



BIRD 100

BUILDING CANADA
FOR 100 YEARS

1920-2020

BIRD, WOODDALL
& SIMPSON
GENERAL CONTRACTORS
MOOSE JAW, REGINA, SASK.

BIRD

BUILDING CANADA FOR 100 YEARS

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FOREWORD

Teri McKibbin

President and Chief Executive Officer of Bird Construction

This year, Bird Construction is extremely proud to be marking our 100th anniversary – a significant milestone that few companies achieve. 2020 marks 100 years from when Hubert John Bird started the company with two partners in 1920. It has since become one of Canada's largest and most respected builders.

This book reflects back on some of the memorable projects completed across the country, and the employees of Bird, past and present, can be justifiably proud of the role Bird Construction has played in the development of Canada. From providing key infrastructure, to building military bases, complex industrial facilities, and thousands of homes, Bird has made an impact in the commercial, industrial, residential, and institutional sectors. Many of these projects were challenging and complex, and demonstrated the company's commitment to building to the highest standard and conducting business with honesty and integrity.

A key attribute of any successful and enduring endeavour is the ability to accurately assess the changing environment and make the required, if sometimes difficult, adjustments. As the construction industry and broader Canadian economy went through a series of tumultuous and challenging evolutions over the lifetime of the company, the business model necessarily adapted to reflect the shifting landscape. The most significant change was moving to a district-centric approach that empowered local leadership to recognize and respond to regional opportunities, while leveraging the national model as needed in the pursuit and execution of larger projects.

The organizational culture at Bird Construction is one of which the company is particularly proud, and it is frequently cited by many of the longest-serving employees as a determining reason for their tenure. The importance of recognizing and rewarding the contributions and loyalty of dedicated employees cannot be understated, which is why Hubert John Bird founded the 25 Year Club in 1956, a club that now has an admirable 220 members.

The consistency of the growth of the company over the last 100 years speaks volumes about the employees of Bird Construction, with respect to their attention to client satisfaction, safety, quality, and schedule. Their dedication, great work ethic, and entrepreneurial spirit have held the company in good stead all these years and will be the foundation for its future successes.

Looking forward, our key focus will be on remaining at the forefront of new developments in technology, construction practices, and safety. We will continue to seek new opportunities where we can successfully execute complex projects by delivering exceptional client service and creating value, as well as growing the business in diverse markets across Canada. Bird has been a proud partner in building Canada for the last 100 years, and we shall strive to remain a premier Canadian builder driven by passion and dedication. I would like to express my personal appreciation for the contribution and efforts of all our employees on this journey and I look forward to working together for an even brighter future.



introduction

H.J. BIRD: THE JOURNEY TO MOOSE JAW

Born on July 29, 1889, Hubert John Bird was one of the youngest of eleven children. Following the death of his father, who was the owner of a brickyard on the outskirts of Plymouth, England, H.J. Bird immigrated to Canada in 1905 to join two uncles in rural Saskatchewan. At the age of 15, he filed a claim on land south of Melfort under the Homestead Act and homesteaded there until 1908.

As a result of his involvement in provincial politics, where he supported the rival candidate of an influential cabinet minister, he found he had jeopardized his rights to prove his title to his homestead. Selling the property for the value of its improvements, he briefly worked at a bank in Winnipeg before accepting the position of timekeeper at the Navin Brothers construction firm in Moose Jaw, Saskatchewan.

At the advent of the First World War, he enlisted as a Private in the 5th Battalion of the Canadian Expeditionary Force. Before being sent to France to fight in the trenches, he married his sweetheart, Violet Stewart, who originally hailed from Wolfville, Nova Scotia. Once in France, he suffered some relatively minor wounds in battle and was sent to England to recover.

As he returned to full health, H.J. Bird was assigned to the Engineering Corps at an air force base in the south of England, where he assisted



Image courtesy of the Moose Jaw Public Library Archives

with the construction of aerodromes. He also assumed supervisory responsibility for the tarmac and building construction at the base, and oversaw the installation of the pipeline from Rosedale to the city and the construction of the Dominion Government Armouries. He was promoted to the rank of Lieutenant in the Canadian Engineers in 1916, and to Captain in 1918.

Upon his return to Canada, H.J. Bird made a brief detour to Ontario. While there, he superintended the construction of the bridge with the longest concrete span in Canada at the time – the Hunter Street Bridge in Peterborough.

Once back in Moose Jaw, he learned that one of the Navin brothers had passed away. The other brother decided not to continue with the business, and H.J. Bird negotiated the purchase of the company assets and retention of the current employees. This was achieved in

partnership with George Woodall and James D. Simpson, and thus the earliest incarnation of Bird Construction came into existence. The company started trading under the name “Bird and Woodall” in 1920, and would be known as “Bird, Woodall and Simpson” from 1926.

In addition to establishing and growing his construction business, H.J. Bird was setting down roots in Moose Jaw, Saskatchewan. He built an Arts-and-Crafts style bungalow at 1122 Redland Avenue in October 1924 that incorporated the distinctive broad eave with exposed rafters, low-pitched roof overhanging the porch supported by substantial columns, and casement windows with single pane lowers and multi-paned uppers. It had narrow clapboard siding above a stucco foundation sprayed with small brown, red, and beige stones. There were cedar shingles to the top of the gables, oak wood floors in the living area, and maple floors in the kitchen. The Bird family lived in this home until 1937, when the company moved its head office to Winnipeg. Subsequent owners of the home included the Manager of the Prairie Bag Company, the President of Sterling Motors, an instructor at the Saskatchewan Technical Institute, and an announcer on the local CHAB radio station. The restored home is now a charming Bed and Breakfast.



The bungalow built by H.J. Bird in Moose Jaw, Saskatchewan in 1924.

Image courtesy of Patricia Thiele Reilly and Gerald Reilly



1920s

1930s

1940s

1950s

1960s

1970s

1980s

1990s

2000s

2010s

20s

GETTING STARTED: THE 1920S

The 1920s were a time of optimism and opportunity in Canada. Peace had returned with the end of the First World War. Canada was becoming a respected player on the world stage and was a founding member of the League of Nations in 1920. Women gained the right to vote and the right to be elected to parliament. Canadian Frederick Grant Banting co-discovered insulin with American-Canadian Charles Herbert Best, transforming the lives of millions for decades to come and earning them the Nobel Prize. New technological advances including the radio, airplanes, snowmobiles, and automobiles were changing everyday life.

Some of these advancements created opportunities for growth and development, for example, the need for industry to produce these goods and the construction of infrastructure such as roads and airports for the use of the new inventions. By the middle of the decade, foreign demand for Canadian raw materials such as wheat and timber were increasing, and new resources such as pulp, paper, and base metals also found an international market. This further boosted the development of the Canadian economy and spurred on growth and opportunities across most of Canada. It was within this context that Bird Construction first started doing business.

LOCAL CONTRACTORS MAKE RAPID GAINS

Bird, Woodall & Simpson Are Aggressive Organization

A firm whose business has doubled each year for four years in succession is worthy of mention. Bird, Woodall & Simpson, contractors and engineers in Moose Jaw, possess this enviable record.

Business done by the company in its first year amounted to about \$150,000, while in 1929 contracts totalled approximately \$2,000,000. The firm's activities are by no means confined to Moose Jaw; work is carried out in all three of the Western provinces.

Some of the buildings constructed by Bird, Woodall & Simpson include Royal Bank structures in Moose Jaw, Regina and Melville; schools in Regina, Drumheller and various other spots; St. Joseph's Church in Moose Jaw and St. Matthew's Church in Regina were both built by this organization.

Some of its commercial buildings include the Dominion Express Building, Weyburn; C.P.R. Postal Building, Regina; T. Eaton store, Moose Jaw; Crown Bakery, Regina; Northern Electric, Regina; International Harvester, Swift Current, and National Fruit Warehouses in Regina, Moose Jaw, Medicine Hat.

These, of course, are only representative of a large list of similar buildings scattered throughout the three prairie provinces, but are an indication of the progressive spirit of this Moose Jaw organization.

Image courtesy of the Financial Post

In the 1920s, Moose Jaw was an economic hub in the area, serving as the retail centre for 110 villages and 130 hamlets. Situated at the confluence of the Moose Jaw River, Thunder Creek, and Spring Creek, it was a town that was growing fast. It was an important divisional point on the rail system, with the Canadian Pacific Railway, Canadian National Railway, and the Soo Line running through the town. A railway depot, freight yard, and repair facilities were located in Moose Jaw.

Employment levels were rising, partly due to major construction projects that were trying to keep up with the expansion of the town and the influx of post-war immigrants. The population was surprisingly diverse for a Prairie town, even in the pre-war period. While predominantly Canadian and British, there were also Jewish,

Ukrainian, Russian, German, Polish, and Chinese communities. Following the war, Mennonites, Hutterites, and Doukhobors further diversified the demographic composition of the town.

From the early years, the company had a varied portfolio of work. During this decade, Bird built hospitals, schools, warehouses, disposal plants, town halls, factories, theatres, homes, bridges, and roads. The company quickly established a reputation for professionalism, fair-dealing, integrity, and tenacity. These qualities would be essential to the survival of the company as it would be sorely tested by the Great Depression that hit at the end of the decade, annihilating the international economy.^[1,2,3,4,5]



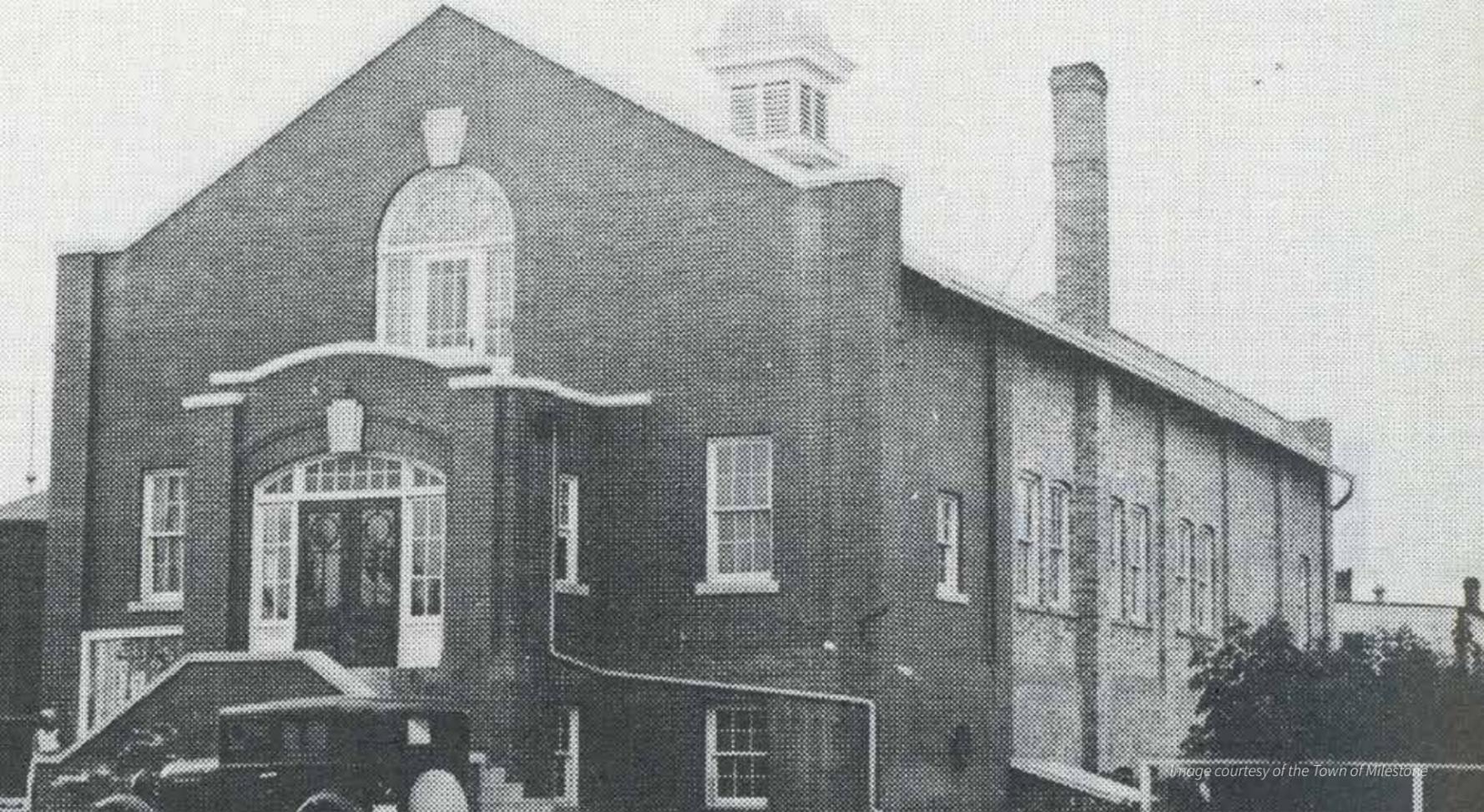


Image courtesy of the Town of Milestone

MILESTONE TOWN HALL

Milestone, Saskatchewan

The town of Milestone had an unfortunate history with town halls. The first meeting hall burned down in 1905, and the second was soon condemned. The third town hall was a remodeled hotel that also burned down. The pressing need for a public meeting place was resolved on July 14, 1921 when Bird and Woodall were awarded the contract to construct a new hall on the site of the old Imperial Hotel.

Three hundred community members attended the official opening by Mayor J.J. Currie on January 18, 1922, who remarked that “the resplendent new community hall ranked first on the Soo Line [Railway]”.

In addition to the council chambers and town clerk’s office, the building also featured theatrical facilities, a fire hall, firefighting apparatus, and a jail cell.

The building provided a focal point for the community, hosting a variety of activities over the years: dances were put on by the United Farmers, Anglican Church, and 4-H Club. There were regular concerts and musical performances, plays, fashion shows, political debates, talent shows, and movie screenings. The town hall remained in use until 1971.^[6]

MAPLE LEAF HOSTEL

Regina, Saskatchewan

The Fellowship of the Maple Leaf, an Anglican society established in England, recruited teachers for Prairie Schools. The Maple Leaf Hostel was built in 1925 at a cost of \$50,000 to house these English teachers while they attended the Normal School, a teacher’s training college in Regina. The hostel was used by the Women’s Division of the Royal Canadian Air Force during the Second World War, and then accommodated discharged service women until 1947.

The Maple Leaf Hostel is nestled on an 8.142-hectare parcel of land at the corner of College Avenue and Broad Street in Regina. This building is one of five red brick Collegiate Gothic style buildings that form the Diocese of Qu’Appelle, and the entire site has been declared a Provincial

Heritage Property. The building has also been known as Harding House and Anderson House, and was awarded the City of Regina Municipal Heritage Award in 2010.

The building has a stone-trimmed red brick exterior and a charming roofscape with gables, dormers, and a chimney. The multi-paned pointed arch windows are typical of the Gothic style, as are the various representational sculptural elements found throughout the structure. The Maple Leaf Hostel is still in use today – it currently houses the practices of a variety of holistic health practitioners.



Image courtesy of the Canadian Register of Historic Places

T. EATON STORE

Moose Jaw, Saskatchewan

Timothy Eaton transformed rural Canadian retail with the introduction of his mail-order catalogue system in 1884. People in isolated communities finally had access to a wide range of goods that had previously been prohibitively costly and difficult to procure. By 1905, the first Eaton's Department Store opened in Winnipeg, Manitoba and the company began expanding into the Prairies, selecting Moose Jaw as one of the first locations in the province of Saskatchewan for the growing retail business.

The building's architecture reflects Eaton's no-nonsense sensibility: utilitarian, minimal ornamentation, and simple brickwork. A late nineteenth century bylaw mandated the use of brick following the damage caused in most of the downtown district by fire on December 12, 1891 (a strangely common occurrence in Moose Jaw, which appears to have had more than its fair share of fires). The \$126,000 store opened to great fanfare on November 6, 1928, and by the 1940s it was one of Moose Jaw's largest retail stores. It was designated a Municipal Heritage Property in 1991.^[7]



Image courtesy of Moose Jaw Public Library Archives

CROWN BREAD AND CAKE COMPANY BAKERY

Regina, Saskatchewan

Designed by Montreal architect Sidney Comber, the Crown Bread and Cake Company, Ltd. was a mixture of the Spanish Mission and Italianate styles, giving the building a Mediterranean flair reinforced by the red tile roof and arched windows. The 1929 building contract was worth \$125,000, while the total cost for the new plant was \$300,000.

The thoroughly modern baking plant had a significant proportion of automated and mechanized processes for the time. The well-ordered operation started in the basement of the building. Flour would be delivered by box car and slid down a steel chute into the basement storage area that could hold 5,000 sacks of flour. The flour was moved up the elevator by an attendant to the third floor, where a blender would mix the flour before a rotating screw forced the mixed flour through an electric sifter and into bins on the fourth floor. An electrically controlled “weigh hopper”, Gottfried automatic water scale, and high-speed mixer were used to create a dough with the ingredients from the refrigerator room. The state-of-the-art mixer had a cold-water jacket through which ice water could be circulated to keep the dough at the correct temperature during this process. After pouring the prepared dough into long troughs, it would be trundled to a humidity-controlled room where the perfect, uniform moisture levels were created by a Babinson humidifier. Approximately 2,000 loaves of bread per hour could be baked in the trade-type travelling oven, which had five furnaces with specially constructed burners. Oil was used for heating the ovens and the building, ensuring that no dust from coal and ashes could contaminate the bread.

Among the innovative safety features for the time were buttons that could immediately cut off oil lines, and the installation of concrete and steel stairways throughout the building to create a fire well that would restrict the spread of smoke in the case of a fire.

The doors were also made of fire-resistant materials. The boiler room, engine room, and major machinery were all contained within fireproof, reinforced concrete rooms. Each room could be sealed with a fire door.

The 30.5-metre long wagon yard and garage on the north side of the building adjoined the stables, which were a separate building from the bakery. A local news report described the stables as a “model of cleanliness, being constructed of brick for accommodation of 30 horses”.^[8] Bread deliveries were made around the city by 22 horse-drawn wagons and two light trucks. The company also had its own private siding at the rear of the building with over 61 metres of trackage.

The bakery was purchased by the Weston Fruitcake Company of Ontario in 1938, which changed its name to Weston’s Bread & Cakes Canada Ltd. The building has been on the Regina Heritage Holding Bylaw List since 1989, and the original hand-painted sign for the Crown Bakery is still visible on the south side of the building.^[9,10]

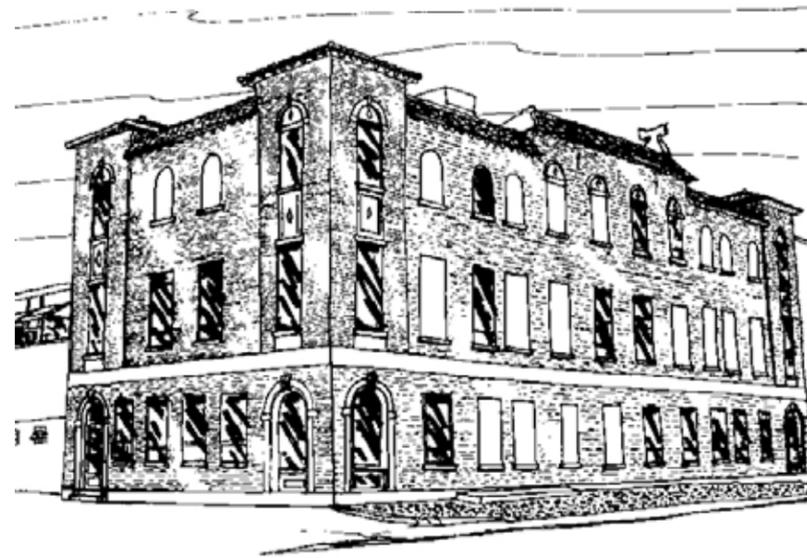


Image courtesy of Bill Henderson, Heritage Regina, and the City of Regina

The latest models of backhoe and excavator shovel were used during the construction of the bakery.



ADDITIONS TO PROVIDENCE AND GENERAL HOSPITALS AND WEYBURN MENTAL HOSPITAL

Moose Jaw and Weyburn, Saskatchewan

The Moose Jaw General Hospital was founded in 1903, and Bird built the attractive new three-storey wing in 1928. The brick building added 54 beds and a 20-crib nursery to the overall capacity of the hospital. A new operating theatre for ear, nose and throat cases was built on the third floor, bringing the total number of operating theatres in the hospital to four. The addition cost \$140,000 to construct and equip and featured modern innovations such as dimmable lights for patient comfort, tiled washrooms and bathrooms to improve sanitation, kitchens on each floor, and soundproof doors. There were no fireplaces or furnaces in the new wing – all heating was provided by steam conveyed through the central steam system from the city power house. Even the cooking was performed using the same steam system. The new wing boasted a modern medical laboratory for tests and a dispensary for the preparation of prescriptions.

The original Providence Hospital was opened by the Sisters of Providence of St. Vincent de Paul in 1912, and a new fifty-bed hospital was built in 1917 to accommodate the growing needs of the population of Moose Jaw.

By 1928, further expansion was required and Bird built the new 64-bed east wing. The School of Nursing and accommodation for the Sisters and nurses were incorporated into this wing as well. The Providence and General Hospital additions took place concurrently.

