks Design Studio), 2012

At this point, you may wish to extend the tour with the first "extra" site listed on page 47; otherwise, from here, look across Portage Avenue at the former North West Trust Building.



8. Former North West Trust Building

234 Portage Avenue, 1909, John D. Atchison.

The small, classically-inspired North West Trust Building is another well-executed project by Atchison. The structure was built for the real estate firm Oldfield, Kirby and Gardner. It is faced with a very fine cream-coloured terra cotta with a green and cream terra cotta floral design manufactured by Chicago's American Terra Cotta Company. The fire-proofing qualities of the terra cotta may have been of aid to the structure when, on Boxing Day 1955, the neighbouring Huron and Erie Building was destroyed by a blaze. The building's pediment (triangular top) is particularly rich in detail. Two cherubs support a medallion and are surrounded by feathery sheaves of grain and lush garlands of flowers, fruit and vegetables.

Go west on Portage to Garry Street and, without crossing Garry, view the Paris Building.

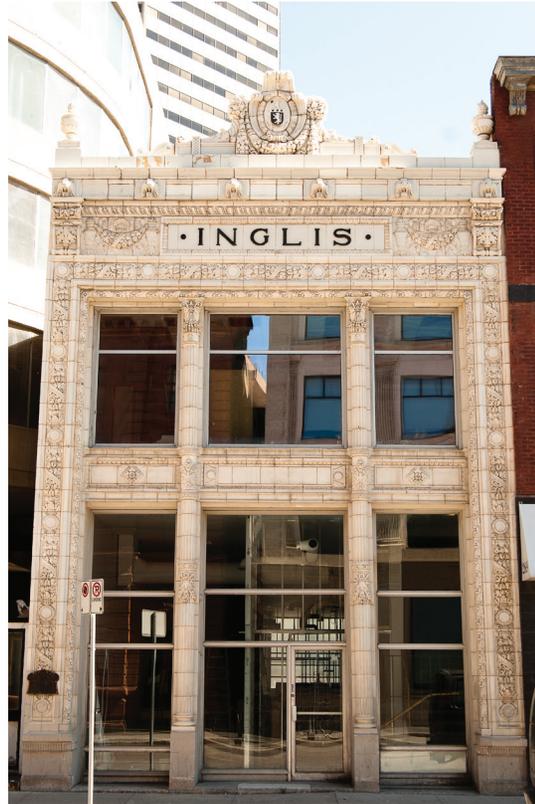


9. Paris Building

*259 Portage Avenue, 1915, John Woodman & Raymond Carey.
Six stories added in 1917.*

The origin of its name is uncertain; however, the decoration of the Paris Building is certainly French-inspired. This is another fine example of terra cotta cladding and ornament resembling cut and carved stone. Above the second floor, a series of shields bearing fleurs-de-lis and topped with crowns decorate the large, repeating arched windows. Above the fifth floor (once the top of the building), are panels of angels. The building is actually home to many such figures. The bare-breasted women at the second floor corners are no angels (they have no wings) but, at the very top corners of the building, beneath the deeply vaulted cornice, are winged creatures with curious (and, arguably sinister) faces. The vertical emphasis of the building is not marred by the fact that it was built in two phases. The six-storey addition features cast iron and gilded detailing.

Cross Portage and proceed half a block south to examine the North West Travellers' Building.



10. North West Travellers' Building

291 Garry Street, 1908, John D. Atchison.

Remodelled by Herbert B. Rugh and terra cotta added in 1914.

Altered by John D. Atchison in 1916.

Atchison's original building was a common two-storey brick structure which housed the Angelus Cafe. In about 1914, Herbert Rugh was commissioned by the R.J. Inglis Company, a manufacturer of civil and military uniforms, to significantly remodel the structure. Numerous repairs were made and the fanciful white terra cotta was added to the face of the building. Today, a plaque on the building commemorates its "fairytale facade" of imported terra cotta, a harvest of flowers, fruit and vegetables. Note the one splash of coloured terra cotta, the cobalt blue crest centred on the upper portion of the building.

Retrace your route to Portage Avenue, turn left and cross Garry Street to view the former Bank of Nova Scotia.



11. Former Bank of Nova Scotia

254-258 Portage Avenue, 1910, Frank Darling & John Pearson.

Enlarged and additional terra cotta added by Percy Over in 1930-31.