The new wing additions for both the Providence and General Hospitals were opened by His Excellency Viscount Willingdon, the Governor General of the broad Dominion of Canada, in May 1928.

The Weyburn Mental Hospital opened in 1921, a few years after the federal government passed legislation calling for the “safe-keeping of dangerous lunatics in the Northwest Territories”.^[11] Mr. M.W. Sharon of Regina was the architect of the original building, and was eager to move away from the cold, formal lines of traditional institutions and provide a sunny and cheerful structure that was also modern, economical, and convenient to operate. The well-proportioned brick building had a total of almost 24,000 square metres of floor area, about half of which was finished with maple flooring.



Moose Jaw General Hospital



Image courtesy of the Moose Jaw Public Library Archives

Moose Jaw Providence Hospital



Image courtesy of the Moose Jaw Public Library Archives



Image courtesy of the Moose Jaw Public Library Archives

The original steel-framed building cost more than \$2.2 million to construct, and it had its own power plant for the provision of electric light and heat. The hospital was one of the largest facilities in Canada and had a reputation for employing cutting edge treatments and psychiatric drug research.

Bird was awarded the contract for the construction of a third wing at the Weyburn Mental Hospital. Valued at \$700,000, this was one of the largest contracts secured by the company at the time of award. The four-storey wing stretched 87.5 metres in length and rose to a height of almost 16 metres.

Over 600 tonnes of steel were used in the framework construction of the new wing. To compensate for the delayed arrival of the steel beams, the number of workers on site was increased to speed up

construction: more than 300 steelworkers, plumbers, electricians, bricklayers, carpenters, and labourers were employed during this project. In excess of 1.2 million Saskatchewan-manufactured bricks were used for the exterior finish, including Tee-Pee-Mocha face brick from Claybank. Tyndall stone was also used for the exterior finish.

The building was fully enclosed in October 1929, and interior work proceeded throughout the winter. Terrazzo floors were laid in the corridors, stairways, and washrooms, and the bathrooms were tiled up to a height of two metres to improve sanitation. The dormitories, recreation, and reading rooms had hardwood floors. Modern ventilation and lighting systems were installed, including two six-metre brass-topped air ventilation shafts. The northwest wing could accommodate 400 additional patients and was completed in April 1930.^[12,13,14]

Given the size and importance of this project for the new company, General Superintendent Bill Greenfield moved to the job site in Weyburn for the duration of construction. He built a small house on site for his family, and his son Bill Jr. was born in that house.



Image courtesy of Soo Line Historical Museum



1920s

1930s

1940s

1950s

1960s

1970s

1980s

1990s

2000s

2010s

30s

BOOM, BUST, BOOM: THE 1930s

The collapse of the stock market in 1929 and the Great Depression that followed had a devastating impact on Canada, as it did in other countries around the world. As is typical, the effects were slightly delayed for the construction industry, and for Bird Construction the volume of work secured before the crash would carry the company through to 1931 before being significantly affected by the economic downturn. Some of the major jobs undertaken in the early years of the decade were the expansion of the former Northern Electric Company building (which later became the Army and Navy Store Warehouse) and the C.P.R. Depot, both in Regina. The C.P.R. Depot project would become a major landmark in Regina as Union Station was the transportation hub for a growing and thriving city. In Moose Jaw, the Natatorium, another project built by Bird in the early thirties, was a welcome focal point for local recreation while also providing much needed employment.

The Prairies were hit particularly hard during the Depression as it coincided with a severe drought that did not abate until 1934. Unemployment exploded as businesses collapsed, with further jobs lost as the federal and provincial governments initially cut back on their spending. As poverty became widespread throughout the country, however, government services and programs eventually became a lifeline.

In response to the catastrophic economic situation, the government instituted a program of relief work to provide workers with the means

to survive. In some regions, this meant payment in the form of vouchers that could be exchanged for food and other necessities. Government projects included building roads and bridges, and planting trees. In Moose Jaw, for example, road paving projects provided some of the relief work. A major project undertaken by Bird Construction during this period was the construction of the bridge over the South Saskatchewan River in Outlook. Local historian Bruce Fairman reported that almost half of Moose Jaw's workforce was unemployed and on relief by the fall of 1931.^[15]

This was the highest rate of any city in Alberta or Saskatchewan and, throughout the course of the Depression, about a quarter of the city remained on relief at any given time.^[16] Although significant salary cuts had to be made, H.J. Bird earned the eternal respect and loyalty of his staff when he retained all key office personnel on the payroll throughout the Depression years. According to company legend, in an effort to keep people employed, H.J. Bird secured an opportunity for staff to drive buses when construction work was in short supply.



Construction of the bridge over the South Saskatchewan River in Outlook.



By the middle of the decade, the situation began to improve: many new businesses were started and by 1935 Moose Jaw was the top manufacturing centre in the province. In Edmonton, a large Canada Packers Plant was built in 1936, a sign that optimism in the market was returning. Other projects related to the recovering economy at this time included work for the P. Burns Slaughter House in Calgary, the Swift Canadian Company in Winnipeg, the International Harvester Company and Woolworth Company in Regina, and Imperial Oil in a number of locations. In addition, the traditional bread-and-butter work of the company was continuing, such as the construction of schools, hospitals, and housing.

When the predecessor to Bird Construction was incorporated as a company on February 15, 1930, the initial capital stock of \$150,000 was divided into 750 common shares and 750 preferred shares at a par value of \$100 each. In 1934, H.J. Bird bought out the interests of his partners, and the company name was changed to Bird Construction Company Limited.

Although the company was achieving strong results by the end of the decade, a government wage, price and profit freeze was imposed on all businesses and the company's profit was therefore "frozen" at \$28,000 per year. In order to maintain a steady volume of work in the face of increasing competition from new general contractors, the company decided to diversify its operations and invested in equipment and other assets that would allow it to pursue larger projects that were out of the reach of these new players in the market. For example, the company purchased pumps, a hoist, pile driving equipment, a stabilizing plant, and a Caterpillar Auto Patrol. As the 1940s approached, the company had earned a reputation for quality work at fair prices and was well-positioned for further expansion, having already established district offices in Moose Jaw, Regina, and Winnipeg.



- | | | |
|---|----|--|
| 1 | 1. | <i>Construction of the Swift Canadian Company Plant in Winnipeg</i> |
| 2 | 2. | <i>Construction of the Woolworth Company store in Regina</i> |
| 3 | 3. | <i>Northern Electric Building / Army & Navy Main Warehouse in Regina</i> |

NORTHERN ELECTRIC COMPANY ADDITION

Regina, Saskatchewan

The original Northern Electric Company facility was erected in Regina in 1919. In 1930, Bird, Woodall and Simpson built an addition on the north side of the building as a warehouse for the new tenant, the Army and Navy Department Store. Designed by Puntin, O'Leary and Coxall, the addition featured a blend of Art Deco and Art Moderno styles, as seen in the Tyndall stone accents and inset pediment decorations around the entrances. It was constructed of reinforced concrete and

brick, had laminated maple floors, and featured a sprinkler system, an uncommon addition to buildings of this era.

The addition to the original building has been on the Regina Heritage Holding Bylaw list since 1989. The building still stands today and is currently housing an office supplies company. Many original features both inside and outside the building have been preserved.

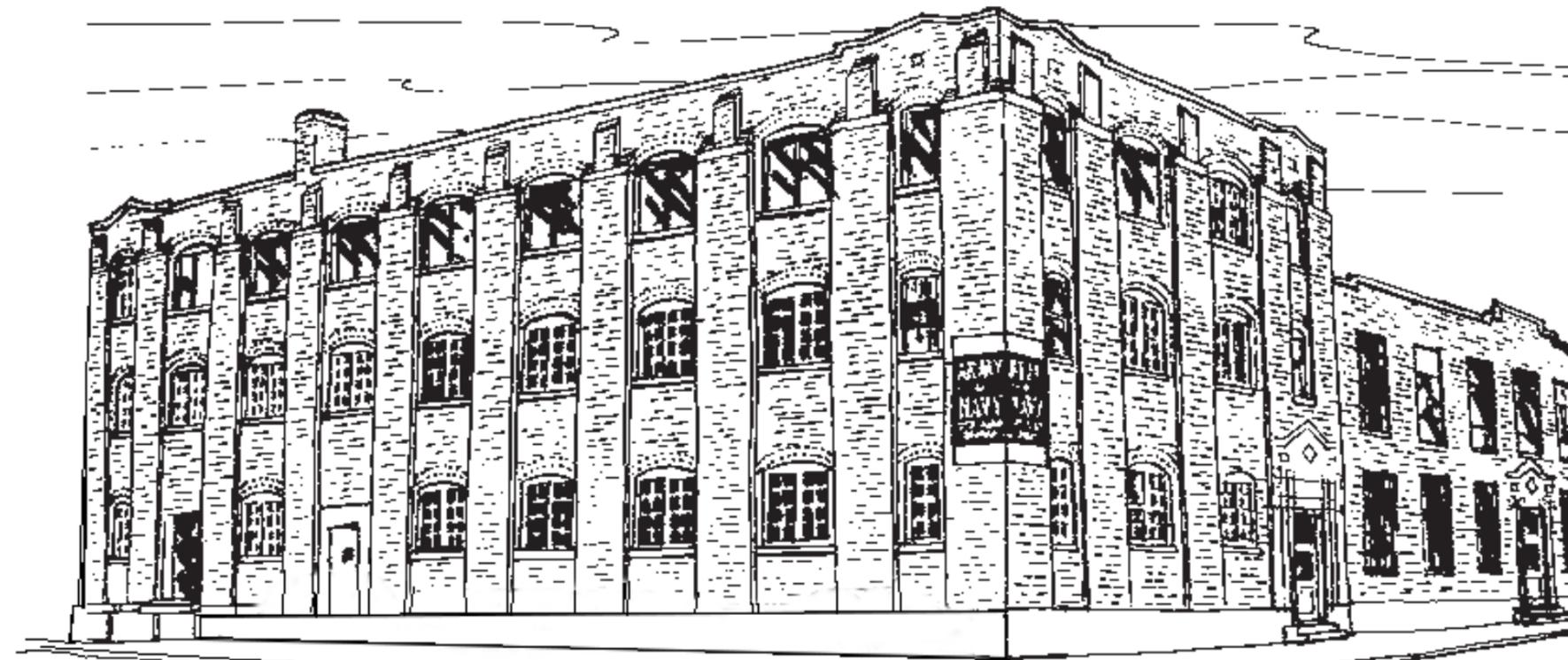


Image courtesy of Bill Henderson, Heritage Regina, and the City of Regina



C.P.R. DEPOT/UNION STATION EXPANSION

Regina, Saskatchewan

This milestone project was the first \$1-million contract secured by the company, and helped provide Bird with the means for surviving the lean Depression years. Construction began in 1931 and concluded in June of 1932.

In late 1882, a fledgling Regina had begun to grow around the original Canadian Pacific Railway station. Union Station determined the location of the downtown core as merchants set up their businesses around this central transportation hub, and people and goods entering or leaving the area did so through the rail station. The Canadian Pacific Railway and the Canadian National Railway combined their facilities and both operated out of Union Station. Daily passenger service commenced in 1886, and by early the following century it was clear that the station was stretched beyond its capacity.

The planned expansion would substantially increase passenger facilities, baggage and express facilities, food services and office space. A pedestrian subway would provide access to the train platforms. The contract awarded to Bird, Woodall and Simpson was worth nearly \$1,250,000.

As part of the project, the central three-storey projection was expanded southwards to create the grand concourse. In keeping with the scale and scope of the project, superior construction materials were used including, for example, facing the station with Tyndall limestone rather than Ashlar stone. Stone detailing and bas-relief pilasters, lacy iron canopies, brass fixtures and lettering, and high arched ceilings added a stately elegance to the building. Marble was used for entrances, stairways and counters, while terrazzo flooring was installed in the public areas.

Using local and regional resources, both in terms of labour and materials, was a key consideration on the project. Specially designed seats for the waiting rooms, which were finished with white polished oak, were manufactured in Regina, and the contemporary Art Deco light fixtures were produced by the Canadian Electric Plating Company.

Union Station was a grand focal point for the bustling city back then and, although the last passenger train left Union Station in 1990, the

building has enjoyed more than one new lease on life. It was used as an event space in the early 1990s, hosting weddings, symphony concerts, and an opera. It is now a popular casino. A number of heritage features have been preserved, including the façade, marble staircases, light fixtures, and the departure board.^[17]

The first C.P.R. train reached Pile O' Bones Creek, now known as Regina, on August 23, 1882.

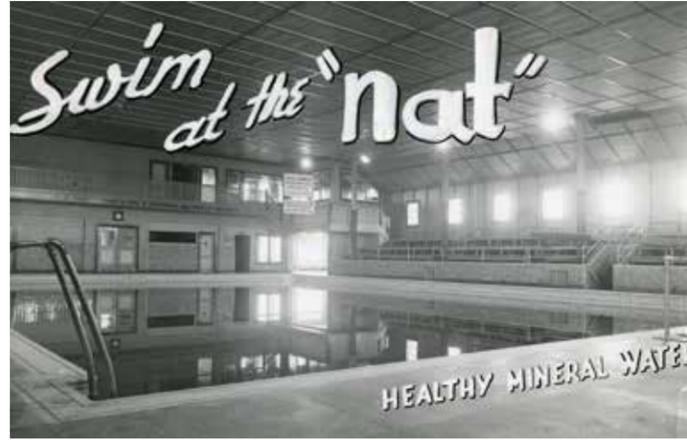
MOOSE JAW NATATORIUM

Moose Jaw, Saskatchewan

The Natatorium was one of Moose Jaw's first major relief work projects and nearly one hundred men were employed to construct the new indoor swimming pool, which was built with exceptional speed. Situated in Crescent Park in downtown Moose Jaw, this handsome building played a key role not only during the Depression, but as a tourist draw for many years to come. It was the largest pool between Winnipeg and Vancouver. As many as 100,000 visitors would be drawn to the geothermal mineral water pool each year. It was also credited with promoting the development of other mineral spas in the region.

Built in the Prairie School style of architecture, the building had a low-pitched roof with overhanging eaves and horizontally arranged window lines and made extensive use of textured brick and limestone. There were also some Art Deco elements, including the carved stone on the central entrance porch. There were even a few Tudor touches, such as the mock half-timbering, the use of stucco, and the buttresses and corbels. Other interesting attributes included the decorative brickwork around the windows and doors, the imposing entrance stairway, and the idyllic setting within a lush popular public park. The pool held almost 500,000 litres of warm mineral water that was completely refreshed every 48 hours by a continuous flow of water from a well that was discovered while searching for natural gas. ^[18]

At the grand opening on Thanksgiving Day in 1932, three thousand people came to see the remarkable structure and more than a thousand had the opportunity to dip into the pool. The Natatorium is sometimes associated with Olympic swimmer Phyllis Dewar, a Moose Jaw resident and Canadian freestyle record-holder who trained there before going on to win four gold medals at the 1934 British Empire Games in London. It was declared a Heritage Property in March 2010, and remains an iconic Moose Jaw structure.



1	1.	Advertisement for the Natatorium	
2	2.	Opening day	
2	4	3.	Exterior during construction
3	4.	Completed exterior	

Images courtesy of the Moose Jaw Public Library Archives



OUTLOOK BRIDGE

Bridge over South Saskatchewan River, Outlook, Saskatchewan

The first bridge built by Bird Construction, this 1936 project provided a few technical challenges for the young company. During a particularly severe winter, the river froze down to 1.8 metres. Work was ongoing during this time.

Abutment excavations had to be fortified against explosive quicksand by using ingenuity: several thousand cotton sacks procured from cement companies, which had recently switched to paper sacks, were filled with sand and clay and dumped by the thousands into the sand outside the cofferdams. Once the pumps started to drain the cofferdam enclosures, the sacks jammed, as planned, and sand stopped flowing into the cofferdams. The cofferdams were then completed without much trouble. This project was the first of many bridges that the company would build throughout the province, and the in-house technical expertise gained in forming and concrete work is evident in the challenging assignments the company subsequently accepted.



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1. Construction in progress
 2. Showing the depth of ice removed, February 19, 1936
 3. West abutment, June 22, 1936
 4. Outlook Bridge view west, May 22, 1936

CANADA PACKERS PLANT

Edmonton, Alberta

The Canada Packers Plant in Edmonton was a massive, sophisticated plant for its time. Built in the “Packingtown” district amongst a cluster of plants run by Swift Canadian and Burns Meats, the plant brought much needed relief to the city’s workforce during the Great Depression. Around 300 workers were employed when production began in September 1936 and, at its peak in the 1970s, 1,000 people worked at the plant.

Almost 400 tradesmen worked on the \$1-million plant, which included an abattoir, packing facilities, power plant, refrigeration plant, chemical laboratory for testing, pickling and smoking facilities, curing cellars, and a vegetable oil refinery. Steam for sterilizing and scalding was generated by three natural gas fired boilers. The plant incorporated 1.1 million bricks, 6,000 cubic metres of concrete, 6,700 metres of pipe and over 80 kilometres of electrical wire in 20 kilometres of conduit. There were 1,400 cubic metres of lumber and 220,000 sections of tile used during construction.

The International Modernist architectural style can be seen in the balanced asymmetry of reinforced concrete frame cubes. Rather than utilizing the more traditional horizontal plant layout of European industrial design, a vertical layout that minimized horizontal movement was implemented instead, accelerating the handling and processing of perishable products. The innovative design by Eric R. Arthur and A.P.C. Adamson was lauded by the Royal Architectural Institute of Canada and the Ontario Association of Architects.

Another notable feature was the large concrete letters on the roof. It is believed that these 2.4-metre high and 30-centimetre thick letters were the largest concrete construction in Canada at the time. The letters were reinforced into the concrete spandrel beam at the roof line.

Today, the distinctive 30-metre terracotta brick chimney stack that dominated the plant is all that remains. It was declared a Municipal Historic Resource in 2015, and restoration began in 2018. It will take pride of place in the public space that has been planned for the forthcoming Kathleen Andrews Transit Garage for city buses.^[19,20,21,22]

The plant incorporated 1.1 million bricks, 6,000 cubic metres of concrete, 6,700 metres of pipe and over 80 kilometres of electrical wire in 20 kilometres of conduit.





1920s

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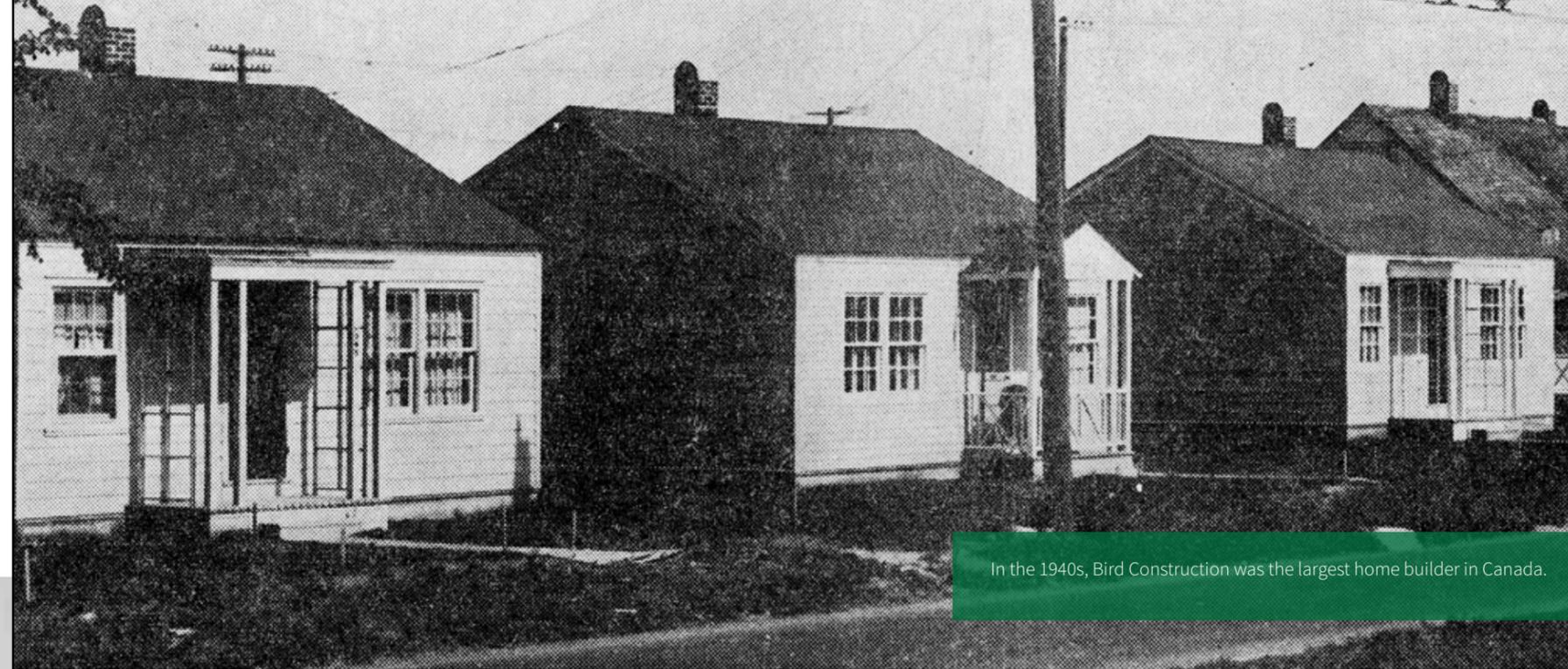
40s

DEFENCE, DWELLINGS, AND DEVELOPMENT: THE 1940s

The Second World War dominated this decade. In addition to their heroism and sacrifices on the battlefield, Canadians made a significant contribution to the war effort on the home front, including through the British Commonwealth Air Training Plan. This agreement between Canada, Great Britain, New Zealand, and Australia provided for the training of 130,000 Allied pilots, navigators, air gunners, wireless operators, and flight engineers. These personnel were sent to air schools established across the country, which were staffed by more than 100,000 Canadians. The training sites were chosen based on a few key factors: uncongested airspace, good weather conditions, and large tracts of land ideal for training novice pilots and accommodating the runways and facilities required for an undertaking of this scale.