This is the second bank building on the tour designed by Canadian bank architects, Darling and Pearson. Its curved facade, corner dome, and decorative window and door surrounds, are indicative of the Baroque Revival style. The building, of steel and hollow tile construction, is cloaked in an exquisite semi-glazed terra cotta. Its pale hue offers hints of pink and yellow. The terra cotta was produced by the Leeds Fireclay Company in Yorkshire, England and supplied by the Eadie Douglas Company of Montreal. Twenty years after construction, in a remarkable feat of design and terra cotta crafting, the structure was carefully and almost invisibly extended along the Portage Avenue side. Visit the rehabilitated lobby and banking hall which contain sumptuous marble, mahogany, brass and gilded details.

Proceed west on Portage and cross Smith Street. Look back to view the former Birks Building.



12. Former Birks Building

276 Portage Avenue, 1901, George Browne.

Remodelled and terra cotta added by Percy E. Nobbs in 1914.

This building is the result of successive efforts by two famous Montreal architects, George Browne and Percy Nobbs. Although built by Browne as the YMCA with a swimming pool fed by an artesian-well, 600-seat auditorium and dormitory rooms, it housed Birks Jewellers from about 1912 until 1987. Browne's Romanesque building, with its subdued ornamentation, rusticated stone, round-headed arches and Portage Avenue tower, was largely altered by Nobbs. Nobbs transformed the building into a lavish yet delicate Italianate design. The building was faced in granite, tyndall stone and bronze. Terra cotta, designed by Nobbs, was used for quoins, window frames, and niches. The most spectacular terra cotta decoration is seen along the Portage Avenue frontage where terra cotta medallions (crafted to look like mosaics) depict the source of materials for jewellers. Above, a frieze (decorative horizontal band) portrays a visit of the Queen of Sheba to King Solomon.

From here you may wish to extend the tour with up to three "extra" sites listed on page 47; otherwise, cross Portage Avenue and, still on Smith Street, proceed half a block north of Portage to examine the former Marlborough Hotel across the street.



13. Former Marlborough Hotel

331 Smith Street, 1913, James Chisolm & Son.

Six stories added by J.H.G Russell in 1923.

Before World War I, this hotel was known as “The Olympia”. Business suffered at the beginning due to the War and Prohibition. For a short time the hotel was run by the federal government to house Canadian soldiers. Castle-like, with its arched windows, stained glass, buttresses and quatrefoil (four-leafed design) parapet, this otherwise plain brick-faced building is a wonderful example of the Gothic Revival style, popular at the time for public buildings. Architects felt the style was suited to the new skyscraper form because it stressed vertical rather than horizontal design elements. The Gothic detailing is crafted from a grey-white terra cotta. The dramatic base (the original building) features green and yellow floral motifs, also of terra cotta, and, at one time, inset electric lights. Typical of its designers, James Chisholm & Son, but rare among architects, they marked the building with their “signature” (seen on the south or lane-side wall, very close to the Smith Street sidewalk).

Continue north on Smith Street, turn right on Ellice Avenue and proceed to Garry Street. From this corner, proceed to the triangle in this intersection to examine the Lindsay Building.



14. Lindsay Building

228 Notre Dame Avenue, 1911-12, John Woodman & Raymond Carey.

Frank Lindsay, a stage coach driver, then businessman, built this structure and, on its walls, emblazoned his name and the date in terra cotta. The Lindsay Building offers the most effusive use of terra cotta in the city. This is a trapezoidal building due to the irregular dimensions of the property. It is here where the original settlers' strip lots extending from the Red and Assiniboine Rivers converge. The architects chose a reinforced concrete construction and faced it with a shining ivory terra cotta with dark green accents. Much of the decoration is found on the top two floors. Beneath the cornice, from the mouths of lions, hang coats of arms. On the narrowest wall, at the second storey, are maple leaves and emblems of Great Britain. From near the second-floor corners, garlands and fruit spill onto the first-storey ledges. Below five arched windows on the main floor, angel twins flutter in profile.

From the triangle in the intersection of Ellice, Garry and Notre Dame, cross Notre Dame, turn right and proceed to Albert Street to view the Former Electric Railway Chambers Building.