For the Prairie towns still feeling the effects of the Depression, the economic benefits of having a base in the area was significant: construction jobs, permanent employment for staffing the base, as well as the secondary employment that would arise from having a continuous stream of trainees coming to town. Lobbying for the bases was intense. All told, 107 schools and 184 ancillary units operated at 231 sites across Canada during the peak of the program. One of the largest sites was located outside Moose Jaw and, by the end of the war, the No. 32 Service Flying Training School (32 SFTS) had trained 1,200 pilots.

The company's first "rubber roller", shown in use at Gimli Airport.



In the 1940s, Bird Construction was the largest home builder in Canada.

Bird Construction secured a large volume of war-related construction contracts, including training schools across the region and other defence-related projects. By the end of the war, because of its solid reputation of delivering construction projects on time and on budget, Bird had completed more air force work than any other company in Canada, and 50 per cent of the air training facility construction in western Canada. Some of this work was carried out as part of a syndicated partnership with Wells Construction of Saskatoon (which provided asphalt plant resources) and Ramsay Construction of Regina (which provided excavation equipment).

The rapid erection of facilities to accommodate a parachute training group, including the construction of a jump tower, was also undertaken at this time. Hundreds of U.S. Forces personnel, together with their tanks, trucks and guns, used the facility for a winter testing ground. Bird Construction also performed work at the Brandon Military Hospital, C.W.A.O. Osborne Barracks, and Supply Depot M.D. #10.

Work was completed at many airports across Manitoba and Saskatchewan, including at Brandon, Buttress, Chater, Dafoe, Davidson, Estevan, Gimli, Moose Jaw, Mossbank, Neepawa, Portage la Prairie, Souris, St. Aldwyn, Swift Current, Virden, and Weyburn.

Throughout this period, work frequently continued around the clock as many of these facilities were built on a fast track basis. Bird Construction's senior field personnel were on call 24/7 to attend to the maintenance and operation of airport facilities.

At the same time the company was growing its airspace defence portfolio, it was also becoming a leader in residential construction. In the mid-1940s, Bird Construction was the largest home builder in Canada. The company entered into contracts with Wartime Housing Ltd. to build 15,000 houses, including in the Atlantic region and in Logan, Brandon, Calgary, Kildonan, Elmwood, Fort Rouge, Kenora, Lethbridge, Medicine Hat, Moose Jaw, Notre Dame, Portage la Prairie, Redcliff, St. James, Transcona, and Winnipeg. After the war, Bird contracted with the federal government to build over 5,000 peace-time homes in western Canada for returning veterans, including homes in Radcliff, Lethbridge, Medicine Hat, Bow Island, and Moose Jaw. In addition to the government contracts, Bird built houses in Redwater for Imperial Esso during the oil boom of 1948 and undertook a major development in Winnipeg – the Wildwood Park residential community.

Following a period of mostly war-related rapid expansion, the decade concluded with a very good year for Bird Construction. In 1949, annual

revenue exceeded the company record achieved the previous year and construction activity reached a new high, which was reflected in Bird's increasing volume of business. It was at this time that the company first went public, trading on the Winnipeg Stock Exchange.

During this time, a new district office was opened in Calgary and the Lethbridge office was expanded to cope with the increasing volume of business. There was also discussion about opening a district office in Edmonton and setting up a retail building materials sales division at each office. The company had always maintained an inventory of building supplies for use in its projects and expanding into retail sales seemed a natural progression.

Major building contracts during the 1940s included the Lethbridge Disposal Plant, the new Technical School in Winnipeg, store and warehouse additions for national retailer Simpsons Limited in Regina, Scott Collegiate, also in Regina, the B.A. Oil Refinery in Moose Jaw, and rebuilding the Burns Packing Plant in Edmonton. As a significant historical achievement, Bird completed the Winnipeg General Hospital Maternity Pavilion just in time to take patients from other hospitals that were flooded during the 1950 Winnipeg Flood. Bird was also an associate contractor on the Pine Falls Hydroelectric Project in Manitoba, and worked with the Ramsay Construction Company on a bridge over the Saskatchewan River north of Swift Current.



Bird Construction had an established relationship with the W. Beattie Ramsay Construction Co. as the two firms had formed a syndicate in the late 1930s to pursue road building and airport runway contracts. They also tackled projects for road grading and stabilization, asphalt paving, and sewer and water construction. This partnership endured and in 1965 a new company, Ramsay Bird Limited, was formed. Each firm owned half the shares in the new company and business thrived with major projects such as the twinning of the TransCanada highway east of Winnipeg. Ramsay would eventually buy out Bird's shares in the joint venture in 1970.

Among the assets acquired by the company was the Regina Gravel Pit. Purchased in 1947, it was estimated that more than 1 million tonnes of asphalt were mixed through the plant by the time this photograph was taken in 1958. Pictured from left to right are Doug Ramsay, Jack Dunlop, John Irving, Mike McCormich, and Lorne Mills.



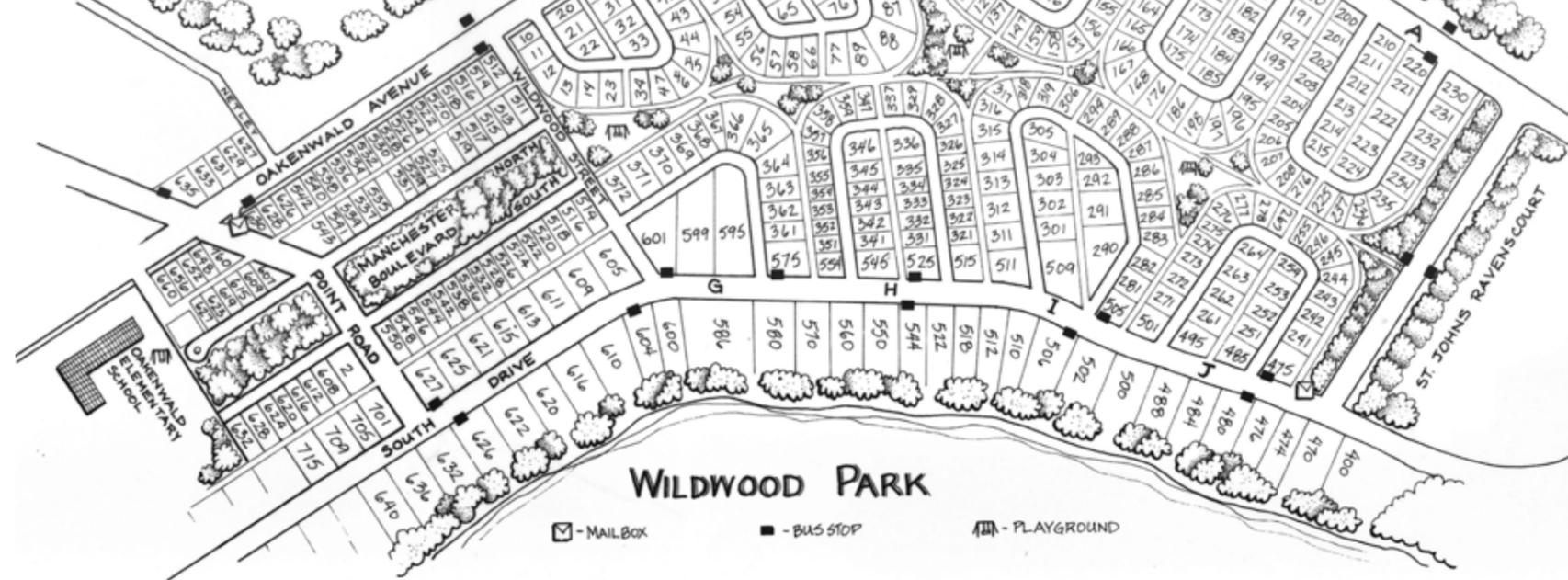
CAMP SHILO

Brandon, Manitoba

Perhaps the biggest defence contract undertaken by Bird Construction during the war years was Camp Shilo, which sprawled across almost 40,000 hectares of open prairie, woodlands, and sand dunes. The diverse terrain has been a preferred training location since 1910 for Canadian Armed Forces as well as for military personnel from other countries including the United States, Germany, Denmark, and France. The autonomous base maintains its own water, sewage and recreational facilities, and is home to 1,400 military personnel and their families. It is a designated Area Support Unit that can serve as a base of operations during a civil or military emergency. It is currently the home base of the 1st Regiment of the Royal Canadian Horse Artillery and the 2nd Battalion, Princess Patricia's Canadian Light Infantry, and hosts a number of detachments supporting the 3rd Canadian Division.

Bird Construction employed almost 1,000 personnel for the \$5-million project that began in 1943. Fifty existing buildings were relocated and renovated, and new heating and wiring systems were installed. Additional buildings were constructed, including new camps, quarters, mess halls, and chapels. A complete sewage system with a disposal plant was also built.

Bird Construction would return to Camp Shilo (now known as Canadian Forces Base Shilo) to complete other projects after the war. A number of contracts were completed in the 1990s and 2000s, such as an artillery complex and a maintenance facility that services military equipment, including tanks, self-propelled guns, various weapons, and military vehicles. The building has two 35-metre clear span maintenance areas and features an innovative suspended cable structural steel system.



WILDWOOD PARK

Winnipeg, Manitoba

Wildwood was one of the first post-war privately financed housing developments in Canada, and the first planned housing development in western Canada.

The unique character of the Wildwood residential community arose from H.J. Bird's vision of a development where the houses would front onto a central pedestrian-only communal green, with all vehicle access restricted to roads running behind the houses. It was inspired by the distinctive layout of the Rathburn development in New Jersey, designed by American planners Clarence Stein and Henry Wright, which H.J. Bird noticed while on a flight over the area.

Bird purchased the 74.7-acre parcel of land on a bend of the Red River from the municipality of Fort Garry for \$15,000. Prior to the purchase, H.J. Bird regularly hiked in the area, admiring the heavily wooded tract of land that was populated with Manitoba maple, elm, oak, and giant cottonwood. Many of these mature trees were preserved during the development of the land and construction of the homes.

The project was conceived as a low-cost housing development for returning veterans, with 200 of the 325 homes reserved for them. There were five different home styles, which ranged in price from \$6,500 to \$9,300 and could be purchased under the Housing Act Plan with a 30-year mortgage.

The pre-fabricated systems and mass-production building techniques that had been developed for the wartime housing programs were suitable and applied to the construction of the Wildwood development. The efficient and highly organized construction teams completed homes at the rate of three per day and construction was substantially completed by 1946.

The distinctive Wildwood Park development attracted many first-time buyers and, as many residents were in a similar demographic in terms of age and economic status, a tight-knit community rapidly developed. The strong sense of camaraderie supported young families as they found their feet and dealt with the challenges of post-war life. For example, few families owned a car and those who did were generous with lifts into town. Telephones were also not common, as there was a significant post-war backlog in service connections. As another show of community support, Bird allowed people to place calls from its business office, making its phones available after business hours. During the day, office manager Frank Burleigh took messages for the residents.

This community spirit really came to the fore in the 1950 flood when snow melt and heavy rains swelled the Red River to nine metres above the usual water level. Volunteers, including H.J. Bird himself and staff from Bird Construction, built a dike of sandbags and mud, but could not hold back the river. The Wildwood Park community was unfortunately required to evacuate in the early morning hours of

May 6, 1950, joining the tally of 100,000 Winnipeg residents fleeing the rising waters. Although there was extensive damage to their homes, the community rallied together and helped neighbours muck out their homes and rebuild houses and the community. Bird Construction remained actively involved and contributed to the cleanup and rebuilding effort, including steam-cleaning homes and repairing them for people to move back in.

Wildwood Park maintains its distinctive style to this day, and residents continue to enjoy a rare sense of community. The unique features of this development have gained greater recognition over time, with the Metropolitan Corporation of Greater Winnipeg confirming that Wildwood Park is acknowledged as one of the most significant housing developments in Canada. It remains a point of reference and inspiration for planners, architects, and builders. Amongst other accolades, the Wildwood Park development received the Award of Merit for Community Design from the Canadian Housing Design Council in 1980. The personal foresight and investment of H.J. Bird, its singular design and character, and its surprising longevity, make Wildwood Park an enduring point of pride for the company.^[23,24]



Image courtesy of Fanis Grammenos, www.fusedgrid.ca





Image courtesy of N. Woycenko and J.N. Woycenko, with permission from George and Edward Woycenko

IMPERIAL OIL “BIRD HOUSES” Redwater, Alberta

Following the discovery of oil in Redwater, Alberta in 1948, the Imperial Oil Company mobilized crews into the community to begin exploration and extraction activities. The small farming community exploded from 90 people to more than 3,000 people within three months. Accommodations were in critically short supply, and Imperial Oil realized that it would need to build its own housing for its staff.

A housing development, named the Devonian Estates, was created on land secured at the northwest edge of the town, and Bird Construction was one of the contractors hired to develop the townsite. The homes became known as “bird houses”, although this was likely due to the diminutive size of the houses rather than any connection to the company that built the homes.



Image courtesy of Ruth Melander

GENERAL HOSPITAL MATERNITY PAVILION

Winnipeg, Manitoba

This provincial and federal government-funded project provided a much-needed expansion to the local healthcare infrastructure, particularly as existing facilities were struggling to cope with the post-war baby boom. Construction began on the \$1.5-million, five-storey, 132-bed facility in 1949. Two architectural firms collaborated on the design: Moody, Moore & Partners and Northwood & Chivers. It was built in the Modernist style, clad in orange-toned buff brick, and there was a nursery on each floor with a total of 162 bassinets. This new hospital provided the local community with maternal health services until 2015, when a new facility was constructed a few blocks away.



Image courtesy of Christian Cassidy and the Winnipeg Architecture Foundation



1920s

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FLOOD, FLEXIBILITY, AND FORESIGHT: THE 1950s

The Winnipeg Flood in 1950 directly and indirectly affected the company, particularly the Winnipeg office. For about a month following the flood, the majority of the Winnipeg organization was employed in flood cleanup and the enormous amount of home restoration required, which created a shortage of skilled tradesmen and delayed work on other ongoing projects. Adverse weather conditions continued into 1951, with heavy rain delaying the company's active projects.

However, Bird Construction thrived throughout the remainder of the decade as growth and the record rate of building activity across the country continued. The company completed almost \$7 million in defence projects in Manitoba in one year alone, built a number of iconic landmarks in Calgary, carried on providing much-needed mass housing, and continued to build bridges, such as the highway bridge at Saskatchewan Landing and the bridge over the Black Sturgeon River in Kenora, Ontario. Bird Construction also undertook a diversification of its work program and, in this decade, built an arena, a museum, a cathedral, and a complete town (Inuvik). Another major project at the time was the construction of five pumping stations on the Interprovincial Pipeline from Edmonton to Lake Superior.



Donald Stuart MacDonald



Image courtesy of the Saskatchewan Provincial Archives

Carpenter Vern Davis on a job site. He joined Bird Construction in 1951 and, by the 1960s, he was the superintendent of the concrete spillway project on the Red River Floodway in Winnipeg, Manitoba. He was inducted into the 25 Year Club in 1976.

The business expanded district office operations and invested in assets that could promote further growth, such as the purchase of a modern concrete plant in Regina in 1955. In conjunction with the Beattie Ramsay Construction Company Limited, with which Bird had established joint ventures, another asphalt plant and base plant were purchased, together with the necessary auxiliary equipment for the operation of both.

On the management side, H.J. Bird stepped down as President of Bird Construction in January of 1953 but retained his position as Chairman of the Board. Donald Stuart MacDonald assumed the role of President.

Mr. MacDonald was a well-known and respected Regina construction executive. After serving in the Royal Air Force during the First World War, he earned his engineering degree from Queen's University in Kingston, Ontario. In addition to being a Director in the Beattie Ramsay Construction Company, he held senior positions with the Regina Builder's Exchange, Saskatchewan Employer's Association, and the Canadian Construction Association. He was a prominent sportsman and had a long association with the Saskatchewan Roughriders and the Regina Pats Hockey Club.

STAMPEDE CORRAL

Calgary, Alberta

This distinctive arena, the largest west of Toronto, was designed by architect J.M. Stevenson and engineer J.A. Scarr, and had a number of pioneering features, including long span steel arches that allowed an unobstructed view of the ice or horse show ring. Bird installed a modern freezing plant that could form ice within a day and its mechanical system featured the first refrigeration system of its kind. When Bird Construction poured the seat deck concrete, it was the biggest and longest concrete pour in Calgary history up to that time.

The \$1.5-million reinforced concrete exhibition and stampede arena was constructed to replace the much-used but outdated Victoria Arena. The new arena could seat 6,650 people and accommodate a further 2,200 standing spectators. The 300-metre long concourse circled the rink and housed concession stands, dressing rooms, and offices. The finished project was equipped to host a range of events, including sporting events such as hockey, skating, boxing and wrestling, as well as horse shows, banquets, bingos, and headline concerts.

Architecturally, the arena is an amalgamation of post-Second World War modern movements, combining elements from the Moderne, International and Art Deco styles, such as the use of stepped back massing, and the modernistic bas-relief carvings: a bucking bronco on the entrance façade and hockey players in the foyer.

At the grand opening in December 1950, members of the public attended a massive western-style house-warming for just 55 cents.

A week later, a Western Hockey League tournament was held between the Calgary Stampeders and Edmonton Flyers, with the home team winning 5-0 in front of a roaring 8,000-strong crowd.

The arena was the home ice for the Calgary Stampeders hockey club, and then the Calgary Flames. It hosted the 1953-1954 Canadian Professional Hockey Championship (which the Calgary Stampeders won), the 1972 World Figure Skating Championships, and the 1988 Winter Olympics figure skating and ice hockey events. Other notable events included performances by Bill Haley's Comets, Duke Ellington, Louis Armstrong, Fats Domino, Joni Mitchell and the Vienna Boys Choir, and numerous rodeo competitions. It has also occasionally hosted the Davis Cup and may be the Canadian tennis team's lucky charm: they hold an all-time record of 5-0 in the Corral.

Proposed names for this iconic landmark included Stampedeorium, The Fort, The Teepee, Rodeodrome, and Stampede Gardens.



Image courtesy of Glenbow Archives (NA-5093-215)

HIGHWAY BRIDGE

Saskatchewan Landing, Saskatchewan

The Saskatchewan Landing Bridge was the longest highway bridge in the province at the time of its construction. The contract was taken by Ramsay Bird and construction began in the spring of 1949 on the north side of the river. There were as many as three draglines on the job, and half of the piers and concrete arches were completed in the first year. In 1951, the concrete decks were poured on the steel spans and the bridge was officially opened on June 20 of that year.

Disaster struck in the spring of 1952 when the three steel spans and one concrete arch were carried away by river ice. Returning to the site, Bird reinforced the remaining arches and elevated the piers by almost three metres. In the 1960s, the bridge level was raised again because of the construction of a dam at Outlook. Only the four river piers remain from the original construction, and they have been extended about nine metres higher. Several new piers and a completely new superstructure make up the present bridge.



Lethbridge



The Lethbridge branch is the centre of the company's extensive operations in southern Alberta. J. O. Langley is branch manager. The present premises were built in 1951 when the firm outgrew its former plant here.

BIRD BUILDING SUPPLIES

From relatively early in the company's history, it became standard practice to stockpile building materials to ensure sufficient supply during projects. This was particularly important when restrictions limited the availability of stock such as timber, for example, during the war years.

In the early 1950s, the company decided to create a retail sales division at each district office that would complement the building construction operations by serving as a supplier to custom home builders. The Bird Building Supplies division did steady business throughout the following few decades at the stores established in Winnipeg, Moose Jaw, Lethbridge, Edmonton, and Calgary. Promotional materials suggested Do-It-Yourself home projects and the stores could provide the necessary materials to complete the job. Bird Building Supplies continued securing materials for projects undertaken by Bird Construction. For example, in the 1950s, this division purchased all the lumber for the Inuvik townsite project and trucked it to Hay River in the Northwest Territories. From there it was barged to Inuvik. In the 1960s,

another branch was opened at Lynn Lake in Manitoba to cater to the growing mining community.

By the 1970s, there was a general decline in business activity, particularly in the residential construction field. There was also a sharp increase in the new "supermarket" style retail outlets, which had a fundamentally different business model and consumer base, but



which nonetheless drew in traditional customers that Bird Building Supplies relied on. The last significant factor was that the nature of the work carried out by Bird Construction had altered dramatically. Large scale contracts and complex industrial builds required materials not carried by Bird Building Supplies, and the previous complementary relationship no longer existed. The decision was made to divest the Bird Building Supplies divisions in certain locations including Lynn Lake, Regina and Calgary, while the Winnipeg and Lethbridge stores would be retained based on the strong specialized client base that still existed in those areas. In 1977, new locations were added in Raymond and Edmonton in Alberta and the Bird Building Supplies division was once again an asset on the company's balance sheet.

In the 1980s, high interest rate levels continued to curtail new housing construction. To offset the decline in sales, a large store was built in Winnipeg to facilitate a shift into the retail and industrial market. New product lines were introduced, and there was significant growth

in retail sales that were buoyed by the strong housing market that flourished in Winnipeg despite the generally depressed economic conditions. In Alberta, the continuing drought and drop in oil prices impacted the market to such an extent that the Edmonton store was closed, followed shortly thereafter by the Lethbridge store.

The Bird Building Supplies division did not fare well during the 1990s, which was attributed to the continued decline in home building activity. As the primary customers for this division were single family home builders, a critical reassessment was needed. The Bird Building Supplies division had been an important part of the history of the company, but with the gradual closing of all the stores except Winnipeg, it had become increasingly difficult to maintain a profitable and competitive enterprise in a marketplace dominated by big box hardware chains. The decision was made to close this division entirely in 1996.



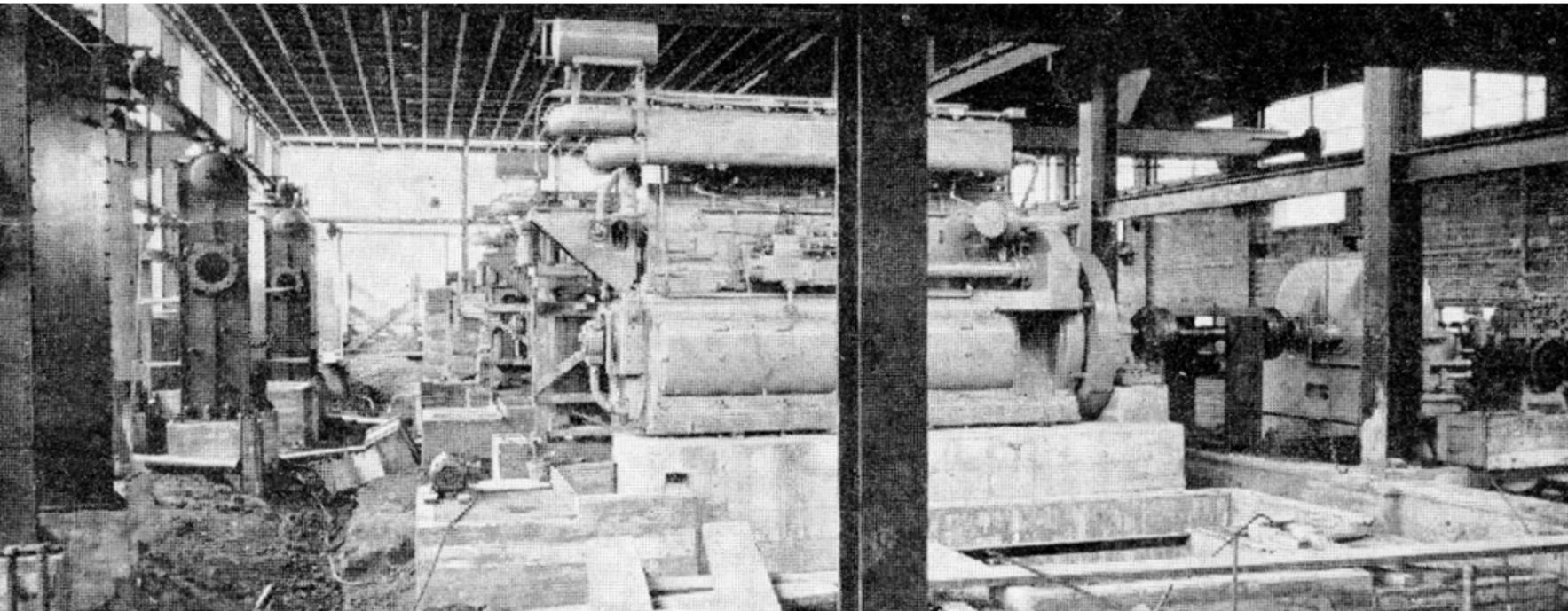
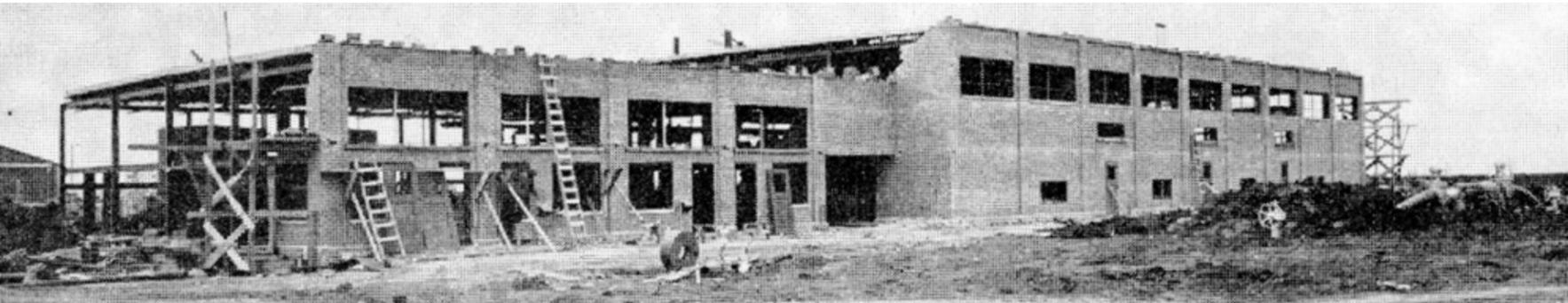
A brochure suggesting home improvement projects.

INTERPROVINCIAL PIPELINE

Edmonton, Alberta to Lake Superior, Wisconsin

The Interprovincial Pipeline stretches 1,813 kilometres from the Redwater oil fields in Alberta to Superior, Wisconsin. It was built in 1950 in just 150 days for under \$90 million. Six pumping stations moved the crude oil at a rate of 100,000 barrels per day. Of the six pumping stations, Bird Construction built five (Edmonton, Kerrobert,

Regina, Cromer, and Gretna), further diversifying its work program. The Interprovincial Pipe Line Company, now known as Enbridge, has been an important long-standing client. Bird recently completed work on the Line 3 Replacement Program, which was the largest project in Enbridge history.

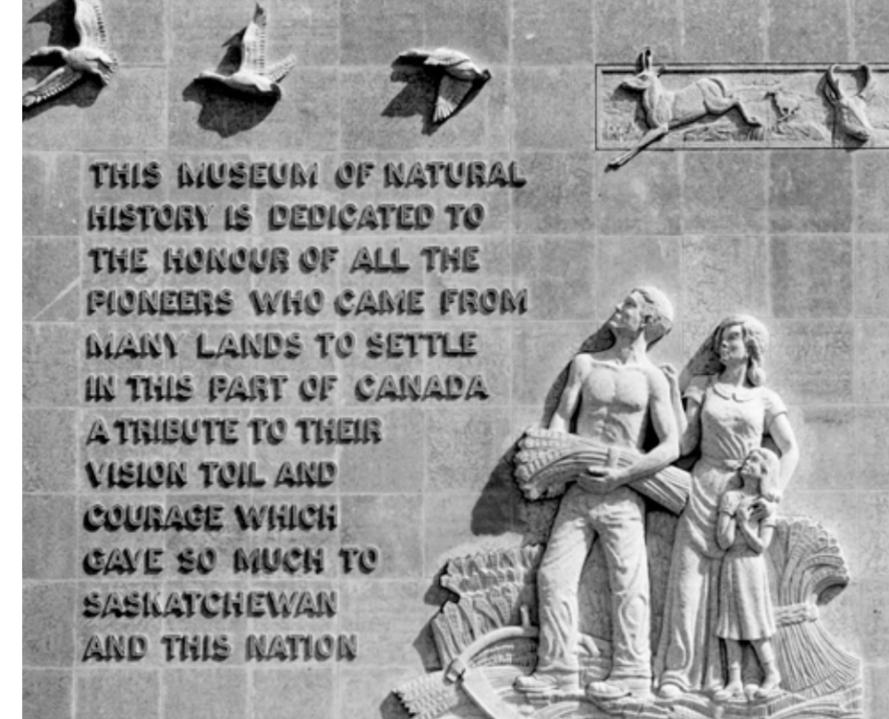


ROYAL SASKATCHEWAN MUSEUM

Regina, Saskatchewan

The construction of this museum in 1953 coincided with the Golden Jubilee project to commemorate Saskatchewan's 50th Anniversary in the confederation. Originally established in 1906, it was the first museum in the province. After moving the collection between several more temporary premises over the years, the Regina Natural History Society and the Saskatchewan Archeological Society successfully lobbied the Government of Saskatchewan to build a permanent home for their artifacts. Situated at the site of the abandoned Chateau Qu'Appelle Hotel development, the new building built by Bird provided over 6,000 square metres of gallery space, as well as storage, offices, laboratories and work areas. It was set back at an angle from the corner of the lot as the removal of the hotel's pilings closer to the street was deemed too expensive to undertake. Instead, a lush manicured garden surrounded the Tyndall stone building and covered the remaining piles.

Provincial architect Edward McCudden chose to reflect the topography of the Prairies by designing a low massing building with a subdued presence. The stark lines of the building were softened by 325 individual relief carvings by sculptor Hubert Garnier in buff Tyndall stone. Garnier's objective was to depict living, breathing Saskatchewan wildlife, although he added the "Wascana mermaid" as a whimsical



touch, much to the displeasure of the architect and the delight of local residents and tourists. There was also a large carving of two pioneers on the front façade of the building to accompany the dedication.

The \$1.5-million museum was opened by Governor-General Vincent Massey on May 16, 1955. Its original title was the Saskatchewan Museum of Natural History, and the name was changed to the Royal Saskatchewan Museum following a royal designation by Queen Elizabeth II in 1993. The museum recently opened the CN T-Rex Gallery to feature the exhibition of Scotty, the largest and most complete T-Rex fossil ever discovered.



RIDEAU TOWERS

Calgary, Alberta

Rideau Towers were the first post-war luxury highrise apartments to be constructed in Calgary. The four six-storey apartment buildings were built in 1955 and have been described by the City of Calgary as a “visually and perceptually significant development illustrating the change in post-WWII urban housing”. It was an example of the International Modern style of architecture as it had a cube-like massing with strong horizontal lines created by continuous balconies and near continuous glazing that created a curtain of glass.

The Rideau Towers were then the tallest buildings to be constructed using the lift slab technique. The floor slabs were poured on the ground and stacked. A common hydraulic pumping system linked 18 jacks, which were used to hoist the floors into place, a process that required meticulous precision to prevent cracks. Among the advantages of this technique was that concrete could be poured under complete

cover from the weather, enabling work to continue through the winter season. It also provided significant savings when compared to using wooden forms, and enabled heating coils and electrical conduit to be installed at the same time as the laying of the reinforcing steel.

This system of construction was not commonly used at the time as it had been developed only a few years prior by Philip Youtz in New York and Thomas Slick in Texas (although it was developed by two independent engineers, it is now known as the Youtz-Slick method). The early adoption of new and innovative approaches in construction was a continuation of the legacy of H.J. Bird and the company’s long-standing commitment to find the best methods and techniques to complete a project on time, on budget, and in the safest manner possible – a hallmark of Bird Construction that continues to this day.^[25]



Image courtesy of the Inventory of Evaluated Historic Resources, Calgary Heritage Authority

25 YEAR CLUB

The dedication of the employees of Bird Construction has been, and continues to be, a key element of the longevity and success of the company. In 1956, founder H.J. Bird wished to recognize the loyalty of staff who persevered with the company during the early years. It was their steadfast fidelity and commitment that had enabled the company to survive the Depression, weather the war years, and thrive in the decades that followed.

Sixteen employees were inducted in the inaugural year, including H.J. Bird. Their names are etched on plaques that hang proudly in the district offices across the country. By the company’s centennial celebrations, an admirable 220 members were part of this extraordinary club. Three people have reached the exceptional milestone of 50 years of service with the company: Richard Turchinetz, Don Eckstein, and Lynn Hanna, pictured below.

The 25 Year Club is a prime example, perhaps the best example, of the culture at Bird Construction. Honouring and recognizing employees for their loyalty and contributions has now become a tradition, and a source of immense pride for the organization and those members inducted into the Club.



The inaugural 25 Year Club



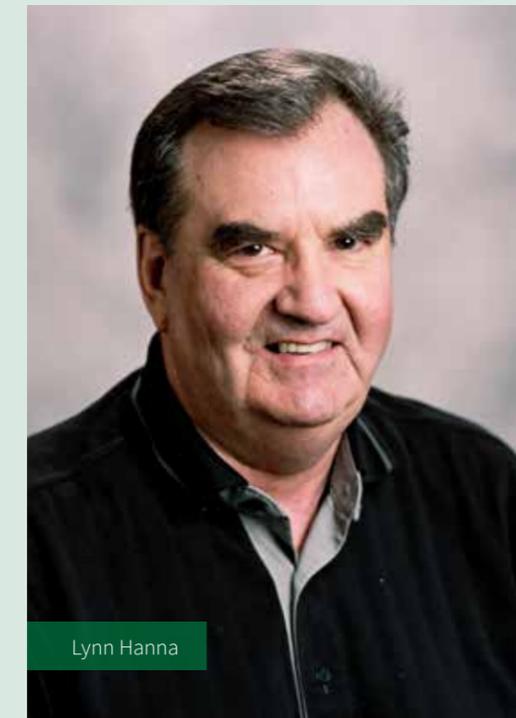
H.J. Bird welcomes new members to the Club.



Richard Turchinetz



Don Eckstein



Lynn Hanna

ST. MARY'S CATHEDRAL OF THE IMMACULATE CONCEPTION OF THE BLESSED VIRGIN MARY Calgary, Alberta

This imposing Gothic Revival cathedral was designed by Maxwell Bates and Alfred W. Hodges, and was situated in the Mission District near the Elbow River. The 36.5-metre tower was visually heightened by the vertical ascending lines employed around the exterior of the structural steel and masonry building. The front façade of cast stone featured Italian bronze doors with deep relief panels, a 5-metre high statue of the Virgin Mary in a niche, and stained-glass windows.

The interior had luxurious finishes: large columns encased in rose terrazzo; a rose marble baptistry; a marble altar rail extending the full width of the church; a Baldacchino marble canopy with mosaic embellishments over the main altar; and a 1.8-metre figure of Jesus Christ in gilt bronze.

Construction of the \$1-million church was completed in February 1957, and the sanctuary consecrated in December by the Bishop of Calgary, the Most Reverend Francis P. Carroll.



Image courtesy of the Inventory of Evaluated Historic Resources, Calgary Heritage Authority

TOWN OF INUVIK Inuvik, Northwest Territories

In 1953, the Canadian government decided that a new town was needed to replace the administrative hamlet of Aklavik. The area was prone to flooding and erosion, had limited space for expansion, and the environmental conditions did not allow for the construction of a sufficiently large airstrip, which was sorely needed for the economic development of the region. The decision on the location of the new town site was made by the Government of Canada together with governmental agencies.

The selected town site had a navigable river with access to wood and gravel, a clean water supply, tree cover, and large flat areas ideal for development. Now known as the gateway to the western Arctic, Inuvik is located 200 kilometres north of the Arctic Circle within the Taiga Forest, just south of the tree line and west of the Arctic Tundra.

Bird Construction was awarded the major public works contract to build several structures in the newly founded town on September 6, 1958. This included 124 federal housing units, the federal building, the Royal Canadian Mounted Police buildings, fire hall, hospital and nurses' residence, school, laundry and wash house, garage, workshop, and morgue, amongst others.

Given the location of the project, there were significant construction challenges to be considered. Complex logistical planning was required to build the town from scratch. This included shipping all required materials and equipment by water and air.

A critical consideration when building on permafrost is preventing thaw. On average, less than a metre of soil sits atop the frozen ground, some of which is solid ice. If these thaw, the ground becomes an unstable slurry that is unable to support any significant load. By building on piles that provided a minimum of a metre of elevation, cold air could circulate around buildings, preventing the heat of the structures from melting the permafrost.

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|---|---|
| 1 | 1. Materials and equipment were barged to the site. |
| 2 | 2. Blasting the permafrost. |
| 3 | 3. Enclosed utility corridors were built throughout the town. |

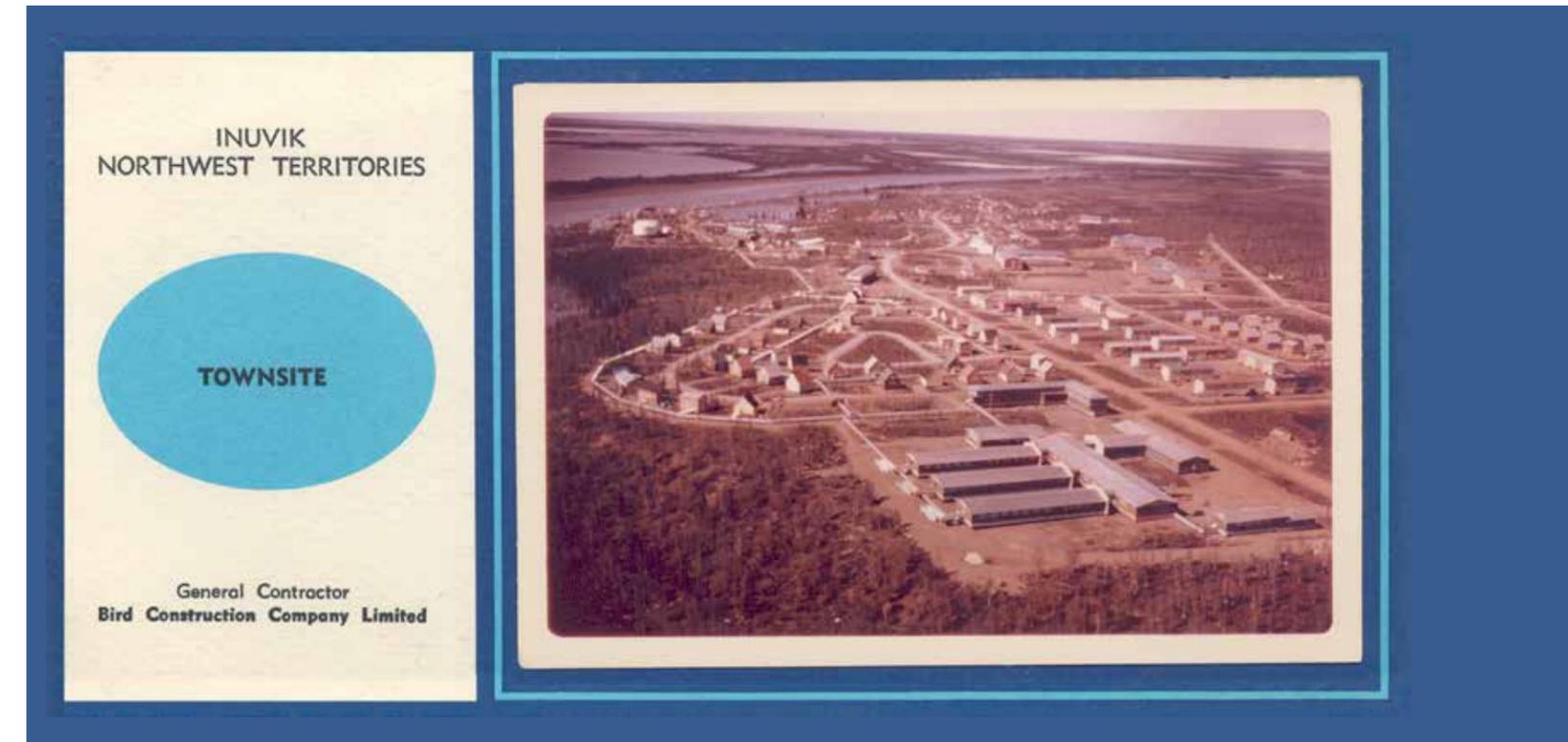


The six-metre long local spruce piles were placed in steam-thawed holes and driven to a depth of 4.6 metres with a 907-kg drop hammer. According to C.B. Crawford and G.H. Johnston of the National Research Council of Canada, the most extensive use of piles for foundations on permafrost in Canada was in Inuvik, with more than 20,000 piles placed during the original construction period. The piles performed well in the extreme conditions, which was attributed to proper planning and site preparation, with all construction operations under strict control in order to disturb the natural terrain as little as possible. In fact, the valuable experience gained during the construction process contributed to the development of design guidelines in the Building Code for the North.

The permafrost also meant that utilities could not be laid underground; instead utilidors were built throughout the town. These enclosed corridors were raised about a metre off the ground and carried water and sewage lines, with the heat emitted from the hot water line keeping the water running in the cold-water line. The utilidors were made of wood, steel, and aluminum.