15. Former Electric Railway Chambers Building

213 Notre Dame Avenue, 1913, Ralph Pratt & Donald Ross.

The showpiece for a private utility company, the Winnipeg Electric Railway Company, this eleven storey Chicago School building is an example of excellent design, composition and craftsmanship. It is arguably the most elegant of Winnipeg's early skyscrapers. Above a granite base, a pale stone-like terra cotta soars on columns that run the full height of the building, terminating in large arches just below the deep filigreed cornice. At regular intervals, slightly darker terra cotta was used to accentuate the columns. The building is adorned with Italian Renaissance motifs, including twisted columns, embossed shields and stars. Just below the cornice, fifteen lions perch on their haunches. Six thousand built-in lights line the columns, a signature of the electric company. The lobby continues these motifs in marble and brass, and another lion guards the lobby stairs. It is well worth a visit.

This completes the tour unless you wish to extend it with the last extra sites listed in the following section. To return to the tour's starting point, proceed north, three blocks along Albert Street.



And There is More Winnipeg Terra Cotta!

A. FRAGMENT OF THE ALLAN LINE OF STEAMSHIPS BUILDING

From site #7, the Curry Building, cross Portage Avenue at Notre Dame Avenue to the Winnipeg Square entrance at 200 Portage (between the Royal and Scotia Banks). In the back lobby is a large arch fragment from the demolished Allan Line of Steamships Building (364 Main Street), built 1912 and designed by John D. Atchison. Through the arches, in the lobby of 360 Main Street, are more fragments including two multi-coloured “ship’s wheels”. This adds two blocks, return, to the tour.

B. FORMER HOLT RENFREW BUILDING

From site #12, the former Birks Building, proceed west on Portage Avenue to Carlton Street to the former Holt Renfrew Building, 350-356 Portage Avenue, built 1913 and designed by John D. Atchison. This adds six blocks, return, to the tour.

C. BOYD BUILDING

From the former Holt Renfrew Building, continue west on Portage Avenue to Edmonton Street to the magnificent Boyd Building, 388 Portage Avenue, built 1912 and designed by John D. Atchison. This adds 8 blocks, return, to the tour.

Photo, left: Boyd Building (by Burdocks Design Studio), 2012

Photo, top: Fragment of the Allan Line of Steamships Building (by Burdocks Design Studio), 2012

Photo, bottom: Former Holt Renfrew Building (by Burdocks Design Studio), 2012



D. YW/YMCA BUILDING

From the Boyd Building, continue west on Portage Avenue to Vaughan Street, turn right and cross Portage Avenue and continue north for half a block to the YW/YMCA Building at 301 Vaughan Street. It was designed by John H.G. Russell and built 1912-13. This adds 12 blocks, return, to the tour.

E. FAIRCHILD BUILDING

From site #15, the Electric Railway Chambers Building, continue north on Albert Street to old Market Square, turn left onto McDermot Avenue and cross King Street, proceed to Princess Street, turn right and walk half a block. At 110 Princess is the Fairchild Building, built 1907 and designed by John D. Atchison and Herbert B. Rugh. This adds nine blocks, return, to the tour.

Photo, left: YW/YMCA Building (by Burdocks Design Studio), 2012
Photo, right: Fairchild Building (by Burdocks Design Studio), 2012

How Was Terra Cotta Made?

The manufacture of terra cotta was both an art and a highly skilled trade. Various detailed steps had to be properly undertaken to produce a quality material. Also, the finished product had to be appropriately sized and fitted to meet the architect's specifications for a particular structure.

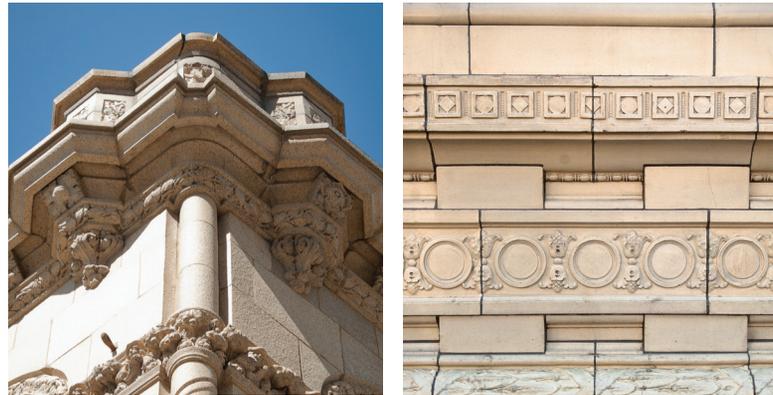
Terra cotta was really a mixture of substances including, mostly, a base of high quality clay or combination of such clays to which a pulverized, previously-fired clay (comprising about one-third of the total mixture), water and sometimes other substances were added. These additions were made to reduce the shrinkage of the terra cotta in the drying and firing processes that followed.