The town was quickly populated following the completion of the core infrastructure. Petroleum exploration in the region was a major source of employment, and a large proportion of the town's population was employed by the Territorial government and the Canadian Forces Station Inuvik. Inuvik remains the administrative and commercial centre for the western Arctic. It is Canada's largest community north of the Arctic Circle, with a population of over 3,500 people. In the last census, almost two thirds of the Inuvik population identified as Indigenous, primarily Inuvialuit.

The successful completion of this large and multifaceted undertaking was a testament to the depth of skill developed by the company in its first half century. Essentially building a town in one of the world's remotest regions, Bird Construction had to contend with extremes and find workable solutions. While the project was well executed, the company has made great strides in improving its approach to working in Indigenous communities, shifting towards a collaborative and participatory approach that fosters meaningful engagement and is based on the respect and promotion of Indigenous peoples' rights.



Working in extremely cold conditions required some adjustment and ingenuity. All machinery had to be kept running continuously: at temperatures below minus 40, the equipment could not be restarted once it cooled down. An extra set of hand tools were kept in a heated box connected to a small generator and pulled along on a sled. When one set of tools became too cold to use, the extra set was pulled out, allowing work to continue without interruption.

STEVENSON FIELD

Winnipeg, Manitoba

Stevenson Field features two of our top 100 projects: two structural steel arch hangars and the cantilever hangar. Located on Canada's second largest R.C.A.F. station at the time, it was the single largest construction job in western Canada. Bird Construction was awarded the contract by Defence Construction Limited (now known as Defence Construction Canada) to construct this 25-building military base, including: officers' quarters, unit supply building, combined mess halls, barracks, chapel, sewage disposal plant, pumping plant, two steel-arch hangars, bulk oil storage, explosives storage, central heating plant, firehall, mechanical equipment garage, headquarters, navigation instruction school, railway siding, and taxi and landing strips.

These new facilities enabled the transfer of the No. 1 Air Navigation School from Summerside P.E.I. and the 350 mostly Canadian students who studied alongside 650 NATO airmen at the only navigation school in the country. The base also housed the 2,100 permanent detachment and unit personnel.

The \$2-million steel arch hangars featured a plate and angle girder arch that provided an almost 50-metre clear opening along the 67-metre length of the building for the storage of aircraft. At each end of the hangars, six sliding steel doors were supported by the arch rib and ran on rails. They could be opened at a speed of 45 metres per minute, which was twice as fast as any design in use at the time.

The massive cantilever hangar was the largest ever constructed in Canada at that time and could accommodate the biggest planes of the time. Measuring 130 metres by 102 metres, two 45-metre cantilever trusses were anchored to either side of the central concrete frame structure, which was almost 40 metres wide. Vertically lifting telescoping doors were hung at the outer ends of the cantilever truss. This building could be extended to an unlimited length at right angles to the trusses, which enabled it to house aircraft with immense wing spans as the doors could be opened for the full length of the building. This remarkable feat of construction and engineering cost \$3.7 million to build.



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1920s

1930s

1940s

1950s

1960s

1970s

1980s

1990s

2000s

2010s

60s

WIDENING THE SCOPE: THE 1960s

Competition remained fierce within the construction industry as more and more contractors entered the market. As it had done in the past, the company successfully weathered the volatile economic conditions, relying upon the stability of the firm's increasingly diversified operations in terms of both geographical reach and sectors of operation. Major residential developments and commercial and institutional projects were tackled, along with an expansion into industrial work. During this decade, Bird would once again prove itself an innovative force within the Canadian construction industry, adding to its growing legacy of iconic buildings and infrastructure.

Organizationally, a number of changes were instituted. The building supplies operation and district office in Moose Jaw were consolidated in 1960, though both were closed in 1966 due to declining opportunities in the area. However, new prospects were



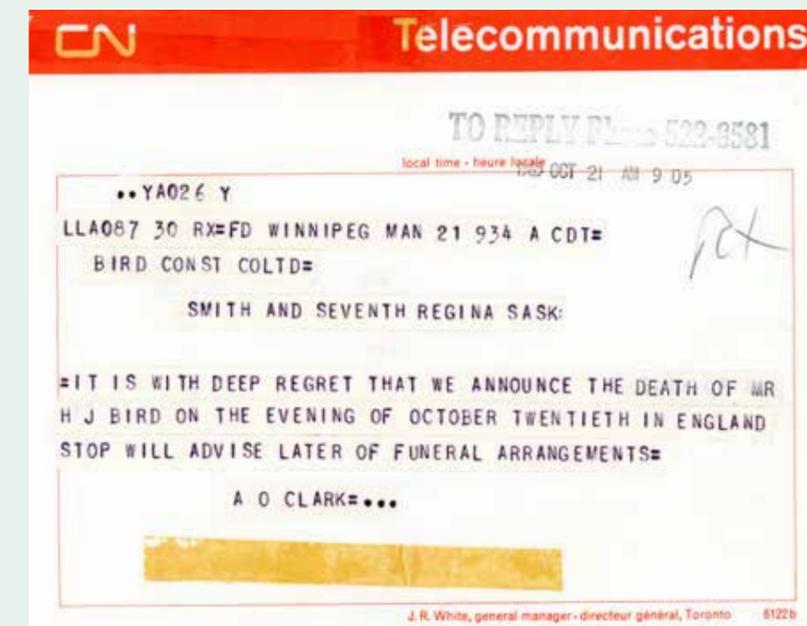
Hubert John Bird

emerging elsewhere in the province, prompting the opening of an office in Saskatoon in 1963. There was also an increasing amount of construction work in the interior of British Columbia following the completion of the Trans-Canada Highway through the Roger's Pass, and an office was subsequently opened in Kamloops in 1963, followed by offices in Vancouver in 1965 and Victoria in 1967.

The office of the president was relocated to Toronto in 1968 with the dual purpose of improving marketing and communication with the head offices of major clients and developing business opportunities in Ontario. Winnipeg maintained the head office functions, and district offices were reorganized into divisions: the Western Division

comprising Victoria, Vancouver, Kamloops, Edmonton, Calgary, and Lethbridge; and the Central Division comprising the district offices in Saskatoon, Regina, Winnipeg, and Port Arthur. Toronto would form the nucleus for a new Eastern Division.

Company founder H.J. Bird passed away on October 21, 1965, while on holiday in England. He was laid to rest at the Anglican Lewknor Parish Church in Oxfordshire, England, near the Chiltern Hills. He was survived by his second wife, Mrs. Myrtle Fox, as well as his two children, Robert and Kathleen. His first wife of 51 years, Violet Stewart, had passed away earlier in 1965.



The telegram conveying the news of Mr. H.J. Bird's death, and a newspaper announcement about the closure of Bird Construction offices on the day of his funeral.



Robert Allen Bird

His son, Robert Allen Bird, who had been appointed General Manager in 1964, was elected to succeed his father as President of the company. D.S. MacDonald became the Chairman of the Board and, after 43 years of service, Vice-President of Operations C.D. Tarr retired, although he would continue as a company director.

The creation of the Industrial and Special Projects Division was a major component of the company's diversification and growth. Operating under the general direction of M.H. Troskey and supported by total company resources, this division provided construction consultancy, project management, engineered construction, special projects, and design-build turnkey services across Canada.

The steady expansion of the company was also facilitated by an employee development program that hired promising young employees without experience and trained them across the ranks. This initiative showed significant results, as there were 500 permanent staff across the country who were truly "Bird" people. This was a critical support for the larger organizational vision to plan, organize, co-ordinate and control all construction activities and resources engaged on site. The company's formula for success had broadened to include both technical competence and a strong construction management orientation.

The application of the principles and techniques of industrial engineering, such as statistical analysis, critical path planning, and other planning, scheduling, and control functions further enabled the company to achieve an increasing volume of work through the effective and rapid completion of individual projects. For example, the Manitoba Institute of Applied Arts complex was running five months ahead of schedule, and the Polo Park Eaton's store was completed on time despite the impacts of a strike. Equipping staff with specialist training, developing the leadership skills of senior personnel, and encouraging the establishment of Construction Technology Courses all formed part of this new company vision.

The management and personnel development strategy would become a central tenet of Bird's organizational plan and would serve the long-term interests of the company well as it continued to enjoy very high staff tenure. The 25 Year Club was already well-established and this people-focused approach ensured that Bird maintained its reputation for developing staff and enabling promotion from within.

Towards the end of the decade, the company had to contend with yet another series of external challenges, including the curtailment of provincial government spending in health and education; severe and prolonged labour strikes; exorbitant and inflationary wage settlements; problematic union labour relations; and general market downturns. As the more turbulent 1970s approached, Bird would once again be required to draw upon the considerable core strengths that had seen it grow and thrive in its first half-century.

MONARCH LIFE BUILDING

Winnipeg, Manitoba

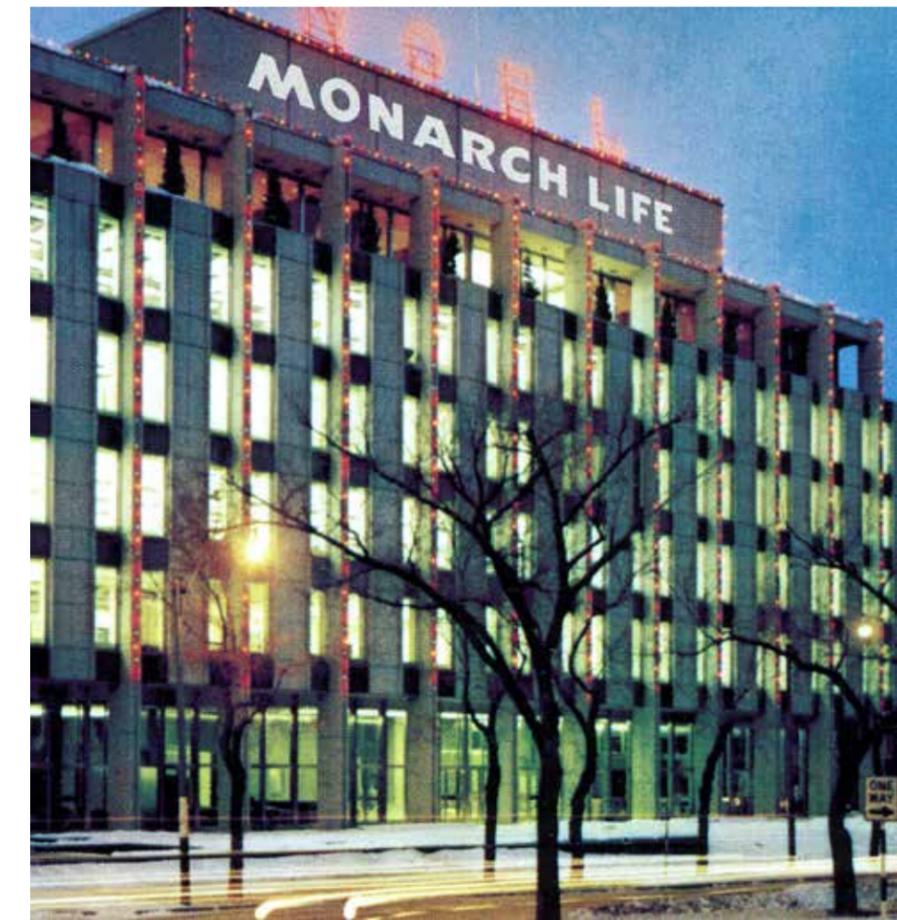
The \$4-million six-storey office building was the latest addition to the prestigious buildings on Broadway Avenue in 1962, forming part of the rapidly developing "financial Wall Street in the West".^[26] Designed by leading Canadian architectural firm Smith, Carter, Searle & Associates, the building rises to 33 metres above street level and is set on a 7,300-square-metre podium base. The structural steel frame supports a façade of quarried granite veneer and glass slit windows in stainless steel frames.

Touted as one of the most modern office buildings ever constructed in western Canada, it was certainly one of the most expensive buildings of its time based on price per square metre. State-of-the-art technology was employed throughout the construction process and the building itself, such as the use of ultrasonic testing of all structural welds (a first in Manitoba) and the installation of a 400-tonne high pressure

air-conditioning system. The structural frame of the building was strengthened with 155 tonnes of reinforcing steel and could withstand winds of up to 320 kilometres per hour.

The building was also somewhat unusual in that it did not employ the traditional masonry wall back-up. Instead, the granite was tied directly to the structural steel with stainless steel anchor bolts and angle iron.

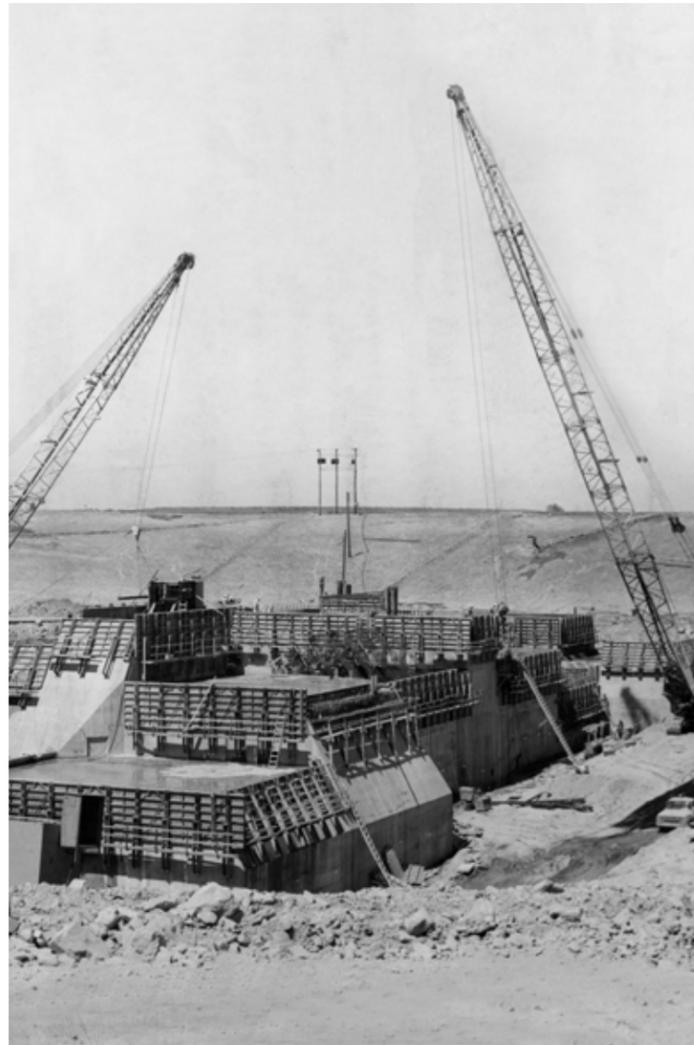
The Monarch Life Building had the largest single use of stainless steel in any building in western Canada at the time (50 tonnes), contained 2,447 cubic metres of concrete, 1,275 tonnes of structural steel, and 1,300 tonnes of granite. During construction, the trades laid 2,000 tonnes of precast concrete flexicore floor slabs, 9,540 metres of piping, and 160 kilometres of electrical wiring.



RED RIVER FLOODWAY GATES

Winnipeg, Manitoba

This immense flood control system was built to protect Winnipeg from the recurring threat of flooding. The location of the city on a flood plain at the confluence of the Assiniboine River and Red River resulted in many devastating floods over the preceding years, including the 1950 flood that also swamped Wildwood Park and prompted this government initiative.



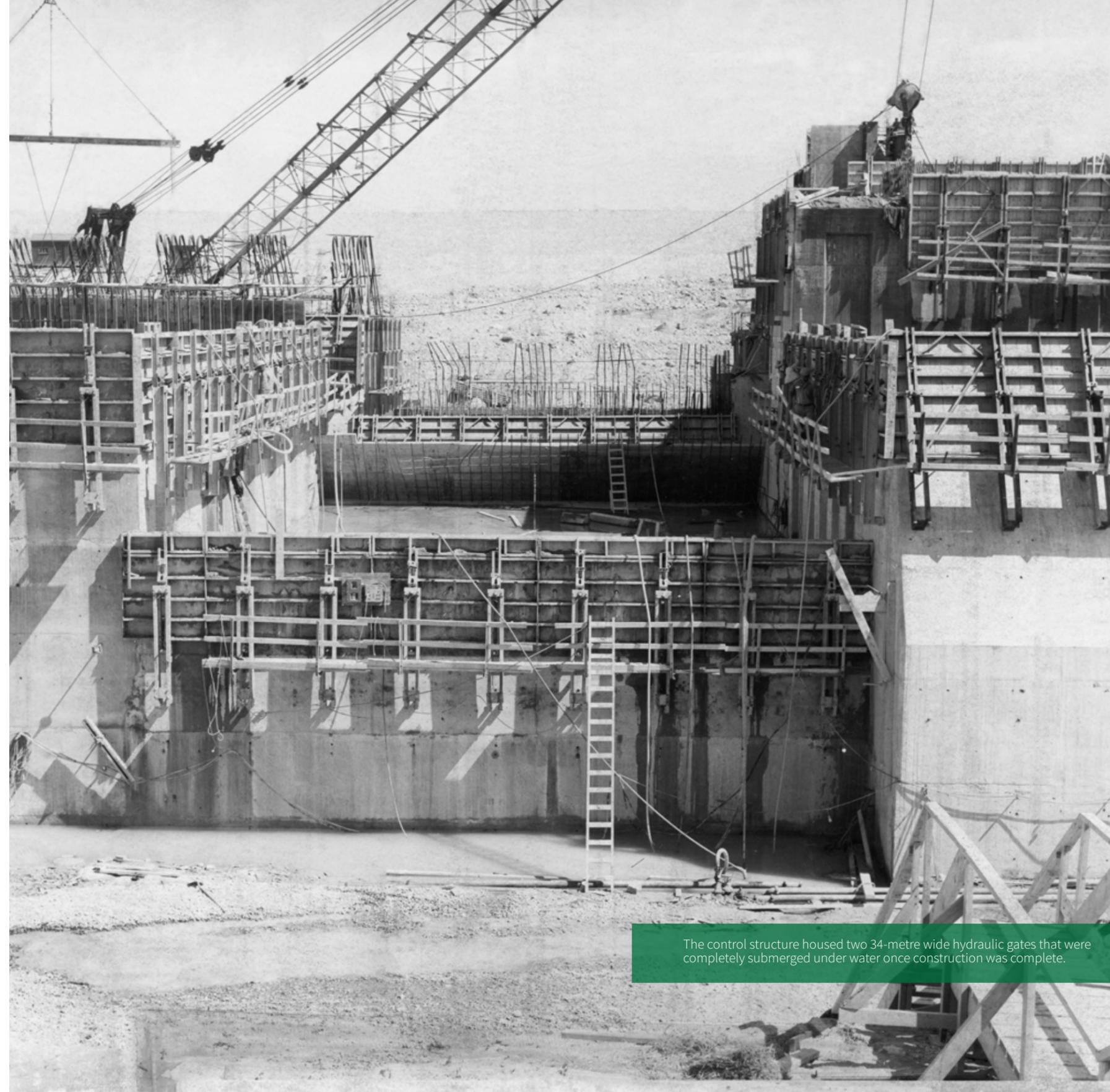
The Red River Floodway was a vast and comprehensive engineering project that diverted excess water around the city. A control structure housing two 34-metre wide hydraulic gates channeled up to 42,670 cubic metres of water per second: 24,380 cubic metres per second flowed through the city in the river channel, and 18,290 cubic metres per second was sent down the floodway.

Bird Construction crews worked around the clock in three shifts to build the control structure and hydraulic floodway gates. Anchored to bedrock almost 14 metres below the bed of the Red River, the structure rose to a height equivalent to a ten-storey building. The 32,300 cubic metres of concrete used in the structure was mixed on-site, ensuring the required rate of production was maintained and facilitating more efficient testing of the mix. Once construction was complete, all that was visible was a bridge with a roadway running along the top. The gates sat about two metres below the water level.

The inlet structure and floodway gates formed one part of the massive floodway system. The channel stretched for 47 kilometres and required the largest excavation project ever undertaken in Canada at the time. The average depth of the channel was ten metres and it was crisscrossed by more than 20 bridges, pipelines, and service crossings.

Completed in 1968, it has been described as “an outstanding engineering achievement in function and impact” and “of exceptional symbolic importance to Canadians”. It was designated as a national historic site in 2000.

The two 100-tonne cranes used during construction were the largest in Manitoba at the time.



The control structure housed two 34-metre wide hydraulic gates that were completely submerged under water once construction was complete.

BURNABY MOUNTAIN CAMPUS AT SIMON FRASER UNIVERSITY

Burnaby, British Columbia

This half-hectare university campus rested on the southern slope of Burnaby Mountain. Six interconnected structures designed by renowned architect Arthur Erickson were erected simultaneously, with the participation of five associate architectural firms and four contractors. The principles of the Modern and West Coast styles were evident in the core design, which moved away from the traditional layout of independent clusters of buildings. Instead it centered the campus around a multi-storey Central Mall, which provided the spine along which all the campus buildings connected. This enabled students to move between faculties and departments without being exposed to the elements. The underlying philosophy was to encourage knowledge transfer through the sharing of spaces and student interaction.

The design embraced concrete in all its forms, and 45,720 cubic metres of poured-in-place concrete and tonnes of precast concrete were used in the six buildings. This theme necessitated chipping and bush-hammering 7,432 square metres of concrete in the quadrangle alone. Bird and other contractors had to pay special attention to the concrete forms as the open columns would highlight any flaws.