Once the recipe was mixed, the moist clay was hand-worked (to extract air bubbles and prevent voids) and firmly pressed to a thickness of about 1-1 1/2 inches alongside the walls of open wooden or plaster moulds. The moulds were about 7-12% larger than the desired dimensions of the finished product to compensate for shrinkage. They were shaped in the form of hollow, three-sided blocks or were crafted from models sculpted by artists to create precise open-backed ornamental shapes specified by the architect. At this point, webs would be added to the clay material to help strengthen it for the rest of the manufacturing process and as a point for pinning or hanging the terra cotta onto the building structure.

The clay would remain in the mould for up to a few days to slightly dry and, after removal, any surface imperfections were fixed by hand. The surface might, at this stage, be combed or otherwise "textured" for a particular look required by the architect. The material was then allowed to dry for days or weeks before it was finished with a glaze (a liquid containing finely ground minerals), slip coat (a clay and water mixture), or both.

The glaze or slip coat was either brushed or sprayed on what would be the front-facing surfaces of the terra cotta when the terra cotta was applied to the structure. The consistency and ingredients of the glaze or slip, the manner of its application, even where the product was ultimately placed in the kiln during firing, would determine the texture and colour of the finished product. The addition of feldspar or flint would contribute a glossy sheen to the finished terra cotta. Chemical additives, in different combinations, would create any desired colour. For example, green was produced from copper or chromium; yellow, from antimony and iron; and blue, from cobalt.

Finally, the product was fired in a kiln at temperatures as high as 2,000 degrees Fahrenheit which, together with the glaze or slip finish, would produce the hard exterior fireskin which made terra cotta such a durable and attractive building material.



Photo, left: Curry Building detail (by Burdocks Design Studio), 2012
Photo, right: Former North West Trust Building detail (by Burdocks Design Studio), 2012

How Was Terra Cotta Fitted to Structures?

The function of the terra cotta determined how it was fixed to a structure. When used to build loadbearing walls, it was cast in blocks and laid and mortared like brick. When terra cotta was used for fireproofing within the body of a building, blocks could similarly be set around structural supports, such as columns and beams, or it could be manufactured to wrap around specific structural parts. When used as ornamentation and surface cladding, terra cotta was hung onto the face of the building with the use of metal anchoring devices.

Essentially, these anchors were attached to the metal or masonry structure of the building and threaded through holes in the terra cotta webbing. Large projecting terra cotta elements, like cornices, were secured by a structural ledge and complex anchorage system that allowed for the attachment of each terra cotta component. The anchorage system itself was further supported by the use of large metal hangers. Mortar was used between terra cotta elements and whether the terra cotta element was large or small, the open-ended back was often filled with brick or cement as an aid to fastening and strengthening each piece

Advantages & Disadvantages of Terra Cotta

Terra cotta was not just a beautiful material. It was also suited to the architectural needs and styles of the time. Its plasticity at the production stage and its relatively light weight as a finished product expanded the design possibilities of the times by permitting architects to demand more detailed and larger elements than could have been created from other materials. It was also relatively economical.

Labour-intensive though its production was, terra cotta proved to be a cheaper material than stone. In the manufacturing process, repeating decorative elements could be cast from a single mould rather than requiring separate individual carving by a sculptor. This saved both

time and money. Because terra cotta was made into hollow forms, it was lighter in weight than stone of the same cubic dimension. This saved shipping costs and required fewer workers at the job site. Terra cotta assembly at the site was also quicker because, as a prefabricated product, each piece could be numbered during manufacture as to its place in relation to other pieces.

As a building material, terra cotta is more resistant to fire than stone and brick and equally durable in Manitoba's climate. Like brick and stone, it requires proper maintenance and this essentially means proper mortaring and regular inspection to prevent damage from moisture entering the glaze and/or clay body.

Like these other materials, terra cotta proved vulnerable to the penetration of water and, particularly, the freeze-thaw cycle.