Bird Construction was responsible for the academic quadrangle and the library. Other general contractors oversaw the gymnasium, theatre, science complex, and the mall and transportation centre. The academic quadrangle was designed by Zoltan Kiss, and incorporated faculty offices, classrooms, a cafeteria, and lounges. It was the biggest structure on this large site, and 365 metres of steel scaffolding was used to support the cantilevered forms for the overhangs. The base of the building, consisting of the basement, ground floor and mezzanine, formed the platform upon which the U-shaped, 24-metre high, 2-storey concrete and glass structure rested. Texture was added to the concrete through a bush-hammered finish.

The five-storey library, designed by Robert F. Harrison, included a central heating plant, university bookstore, and administrative offices. Nearly 4,600 cubic metres of semi-lightweight concrete were poured to construct the 29,450-square-metre building, which had to be sufficiently strong to withstand earth tremors. Pan-slab construction using the biggest pans seen on the coast to that time was employed. Each pan weighed nearly 70 kilograms and two 30.5-metre Heede hammerhead climbing cranes and hoist winches were required to get them into place.

Construction was completed in 1965, and the sprawling design from a central hub facilitated expansion as the campus grew. Additional buildings followed the same terraced form, hugging the mountain and branching out to accommodate the needs of new generations of university students.^[27,28]



MANITOBA CENTENNIAL COMPLEX PLANETARIUM

Winnipeg, Manitoba

In honour of the centennial celebrations for Canada (1967) and Manitoba (1970), 194 building projects were planned, including the Manitoba Centennial Complex in downtown Winnipeg. It consisted of a concert hall, museum, and planetarium that were linked through walkways and underground corridors.

The 315-seat, copper-sheathed planetarium was the first structure to be completed. The demolition of a city block of buildings included the old Winnipeg Jail, and the excavation entailed the removal of more than 57,000 cubic metres of earth and rubble.

The construction of the dome required 9,000 cubic metres of concrete cast in place through the use of 46,450 square metres of forms. Two sets of forms were used for the dome, each composed of 98 curved glued-laminated ribs. The innovative forming system design of laminated structures supported by scaffolding was subsequently utilized during the construction of other planetariums in Canada.

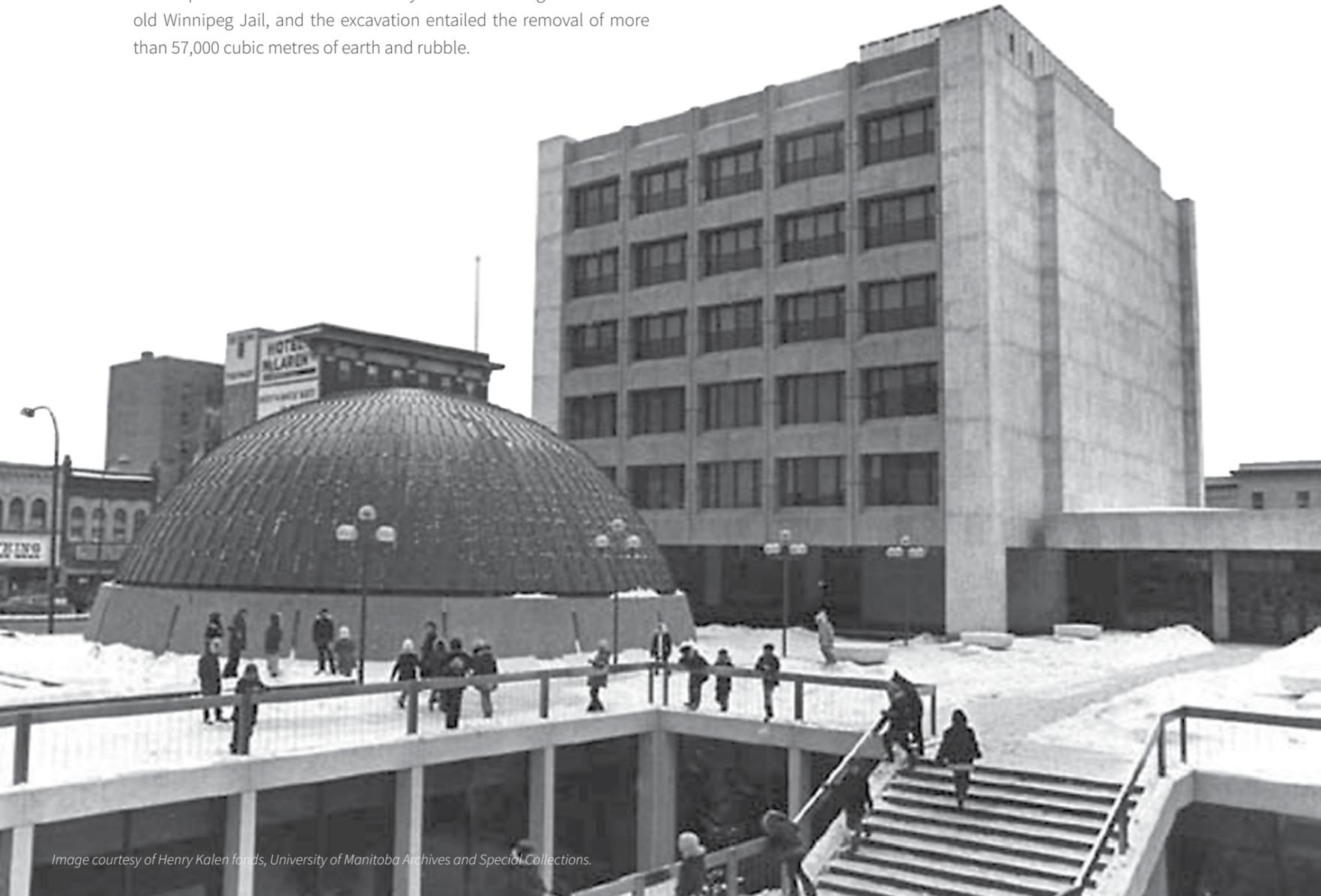


Image courtesy of Henry Kalen fonds, University of Manitoba Archives and Special Collections.

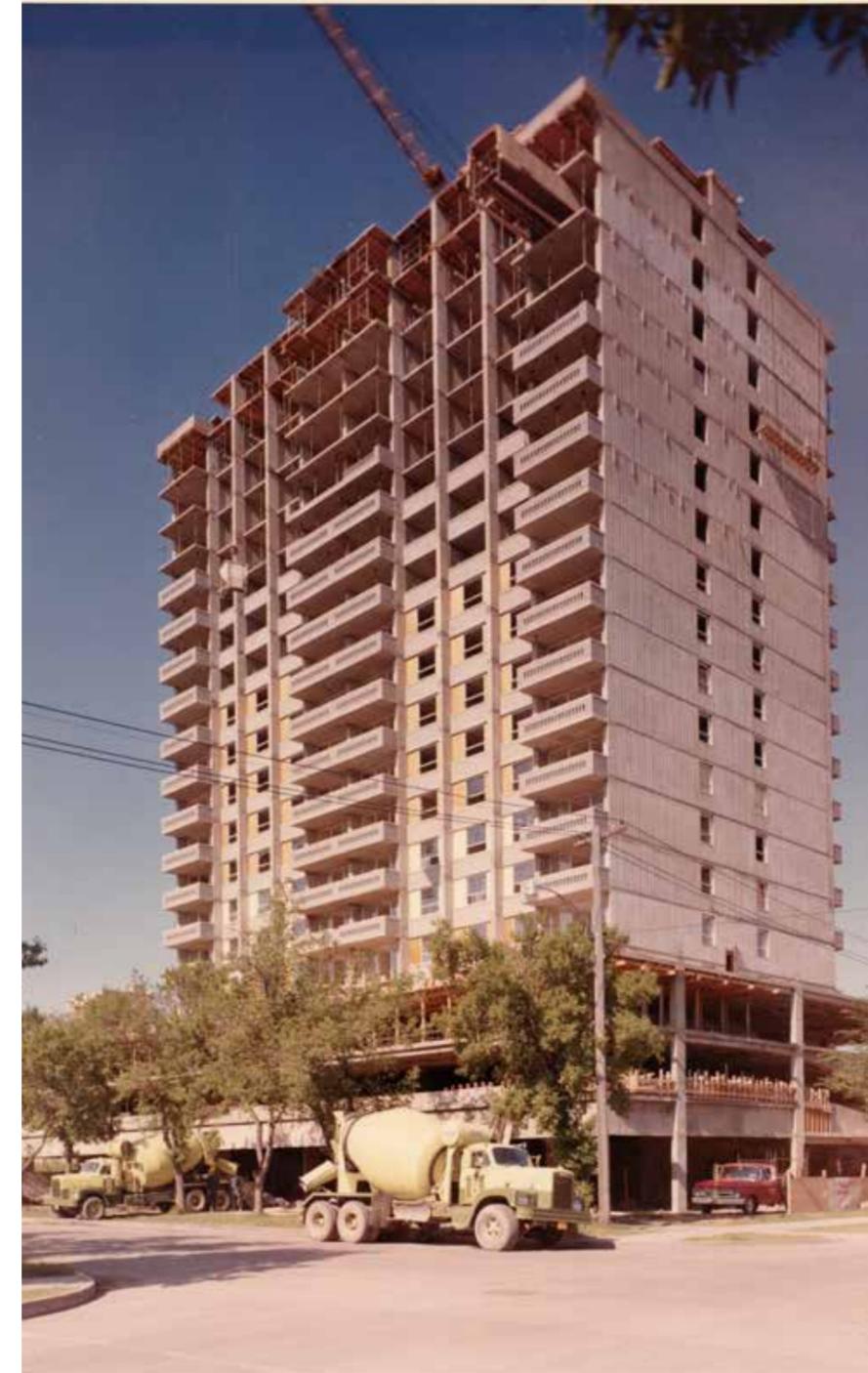
The dome had a 21-metre diameter and was five metres in height. The inside of the dome was a theatre projection screen upon which the sky could be reproduced using slide and movie projections. There was also an auditorium, classrooms, retail space, and display area. On the east end of the site, complex mechanical and electrical services were housed in concrete rooms nine metres below the outside grade, and the hydro-substation and telephone switch room were situated there as well.

Despite severe weather delays throughout its construction, challenging subsurface conditions, a lengthy carpenter's strike in the peak summer months, and contending with an undisclosed live power line running through the work site, the project remained on schedule and the planetarium was officially opened on May 15, 1968.^[29]

MARQUIS TOWER APARTMENTS

Saskatoon, Saskatchewan

The Marquis Tower apartments was the first major highrise building in Saskatoon at the time, built to a height of 74.4 metres. Today, it is still the sixth highest building in the city. The 21-storey Modernist building went up at an astonishing rate in 1966 - a four-day cycle was achieved per floor. It was designed by architect John A. MacDonald of Edmonton.





ALWINSAL POTASH MINE

Lanigan, Saskatchewan

This was one of the first highly specialized industrial projects undertaken by the new Industrial and Special Projects Division. For this major plant expansion, Bird Construction had a \$7.5-million contract covering all site preparation, grading, drainage, and all civil engineering construction work for the new \$50-million mine for Alwinsal Potash of Canada.

Almost all major work was contracted on a unit price basis, a time-saving arrangement that allowed construction to proceed concurrently with design. The mine officially opened in October 1968. Bird returned more than ten years later in 1980 to slip-form construct a new head frame structure at the mine.

55 NASSAU

Winnipeg, Manitoba

The towering 109-metre residential building was the tallest structure in Winnipeg at the time of construction in 1969. Fifty years later, it is still the tallest residential building in the city of Winnipeg, and the fifth tallest structure overall.

Bird Construction built the 39-storey Modernist concrete structure, including underground parking, at the impressive speed of one floor every 3.5 days. This can be partially attributed to the innovative use of the mass production technique of repetitive floor cycles, which is commonly employed in highrise construction today.

In total, 9,050 cubic metres of concrete was poured, and 510,66 tonnes of reinforcing steel placed for this more than 30,000-square-metre building.





1920s

1930s

1940s

1950s

1960s

1970s

1980s

1990s

2000s

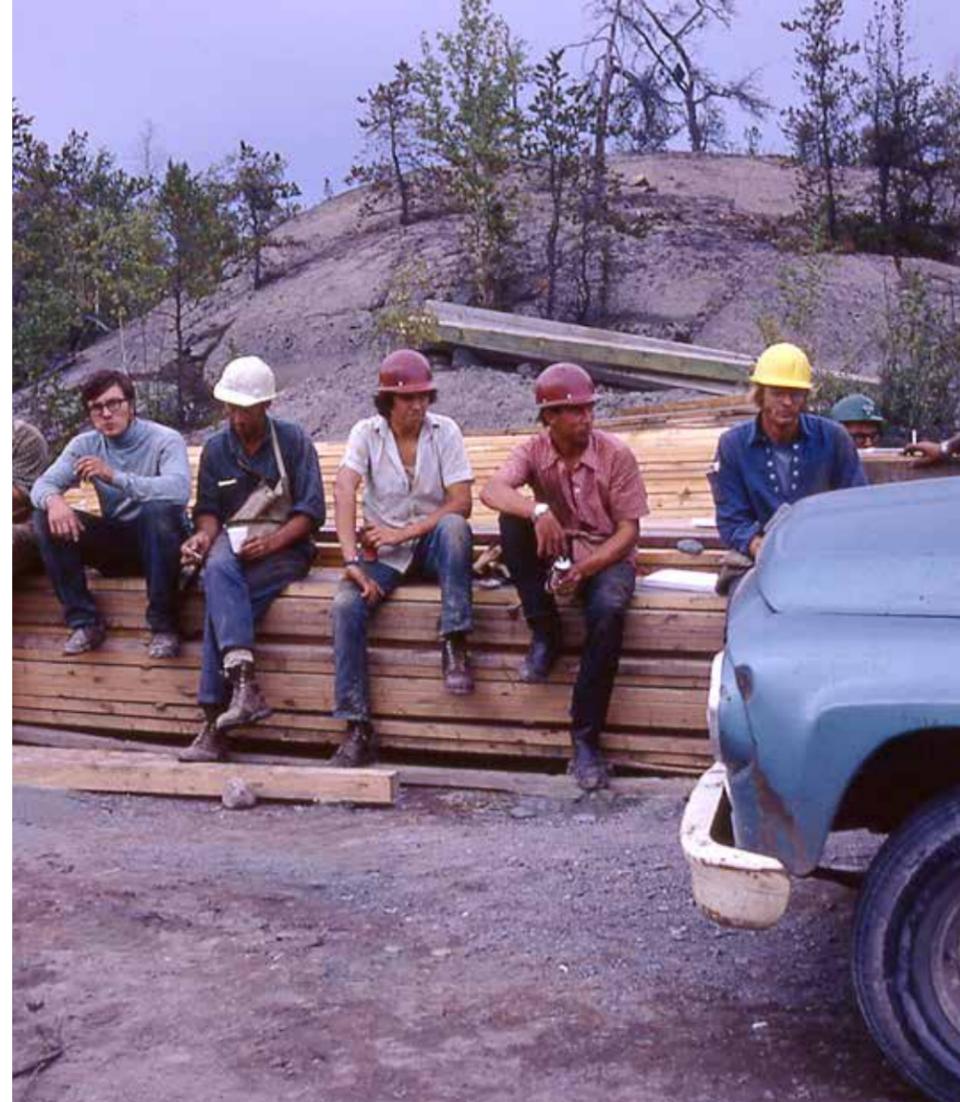
2010s

70s

STRIKES, SCARCITY, AND SCALE: THE 1970s

At the start of the 1970s, government spending and private capital for construction projects began to increase, facilitating a gradual economic recovery. However, some challenges persisted: continued labour instability and recurring strike actions affected new business securement, contract costs, and project completions primarily in three Bird locations: Vancouver, Regina, and Toronto. In 1974, a record number of workdays were lost to labour disputes and this trend did not abate throughout the decade, with 9,000 workdays lost in 1978. Declining construction activity in Victoria, Lethbridge, and Saskatoon led to the permanent closure of these district offices in 1971. By the mid-1970s, the scarcity and escalating cost of petroleum-based materials and steel products caused rapid price inflation.

Despite the challenging economic environment, Bird Construction completed a number of impressive projects in the 1970s, such as the Winnipeg Art Gallery and the Grande Prairie Regional College. Large commercial builds of this era included Fairview Mall in Willowdale, Ontario and Lakeview Square mixed-use facility in Winnipeg, Manitoba. Other significant projects undertaken at the time were the Federal Penitentiary in Mission, British Columbia and the Detention Centre in Etobicoke, Ontario.



Bird's strategy in the latter half of the decade was to increase activity in the industrial sector and to reduce reliance on commercial and residential work. There was also an emphasis on pursuing negotiated contract work, which soon came to represent most of the business secured by the company at the time. These strategies provided better stability and improved company profitability.

The continued focus on the development of internal technical ability in speciality areas such as tilt-up and pre-engineered construction methods, and civil engineering forming in both industrial and building foundations and structures, gave the company a more competitive position within the industry.

COAL SILOS Natal, British Columbia

In 1968, Kaiser Resources discovered an excellent source of coking coal in the Elk Valley and commissioned a massive preparation plant to scale up its operations. Raw coal from the open pits was to be reduced in size at a breaker station, conveyed through a mile-long tunnel and separated for treatment, and then stored in clean coal silos.

The construction of the four huge clean coal silos was one of the first major projects for Bird's Industrial and Special Projects Division. The silos were built using a slipform method, completing a continuous pour of 30 centimetres per hour, working three shifts around the clock. The silos were 21 metres in diameter and approximately 76 metres high, resulting in an equivalent volume of about 11 Olympic-size swimming pools in each silo.

Built as part of the Coal and Mineral Beneficiation International (CAMBI) joint venture, and completed in the early 1970s, this project marked the beginning of a new era in coal mining (and industrial construction) in the Crowsnest Coalfields. It also raised the profile of Bird Construction's technical expertise in complex industrial projects, which would become a major factor in the company's continued growth and success.



FAIRVIEW MALL

Willowdale, Ontario

A major commercial project undertaken by Bird soon after its entry into the Toronto market, this 80,000-square-metre regional shopping centre opened in 1970 with over 100 retail stores, a supermarket, and a movie theatre. The Hudson's Bay Company and the Robert Simpson

Company were the department store anchors for this \$8.2-million development designed by Bregman & Hamann Architects. It was the first multi-level mall in metropolitan Toronto, and only the fourth fully enclosed shopping centre in the city.

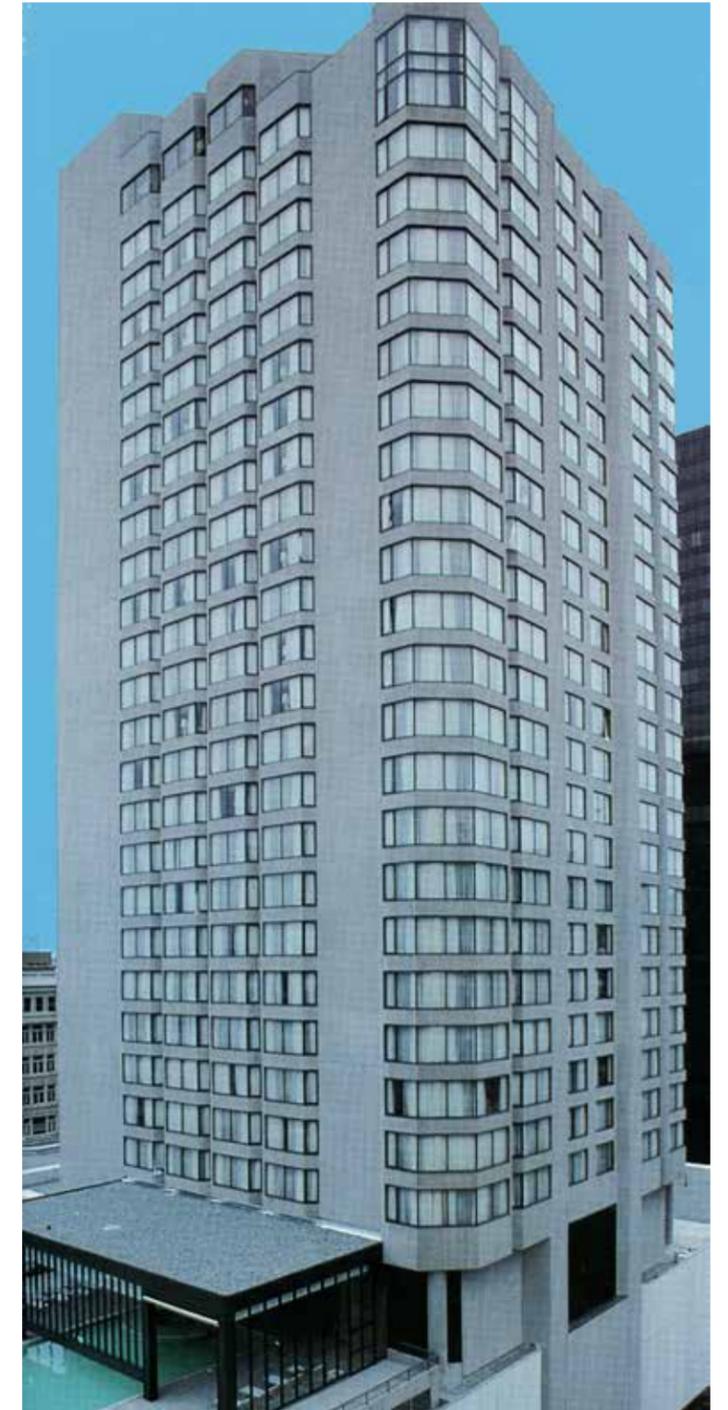


PACIFIC CENTRE PROJECT

Vancouver, British Columbia

This immense 232,300-square-metre complex was completed in a joint venture of Cadillac Fairview, Eaton's, and the Toronto Dominion Bank. The \$100-million project included the Eaton's store, Toronto Dominion Bank Tower, IBM Tower, and Four Seasons Hotel. Covering two blocks of downtown Vancouver, there were four subfloors: two levels accommodated a 120-store retail mall, and two levels provided parking for 1,600 cars. Bird successfully secured each individual construction phase under separate competitive bid processes. Construction commenced in 1971 and was completed in 1973.