Photo, above left: Criterion Hotel detail (by Burdocks Design Studio), 2012

Photo, above right: North West Traveller's Building detail (by Burdocks Design Studio), 2012

Photo, opposite left: YW/YMCA Building detail (by Burdocks Design Studio), 2012

Photo, opposite right: Former Birks Building detail (by Burdocks Design Studio), 2012

Such penetration could be due to improper production or fitting of the terra cotta, inappropriate repair and simply the absorption of moisture by the terra cotta over time.

A common type of water-related deterioration is “crazing,” the development of hairline cracks in the terra cotta glaze. This occurs where the clay body of the terra cotta expands at a different rate than the glaze covering it. Crazing is not detrimental unless it extends into and exposes the clay base.

A more serious and more apparent form of water damage is “spalling”. This is where the glaze and the body of the terra cotta separate, resulting in the destruction of the glaze and the exposure of the terra cotta body to the elements.

Moisture penetration can cause the metal anchors within the body of the terra cotta to corrode. This results in the expansion of the metal, causing the surrounding terra cotta to crack or break and can cause neighboring terra cotta units to crack, break or dislodge because of the resulting pressure.

Regular inspection of terra cotta can avoid or reduce such damage.

Terra Cotta Repair

Cracked, broken and dislodged terra cotta units can be repaired or, if necessary, replaced. For example, there are compatible building products, including mortars for cracks and special cements and coatings to repair spalled terra cotta and eroded glaze. Fractured units can be carefully and unobtrusively fastened with epoxy and stainless steel pins.

Where such repair is not possible, or where the terra cotta is missing altogether, replacement units can be produced, sometimes from modern materials, like glass fibre reinforced concrete or, ideally, with new terra cotta.

These additions must work with the original terra cotta. For example, the new materials must be able to expand and contract at the same rate as the original terra cotta, be as strong and durable and match the original in appearance. Trained restoration experts should be consulted for such repairs.

References

City of Winnipeg. Reports for the City of Winnipeg Historical Buildings Committee.

Furs, Michael. 1997. Architectural Terra Cotta: Standards, Specifications and Testing. Master of Science thesis, School of the Art Institute of Chicago, 1997.

Hunderman, Harry J. and Deborah Slaton. 1992. Diagnostics: Terra Cotta. *Building Renovation* November–December: 63–66.

_____. 1989. Terra Cotta: Analysis and Repair. *The Construction Specifier* 42 (July): 50–57.

Lockhardt, William F. 1931. Architectural Terra Cotta. *General Building Contractor*.

Mack, Robert. 1983. The Manufacture and Use of Architectural Terra Cotta in the United States. In *The Technology of Historic American Buildings: Studies of the Materials, Craft and Processes, and the Mechanization of Building Construction*, edited by H. Ward Jandl. Washington, D.C.: Foundation for the Association for Preservation Technology.

Prudon, Theodore, H.M. 1978. Architectural Terra Cotta: Analyzing the Deterioration Problems and Restoration Approaches. *Technology and Conservation* 3 (Fall): 30–39.

Ritchie, Thomas. 1970. Terra Cotta in Canada. *Canadian Architect* 15 (1970): 55–57.

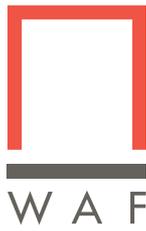
Slaton, Deborah and Harry J. Hunderman. Terra Cotta. In *Twentieth Century Building Materials: History and Conservation*, edited by Thomas C. Jester. N.P.: McGraw-Hill Companies, 1995.

Slaton, D., M.R. Morden and H.J. Hunderman. 1992. *Terra Cotta: Issues in Investigation, Repair and Restoration*. Presentation at the 6th Canadian Masonry Symposium, Saskatoon, Saskatchewan.

Stockbridge, Jerry G. 1980. *Evaluation of Terra Cotta on In-Service Structures*. American Society for Testing and Materials, Special Technical Publication 691. Philadelphia, Pennsylvania: American Society for Testing and Materials (ASTM).

The Toronto Region Architectural Conservancy (ed). 1990. *Terra Cotta: Artful Deceivers*. Toronto: Architectural Conservancy of Ontario Inc.

Tiller, de Teel Patterson. 1979. The Preservation of Historic Glazed Architectural Terra Cotta. Preservation Brief #7. Washington, D.C., U.S. Department of the Interior. National Park Service, Preservation Assistance Division, Technical Preservation Services.



ISBN 978-0-9878093-2-2