The "upside down" method of construction was used, building from the top down to the base, which ensured no interruption to surface traffic. The 46,500-square-metre Eaton's store had six levels and connected to the underground mall through the basement level. The TD Tower, with its glass curtainwall exterior, rose to 30 storeys, as did the IBM Tower. The 430-room Four Seasons Hotel featured a roof garden with a waterfall, canals, and greenery. The high-ceilinged Roof Garden Bar overlooked this restful space.



WINNIPEG ART GALLERY

Winnipeg, Manitoba

The austere and angular Winnipeg Art Gallery, designed by Gustavo da Roza, was the sixth largest civic art gallery in Canada at the time, and housed the world's largest collection of contemporary Inuit art. Built in 1972, its sheer walls of pale Manitoba Tyndall limestone over reinforced concrete created a distinctive wedge shape that was evocative of the rising prow of a ship.

There were eight galleries, a 320-seat auditorium, rooftop garden and restaurant, library, gift shop, and meetings and lecture spaces.

Demonstrating the unique rapport that Bird Construction builds with its clients, the company returned to the site in 2003 to expand the vault storage area, and again in 2009 to safeguard the gallery's collections through the installation of a new complex HVAC system to more precisely control the facility's humidity.^[30]



Image courtesy of Henry Kalen-Tonds, University of Manitoba Archives and Special Collections

GRANDE PRAIRIE REGIONAL COLLEGE

Grande Prairie, Alberta

The characteristically curvilinear Douglas Cardinal design of this college created complex construction challenges. Of the more than one kilometre of enclosing envelope walls, less than 50 metres were straight. In addition, the reconciliation of the structural design with the available construction budget also proved to be a tricky task: cost constraints determined that the building would be of steel and not concrete construction, which would have been an easier method by which to achieve the construction of Cardinal's complex geometric design. Bird's exceptional technical capabilities were therefore integral to the successful execution of this project.

The buildings in this striking design ranged from a single storey to three storeys, blending with the undulating prairie landscape. The interconnected areas for the major wings (physical education, resources centre, bookstore, performing arts, fine arts, laboratories, and administrative offices) flowed along a curved spine on the south bank of the Bear Creek Reservoir. Each section and room had its own unique shape. The unconventional user-defined interior spaces were a hit with students and faculty members when the college opened in 1974, and the checklist system devised by Cardinal that defined the size and special needs of each room would become a standard process in later designs.

The 12,500-square-metre college was the first Douglas Cardinal structure built by Bird, but it would not be the last. Bird staff who have worked with the legendary architect comment that, while some of his planned innovative designs were sometimes challenging to build, Cardinal was always willing to respond with creative solutions when constructability issues arose. Another senior staff member laughingly recalled taking Cardinal to the site to teach the bricklayers how to lay "crooked walls".



Images courtesy of Grande Prairie Regional College

LAKEVIEW SQUARE

Winnipeg, Manitoba

This project is representative of the large-scale commercial and residential developments undertaken by the company during this period. Covering a full city block, this mixed-use downtown development was the largest development of its kind in Winnipeg at the time. It included two 26-storey apartment blocks, a 17-storey Holiday Inn with 411 rooms, three office buildings (two six-storey and one 26-storey), and a multi-level parking garage. At the centre of the square was a 3,250-square-metre Japanese Hayashi garden with reflecting pools, an authentic tea house, and formal flower gardens. A series of interconnected climate-controlled walkways linked the structures via an underground concourse and the skywalk system that extended to the Winnipeg Convention Centre, which was also built by Bird. The \$20-million complex was completed in 1974.



KENSINGTON BUILDING

Winnipeg, Manitoba

After the original 1905 building on this site sustained significant damage in a fire in 1972, Bird Construction was contracted to build a 70-metre highrise in its place. This 17-storey building had two unique attributes: it featured the first reflective glass curtainwall in Winnipeg and included a sidewalk overhang, which was an unusual and controversial feature for the time. The visually striking 4,000-square-metre glass wall wrapped around the building on two sides. Complex spandrel beam systems rebuffed the strong winds in the area. The first tenants took occupancy of the \$5-million building in March 1975.



PHOENIX HOUSE OF LONDON

Toronto, Ontario

This 22-storey downtown office building was constructed on a small footprint between existing structures on University Avenue in Toronto. A 17-storey tower sat atop a five-storey base and three basement levels provided parking and rentable space, with the ground floor used for commercial tenants. Built for the publishing company Phoenix House of London, Ltd., the building covered a total of 25,000 square metres and was completed in 1973.

Contending with the small site surrounded by existing occupied buildings, traffic and pedestrians in close proximity, and numerous bylaws and regulations governing construction activities, required sound project management and detailed planning by Bird.



GROUARD HOUSES

Grouard, Alberta

For this 1977 project in northern Alberta, Bird once again worked with renowned architect Douglas Cardinal. The plan was to construct houses in a Métis settlement using the traditional and economical stacked log method. Short logs of peeled spruce and poplar (45-centimetres long) were stacked to create the circular walls of the homes that had a fireplace at the centre, reflecting the typical ancestral housing model of the community. This construction method can be clearly seen in the image on the right.

A key aspect of the project was to empower the local community with the skills to continue building these types of structures as their needs evolved. Three foremen from Bird Construction trained eight Grouard Métis men, six of whom were heads of households. The 26-week training program was financed by the Canada-Alberta Industrial Training Program.

As the primary building materials could be sourced locally, this construction method was viewed as a new type of low-cost sustainable housing. The logs for the first phase of housing were cut by the community prior to Bird Construction's arrival at the site. However, more wood was required to complete construction, necessitating the addition of a live horse to the payroll. The legendary Lightning Anderson was paid \$2.50 an hour to drag logs out of the bush.

While the project faced many difficulties and delays due to adverse weather conditions and challenges related to offsite servicing in a remote community, it was acknowledged as an innovative approach to the enduring dilemma of building cost-effective, sustainable housing in distant and sometimes inaccessible locations.

The original model built by Douglas Cardinal during the design phase of this project.

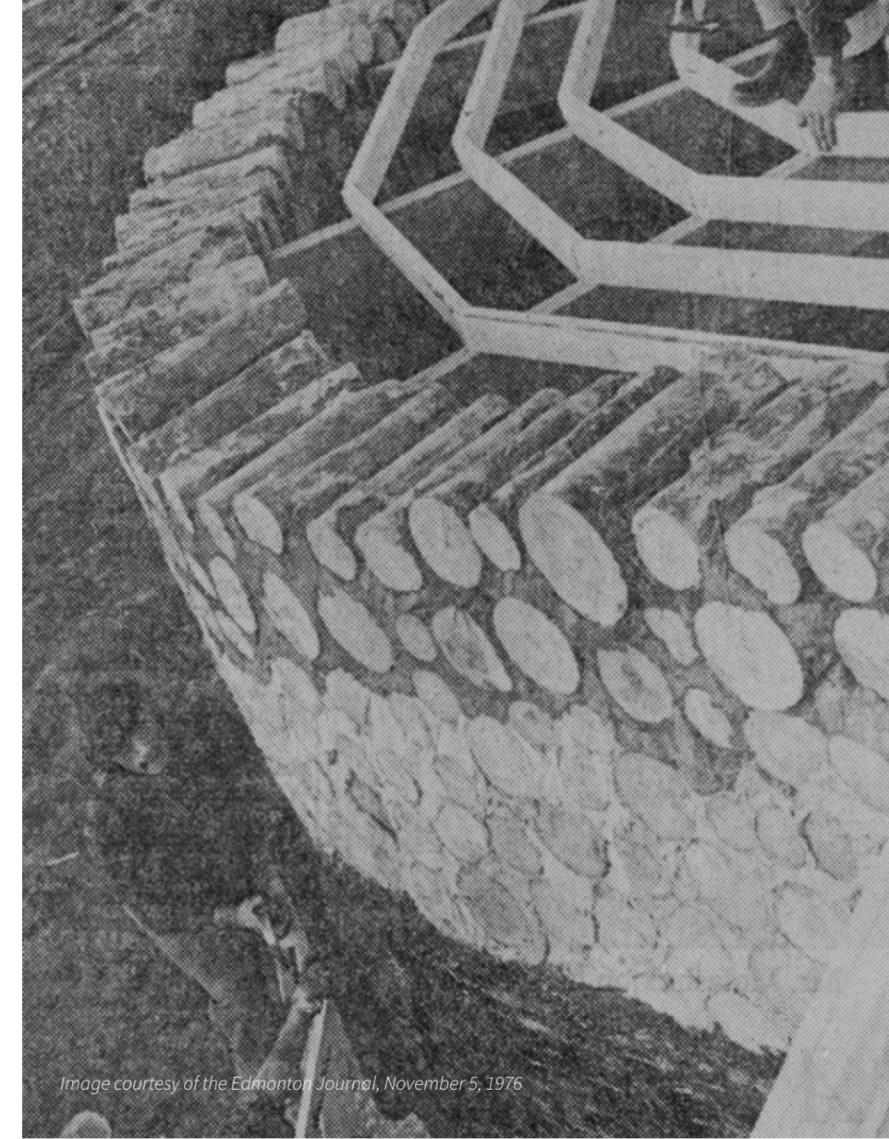


Image courtesy of the Edmonton Journal, November 5, 1976



Image courtesy of Douglas Cardinal

TAYLOR FIELD GRANDSTAND ADDITION

Regina, Saskatchewan

This open-air stadium was the home of the Saskatchewan Roughriders from 1936 until 2016, as well as serving as the home field for the University of Regina Rams. Bird Construction expanded the 5,000-seat stadium in 1978 and 1979 under a construction management contract with the City of Regina.

A new upper deck on the west side of the stadium added 8,300 new seats, and a press box and public facilities were built at this time as well. The natural grass surface was replaced with an artificial turf surface, 3M Tartan Turf, a forerunner of the better-known AstroTurf. The stadium closed in 2016.



TRANSPORT CANADA TRAINING INSTITUTE

Cornwall, Ontario

The Transport Canada Training Institute was situated on 65 acres overlooking the St. Lawrence River. The \$55-million project consisted of six interconnected blocks providing an environment similar to a university campus. The residential block held 628 suites, each with a private bath and study area. The academic research and development areas were used to train transport personnel, including air traffic controllers. These blocks contained equipment such as radar, flight simulators, and meteorological data collection centres that would enable trainees to visualize actual conditions. There was also an extensive recreation and sports complex with a swimming pool, tennis courts, and a baseball diamond. The four-year project was completed in 1979.



REVENUE CANADA WINNIPEG TAXATION CENTRE

Winnipeg, Manitoba

The \$16-million Revenue Canada Winnipeg Taxation Centre was built in a remarkably short period of time for a project of this magnitude. It was designed by Number TEN Architectural Group, an award-winning architecture and interior design firm. Construction began in late 1978, and the centre was already in use when the processing of the 1979 income tax returns began.

Exposed concrete exterior walls with repeating circular motifs contributed to the Brutalist design of the complex. The main building was oriented southward in order to capture the maximum amount of solar energy and shelter the main entrance from the wind. A large pond served as an aesthetically pleasing feature and as a means to deal with the poor drainage in the clay soil in the area. Exploratory landscaping principles were employed that are now commonplace, such as planting “wind sponges” – plants and shrubs of various heights and densities to absorb and disperse the wind.



Image courtesy of the Henry Kalen Fonds, University of Manitoba Archives and the Winnipeg Architecture Foundation



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BLACK MONDAY, BLEAK OUTLOOK, AND BOUNCING BACK: THE 1980s

Due largely to a depressed economy, the 1980s were a particularly challenging decade for Bird and significant organizational changes were therefore required. A key element of the evolving company strategy was the adoption of the unit manager organizational structure at the beginning of 1980. This had the effect of moving decision-making from the central corporate level to the individual district offices, thereby empowering area managers to respond more effectively to the nuanced needs of each market.

The economic conditions that prevailed across the country further intensified in 1982 with the start of the worst recession since the Great Depression. Although the recession was not officially acknowledged until 1990, the Canadian dollar hit an all time low on the international money markets in 1985, and Canadian and global stock prices plummeted on October 19, 1987, known around the world as Black Monday. Interest rates, unemployment, and inflation rates in Canada were higher than in the United States, and the Canadian minerals and manufacturing sectors were hit particularly hard: more than half of all miners in the country were unemployed.



Despite the widespread challenges the country faced in the 1980s, there were nonetheless a few optimistic moments in the decade: “O Canada” was officially adopted as Canada’s national anthem on June 27, 1980; Marc Garneau became the first Canadian in space in 1984; and Calgary hosted the 1988 Winter Olympics.

Then, as an economic recovery began to gain traction in parts of the country, the western and Atlantic provinces remained depressed, largely due to the lower prices for oil and natural resources.

In addition, strikes and skills shortages remained a concern. There was a five-and-a-half-month-long strike in Saskatchewan in 1982 that significantly impacted company operations in the area, and strikes were also encountered on projects in British Columbia, Alberta, and Ontario.

While Bird continued to participate in the Vancouver market, including the construction of the Expo 86 Ontario Pavilion and Russia Pavilion and the \$15-million pre-trial services building adjacent to the Vancouver Courthouse, labour issues became an increasing challenge to traditional construction operations in British Columbia, as the highly unionized sector came under increasing threat from non-union competition. Legislative restrictions made it increasingly difficult for established companies like Bird to compete and, in 1986, Bird made the difficult decision to close the Vancouver district office.

Further organizational changes were required to compensate for the challenging market conditions. As such, the Calgary and Edmonton operations were combined into a single district office covering the entire Alberta market, with a business securement and operational

core group remaining in the Edmonton area while the bulk of the administrative functions were shifted to the Calgary office. The construction of the Provincial Government Building and Courthouse in Grande Prairie, the Edmonton Space Sciences Centre, and the Red Deer Remand Centre were important projects for the company during these challenging times in Alberta.

While the decade had also started with Manitoba and Saskatchewan operating under-capacity, by the mid-1980s, the Manitoba market started improving and more than 30 per cent of the company’s volume of work was executed in this province. Bird continued to help shape the cultural landscape in Winnipeg with the construction of the Royal Winnipeg Ballet in 1987.

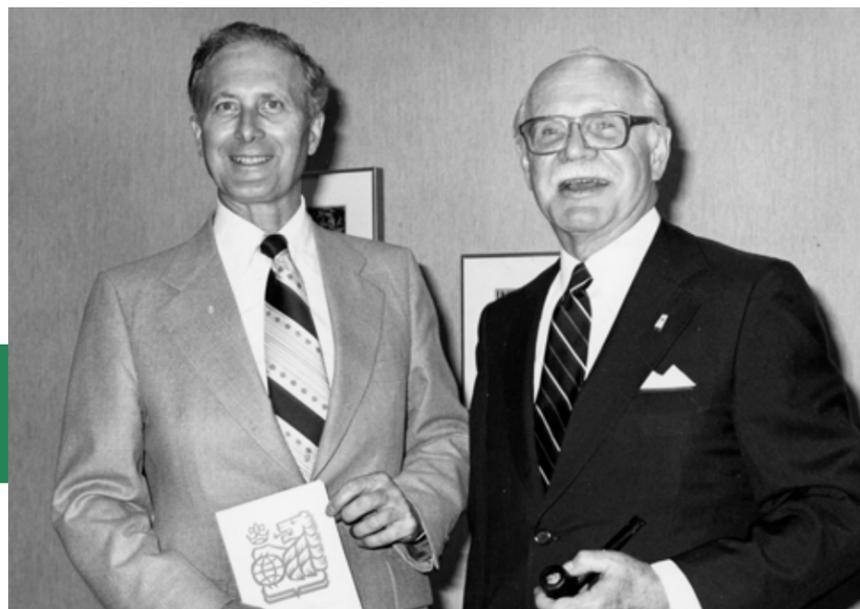
By the end of the decade, the overall economic situation appeared to be improving despite a few markets still experiencing difficulties due to poor economic conditions. The company was now operating under the leadership of Paul Charette, who was appointed President and Chief Operating Officer in 1988. R.A. Bird continued in the roles of Chairman and Chief Executive Officer until 1991. Having come through the most difficult and challenging decade in the company’s history, Bird Construction was on a strong footing heading into the nineties.

ROYAL BANK OF CANADA REGIONAL HEADQUARTERS BUILDING Regina, Saskatchewan

First known as the “Bank of the Seven Merchants” when it was founded in 1864, the Royal Bank of Canada has grown from a single branch in Halifax to the largest Canadian bank and the sixth largest bank in North America. When the time came to build its new regional office building in Regina’s downtown core, Bird Construction was contracted to tackle the high profile \$14-million project. Construction began in April 1978 and the project was completed by April 1980.

Situated on 2,032 square metres of prime downtown land, the nine-storey office building designed by Wiens and Associates featured an attractive aluminium curtain wall exterior with solar reflective glass and slabs of white granite weighing over 100 kilograms each.

The modern banking facility featured innovations such as the latest energy conservation systems of the time, new modular on-line computer equipment, and a revolutionary interior sensor system that monitored and maintained interior climate settings and was interlocked with the fire alert system. Another element that is commonplace today but which was rarer at the time was the emphasis on accessibility, particularly for people with disabilities and the elderly. For example, the building incorporated open areas, specially designed washrooms, and appropriately situated elevator button panels.



R.A. Bird with Mr. W. Earle McLaughlin, Chairman of the Board of the Royal Bank of Canada, at the opening ceremony of the regional headquarters building in Regina.

GRANDE PRAIRIE PROVINCIAL BUILDING AND COURT HOUSE

Grande Prairie, Alberta

The \$18.3-million steel and concrete complex featured two distinct buildings connected by a 16-metre bridge covered with an acrylic dome. The two buildings together contained a total of 750 tonnes of structural steel.

The three-storey Provincial Building covered 9,000 square metres and accommodated 20 government agencies. A structural steel frame tied together five concrete cores and contained 2,400 cubic metres of concrete. The floor and roof slabs were poured in the coldest months of December and January, and placed before the insulated precast sandwich panels were installed. Each successive layer was set slightly inward to create a tiered effect, which was reinforced by multiple retaining walls with three-inch-deep sandblasted concrete ribs. This motif was echoed in the ribbed precast panels that clad the circular

cast-in-place concrete stair shafts. The 5,400-square-metre Court House had a total of four courtrooms, doubling the capacity of the previous building.

The extensive landscaping cost \$2 million and included a pool with a waterfall flowing into a pond that extended between the buildings. Pedestrian trails connected the Provincial Building and Court House with the adjacent Jubilee Park.

This showpiece building was already ahead of schedule by October of 1980. Bird Construction leveraged long-standing trade relations to expedite the fast-tracked schedule, delivering the project in April 1982 three months earlier than anticipated. At the time, this was the largest fixed tender project undertaken by the Edmonton district office.





ST. ALBERT PLACE CITY HALL

St. Albert, Alberta

As the needs of this burgeoning city outgrew the capacity of its 1961 City Hall, a new 2.5-acre site was chosen on the south bank of the Sturgeon River for a multi-purpose recreation and cultural centre. The \$19.5-million development was envisioned as a place where government and the community could come together, and a number of facilities were incorporated into the design. In addition to the city hall and council chambers, a 530-seat theatre would be run by the City as part of a joint use program with community schools. The new library would be seven times the size of the existing premises used at the time. A museum and a facility for local craftspeople and artists would also be included.

The building was immediately identifiable as a Douglas Cardinal design, with its curving lines echoing the flowing motion of the river

it overlooked. It was also evident in the council chambers which featured exposed brickwork and rounded corners. There was much excitement at the time about the use of computers in the design process: the 512-kilobyte Hewlett-Packard cost \$250,000 and was the size of a refrigerator.

The first sod was turned in December 1981, and the project was completed two years later despite some challenging conditions. For example, the site was situated above an underground river that created very silty soil conditions. A “pin cushion” foundation of 600 steel piles, pushed into depths of up to 30 metres, provided the base for the reinforced concrete “raft” on which the 12,370-square-metre building was constructed.

St. Albert Place was declared a municipal historic resource in 2009, a rare achievement as few 25-year-old buildings are considered to be historically significant. The centre remains a popular public space as the services on offer continue to evolve in response to community needs.^[31,32]

EDMONTON SPACE SCIENCES CENTRE

Edmonton, Alberta

The futuristic \$8-million Edmonton Space Sciences Centre was built as a flagship project to celebrate the Province of Alberta’s 75th birthday in 1980. The spectacular structure was clearly visible from all angles due to its strategic placement in its surrounding park setting. The prefinished steel-clad building featured a number of striking design elements, as one would expect from architect Douglas Cardinal.

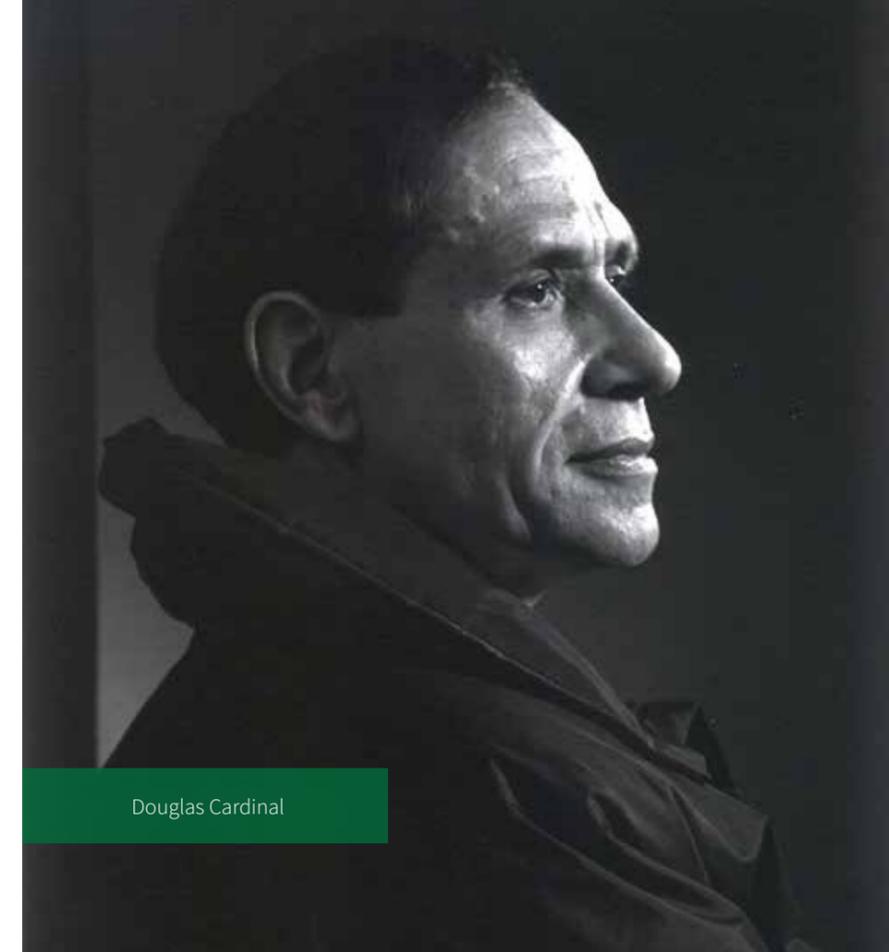
Delicate fins extended outwards from the central structure, while the dramatic angled black roof was designed to accommodate solar panels for a future energy display. The 4,650-square-metre facility included a planetarium theatre, Imax theatre with a 195-square-metre curved screen, space museum, exhibit areas, bookstore, restaurant,

and offices for the Space Science Foundation. The planetarium theatre had a retractable star projector mounted on a hydraulic cylinder that allowed it to be dropped below the floor of the theatre, as well as a 23-metre domed star screen.

The project was completed in just ten months from the development of the design and working drawings to the construction of the building framework. This was achieved through fast track scheduling, which allowed the design and construction periods to overlap. This fast-paced schedule resulted in Bird quickly progressing through construction that, at the time, led to the architects providing hand-drawn solutions on-site that would then be photocopied and distributed. The success of the project was attributed to Bird’s close collaborative teamwork with the architect, Douglas Cardinal, members of the Space Science Foundation, and city officials. The centre opened in 1984.



Image courtesy of WinterforceMedia



Douglas Cardinal

MESSAGE FROM DOUGLAS CARDINAL

Bird Construction was the general contractor for a number of my buildings that received many awards and public recognition in serving the Alberta community. These buildings were very innovative and required a great deal of creativity, not only from my firm, but from Bird Construction as well. It was the leadership, innovation, creativity, flexibility and, indeed, brilliance of their professional staff that brought these projects, the dreams of our professional team, into reality. I have the highest respect for all of Bird's staff that I've met and worked with, in particular, R. A. Bird, who I met on numerous occasions. I am glad to know that Bird is still successfully serving the people of Canada and that they have retained their reputation as one of the best contractors in Canada. I wish them a very happy 100th anniversary and all the best in all their future endeavours.

EXPO 86: ONTARIO AND RUSSIA PAVILIONS

Vancouver, British Columbia

The World Exposition on Transportation and Communication (Expo 86) was a World's Fair held in Vancouver, British Columbia, from May 2 to October 13, 1986. It coincided with Vancouver's centennial celebrations and featured 65 pavilions across a 173-acre site. Each pavilion represented a participating country, province, territory, state, or company. The construction management contract for the Ontario and Russian Pavilions was awarded to Bird Construction.

The \$11-million Ontario Pavilion was located at the east end of the False Creek site, near the main Expo gate. The Zeidler Roberts Partnership served as the architects for the pavilion, while another Ontario architect, Michael Miller, designed the exhibits. The concrete and steel pavilion had four levels built on a concrete platform supported by wood piles. Half of the structure extended over the water, and the

combined exhibition space, amphitheatre, wine garden, and restaurant covered 7,600 square metres. The pavilion could accommodate 4,000 people at a time, and the garden amphitheatre seated 700 and offered spectacular views of the nightly firework display. The roof of the amphitheatre was supported by a tensioned, structural skeleton covered with translucent plastic.

Ontario invested an estimated \$30 million in the pavilion and its exhibits, including a multi-image three-dimensional film show and a sculpture celebrating transportation and communication devices made in Ontario, such as the Canadarm space tool made by Spar Aerospace. The Shuttle Remote Manipulator System was used to deploy, repair, and capture satellites and equipment, as well as assisting astronauts during extravehicular activities.



Image courtesy of Allan Johnstone

The Russia Pavilion was the most popular attraction at Expo 86, drawing 35,000 visitors a day. The 3,000-square-metre space-themed pavilion had a unique roof design that eliminated the need for vertical support columns, thereby maximizing usable floor space. A 19-metre long electric map featured current and historical information about transportation systems in the then U.S.S.R. and the display operated jointly with TV monitors and electric boards elsewhere in the pavilion. An eight-metre high sculpture paid tribute to Yuri Gagarin, the first man in space, and commemorated the 25th anniversary of his historic space flight.

The biggest draw was almost certainly the 33-metre long duplicate of the Soyuz-Saluyt-Progress space station. After the Expo, the Russia Pavilion was dismantled and reassembled at the Kruger Products Paper Plant in New Westminster, British Columbia, to house machinery.



Images courtesy of Ernie H. Reksten fonds/City of Vancouver Archives



ROYAL WINNIPEG BALLET

Winnipeg, Manitoba

Construction of this \$10.2-million four-storey building began in 1986 on a prime downtown site and was completed in 1987. It was the largest arts project in the city of Winnipeg in almost two decades.

A glassed atrium running the length of the building provided the central core around which all the studios and offices were clustered. Each of the ten studios featured ceilings that were over 6-metres high and were situated on the east side of the building to capture natural light through the roof skylight, central atrium, and studio windows.

The main studio was over 370 square metres and served as a 120-seat performance studio. The studio floors were designed and constructed in consultation with the ballet company's dancers to achieve the optimal balance between softness and solidity. An "anchor sleeper" floating floor was installed with layers of thick rubber padding, fir flats in a criss-cross arrangement, solid core plywood, and sheet linoleum on the top layer for a smooth, non-slip surface.

RED DEER REMAND CENTRE

Red Deer, Alberta

The \$14-million multi-purpose correctional facility accommodated 96 inmates of both sexes, with 12 beds on a separate floor for young offenders. In addition to housing detention inmates awaiting their first court appearances and remand inmates awaiting subsequent court appearances, the three-and-a-half storey centre also held prisoners serving short-term sentences.

Built in 18 months on the site of the old downtown liquor store, it was conveniently located beside the Provincial Court House. This helped to address security concerns when transporting prisoners, as well as reducing costs. Safety issues added to the complexity of this technical build, which was completed in 1987.





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REJUVENATION AFTER RECESSION: THE 1990s

Still feeling the effects of the global economic recession that had roiled the 1980s, the early years of the new decade continued to be a struggle for the Canadian construction industry as major capital expenditures were put on hold by the private sector, and governments were unable to stimulate the economy due to severe budget constraints. Central Ontario was hit particularly hard, and the Bird Toronto operation experienced a severe decline in sales. Management reacted decisively by reducing operating costs and transferring surplus resources to other areas of the company. In 1992, in response to the intense competition in the market, the Toronto district office focused on the pursuit of publicly tendered work and expanded private contract work for existing clients.

The market in Saskatchewan had been poor for years as the government tried to cope with heavy farming losses, high debt, a falling credit rating, and low international prices for commodities. Very few funds were being made available for construction activities. A number of general contractors in the province ceased operations as a result of insolvency or lack of business, while many others dramatically scaled down their operations. Bird Construction was not immune to the challenging economic circumstances: the Regina

district office was hampered by the lack of capital spending due to the Provincial Government's severe fiscal problems, and the decision was made to close the district office in 1993. The last major project undertaken by this district office was the Regina Science Centre.

A bright spot in the early days of the decade was Alberta as the provincial economy appeared to be weathering the storm. Weakening markets in oil and gas soon had a dampening effect after 1992 however, and cutbacks in this industry curtailed development in the construction industry.

During this period, British Columbia was experiencing some growth due to development activity and, although competition was heavy, there was considerable opportunity in the market with a significant volume of work. Bird thus re-established its presence in the Vancouver market by 1990 through a district office under the leadership of Paul Raboud. The district office focused on commercial, retail, and highrise residential projects and, by 1993, it had a healthy volume of work, while other district offices were still suffering the effects of the recession. Despite the difficult economic climate, in 1993 the company reported its sixth consecutive profitable year.

By the middle of the decade, economic growth across Canada picked up again as interest rates stabilized and consumer and business confidence returned. Bird Construction reported a significant increase in revenue as a result of growth in activity across all district offices, mostly in the commercial and retail sectors. Increased volume, higher margins, and controlled overhead expenses all contributed to improved profitability for the company. Toronto completed several fast-track retail projects, while Winnipeg benefitted from a more selective securement program. Edmonton continued to show excellent profitability from industrial projects, and Vancouver remained the most active district office despite a general decline in marketplace activity.

The expansion of "big box" retailers was anticipated to be a competitive and difficult market sector, but proved to be an essential component of the company's success in the 1990s, as the company established strong relationships with Walmart and Toys R Us.

For the remainder of the nineties, the company continually exceeded its own profitability and volume records. As the President of the company, Paul Charette, noted in his 1999 Annual Report, "The results exemplify what can be achieved when staff is committed to the success of the company. Although the economy favoured us, our staff was able to leverage the opportunities that presented themselves and with imagination and skill, created new opportunities for the company that helped build on the pattern of success of recent years".

As the decade drew to a close, a number of divisions were showing strong results, particularly Edmonton and Calgary. The main concern moving into the year 2000 was the shortage of skilled tradespeople, which was likely to limit growth in the construction sector. Large industrial projects in Fort McMurray, Cold Lake, and Joffre absorbed many of the available construction tradespeople in Alberta, making it difficult to secure capable staff for commercial and institutional construction work in that market.



Seattle Central Community College Fine Arts Building renovation, Seattle, Washington



Johnson Farm Dinosaur Track Enclosure, St. George, Utah

Midway through 1998, Bird Construction established its first district office in the United States, supported by the Vancouver district office. The Seattle office secured work primarily based on relationships established during the “big box” store expansions into Canada, such as with Toys R Us and Walmart.

A small satellite office was established in New York the following year to coordinate work on a series of Frank’s Nurseries lawn and garden retail stores in New Jersey and Virginia, amongst other projects. A district office was also launched in Salt Lake City, Utah that secured a number of projects including border crossings, health centres, and shopping malls. Most of the work undertaken in the USA was of a

commercial nature, such as the Multiplex Theatre for United Artists, and retail outlets for Cabela’s, Home Depot, Best Buy, and Safeway. Institutional work included the Seattle Central Community College Fine Arts Building renovation, Snoqualmie Fire Station, and the construction of the Seattle Air Traffic Control Tower.

A number of border crossings were also built. Some military contracts were completed, such as building hangars, recreation centres, aircrew water survival training facilities, and commissaries. However, after about a decade, the decision was made to focus resources within the vast Canadian market, and the satellite American offices were closed.



Sault Ste. Marie Border Crossing, Michigan



Sault Ste. Marie Border Crossing, Michigan



Snoqualmie Fire Station, Snoqualmie, Washington



AL-PAC PULP MILL Athabasca, Alberta

The Alberta Pacific Forest Industries pulp mill in Athabasca was the largest pulp mill in North America at the time, and the first in a new generation of mills to meet higher environmental standards. The industry-leading waste treatment facility reduced the total amount of organic material in its effluent, and enough electrical energy was generated through the burning of wood waste in the power boiler to enable the plant to be energy self-sufficient.

Construction began in 1991, and Bird built a range of structures on the site, including the \$21-million effluent treatment plant, \$4.5-million river intake and discharge pumphouse, \$5.8-million control complex, and \$2.8-million administration building. The pumphouse consisted of a coffer dam in the river, an effluent line and a concrete structure on the river bank, and was completed in June 1992. The effluent treatment plant comprised 22 concrete structures and piping systems, and was completed in 1993.



NEW REMAND CENTRE

Calgary, Alberta

The 16,900-square-metre facility was equipped with the latest technology and housed 325 male and 36 female inmates. It had single-occupant cells in all units and two 20-bed assessment and treatment units for inmates with mental health challenges. The \$30.8-million

facility also included an activity room in each living unit, a library, gymnasium, outdoor exercise yard, and weight room. The complex concrete structure became operational in July 1993 and was delivered \$3 million under-budget.

The Bank of Montreal supported the fundraising campaign of the Royal Winnipeg Ballet by operating a box office service in fifty branches in the city. In gratitude for the several hundred subscriptions purchased, the dancers began referring to it as the "Balletbank". This image ran in a local paper when Bird Construction was working on another Winnipeg branch of the Bank of Montreal, just a few blocks from the Portage and Main building.



BANK OF MONTREAL RESTORATION

Winnipeg, Manitoba

The restoration of this elegant neo-classical granite-clad building on the corner of Portage and Main in Winnipeg is a proud achievement for Bird Construction. Designed by the renowned McKim, Mead & White architectural firm of New York City, the building was originally constructed in 1913 and was designated a heritage building in 1980.

Over time, the masonry began to shift due to corrosion of the anchors. The painstaking process of removing the affected masonry, installing

new stainless-steel anchors, then reinstalling the masonry was undertaken by Bird in 1993 and 1994. The original plaster ceiling, more than 21 metres above the main banking hall, was reconditioned and the exterior of the building underwent micro-sandblasting. Dramatic accent lighting was installed to highlight the impressive building that remains a local landmark to this day.



ROYAL CANADIAN MOUNTED POLICE K DIVISION REGIONAL HEADQUARTERS

Edmonton, Alberta

The bold postmodern brick and glass regional headquarters of the Alberta RCMP K Division was the biggest commercial project secured by the Edmonton district office in the decade. The K Division Regional Headquarters building was the largest RCMP structure in Alberta at the time and consolidated units from seven locations around the city, as well as accommodating detachments from parts of Saskatchewan and the Northwest Territories.

The \$36-million complex included two buildings that contained a weapons range, full size gym, auditoriums, living suites, maintenance garage, and underground parkade. The weapons range was essentially a building within a building. Housed in the basement of the main building, it had its own heating and ventilation system and was thoroughly soundproofed. Over 1,300 cubic metres of concrete was used during the two-year construction period, and the interior finishes included terrazzo floors and maple millwork. The 26,417-square-metre structural concrete main building was completed in 1999, while the 1,727-square-metre Post Garage (maintenance garage) was completed in 2000.^[33,34]

The central police force was established in 1873, and officially became the Royal Canadian Mounted Police in 1920.





Image courtesy of Brandon University

BRANDON COLLEGE ORIGINAL BUILDING AND CLARK HALL RESTORATION

Brandon, Manitoba

Built at the turn of the century by the Baptist Church, the Brandon University Original Building and Clark Hall were the oldest public buildings in Brandon still in continuous use. Both were designated historic buildings at the time.

This challenging \$9.3-million project required extensive renovations to update the interiors while preserving the exteriors and protecting key

elements of the interior detailing. The additions made to Clark Hall would accommodate the growing needs of the university.

The load-bearing exterior masonry walls needed meticulous bracing to save the heritage façade. More than 2,500 stainless steel anchors were used to reinforce the 60-centimetre thick walls, creating an outer shell and allowing the interior to be completely gutted.



A new independent structural steel skeleton was then inserted to support the new floor plates. In collaboration with the local historical society, every effort was made to salvage notable features such as the tin ceiling tiles, which were later reinstalled, and the wooden staircase spindles, which were painstakingly replicated. More than 800 spindles were varnished up to three times with marine-quality varnish to match the existing woodwork. The masonry restoration was carried out in challenging weather conditions including temperatures of minus 30 degrees Celsius, and specialized adhesives had to be procured that would ensure a structurally sound finish in these conditions.

Corbett Cibinel Architects praised Bird Construction's unwavering dedication to the development of solutions to numerous obstacles that arose throughout the project, noting that this commitment was a key component of the construction methodology. The project began in the fall of 1995 and was concluded in October 1997.



VIVA MAGNETICS PLANTS

Scarborough, Ontario

Bird Construction continued building its reputation for delivering complex industrial projects through its relationship with Hong Kong-based Viva Magnetics. Specialists in injection-molded plastic products, Viva Magnetics required new manufacturing facilities to support their entry into the North American market in the mid-1990s.

Bird Construction developed specific knowledge of Viva Magnetics' particular automated manufacturing processes and applied this expertise in the completion of projects in both British Columbia and Ontario over the ensuing decade. In 1996, an 11,148 square metre facility was constructed in Richmond, British Columbia.

The \$7.2-million project included a factory, warehouse, and offices. In 1998, ten sets of 260-tonne injection moulding machines complete with mechanical, electrical, structural, and civil works were added, as well as material handling systems and process cooling.

In the late 1990s, Bird designed and built two manufacturing and warehouse facilities in southern Ontario. The total area for both facilities was over 55,741 square metres. For this combined \$56.8-million project, Bird undertook engineering, procurement, and installation of raw material handling systems, storage silos, process cooling, compressed air, overhead bridge cranes, railway spurs, railcar unloading systems and automation systems for finished goods, robotics, and injection molding machines. Bird also handled site plan approvals, building permit applications, and local approvals of all foreign-built proprietary equipment imported into Canada.



19 WING COMOX

Vancouver Island, British Columbia

Harkening back to the earliest days of the company, Bird Construction has maintained a strong relationship with Defence Construction Canada, undertaking many infrastructure projects for the Crown corporation over the company's history. In the late 1990s this legacy continued with a series of projects at 19 Wing Comox on Vancouver Island in British Columbia.

This Canadian Forces Base is home to the 19 Air Maintenance Squadron, the Canadian Forces School of Search and Rescue, the Regional Cadet Gliding School (Pacific), and the HMCS Quadra Sea Cadet Camp. The primary duties of its Aurora crews are to patrol the Pacific Ocean to curb illegal fishing, drug trade, and pollution. They also carry out search and rescue operations from the B.C./Washington border to the Arctic and 1,200 kilometres out into the Pacific Ocean.

In 1999, Bird secured the \$9.7-million contract to construct a Fitness and Community Centre at the base. This 6,800-square-metre facility was conceived and constructed in less than a year, and included a double gymnasium, exercise facilities, squash courts, community centre, and 25-metre pool. The Myrtha system, which is an innovative prefabricated stainless-steel panel system, was used for the pool installation and reduced build time by 30 per cent. It also required less maintenance and cleaning time than traditional concrete and tile pools, adding further value for the client. The exterior of the building featured attractive insulated tilt-up panels that conformed to the stringent wall performance and durability requirements of the client.

Later in 1999, Bird constructed the new \$12-million hangar for the 442 Transport and Rescue Squadron. The structural steel frame and concrete tilt-up panel structure was designed as a post-disaster facility to ensure maintained operations in emergency situations. The 8,600-square-metre helicopter hangar includes training areas, maintenance workshops, and office space across two floors. It was built to house Cormorant helicopters and featured the high-tech Aqueous Film Forming Foam (AFFF) fire suppression system.



The 8,500-square-metre Fixed Wing Hangar addition was constructed a few years later to accommodate the Buffalo and Hercules aircraft. This was also a steel frame structure with concrete tilt-up panels, and featured specific accommodations for activities related to aircraft operations, barrier-free design, and ammunition security.

WALMART

The entry of Walmart into the Canadian market was a boon to Bird as the refurbishment and construction of over 100 stores countrywide provided a steady source of construction opportunities in the 1990s and helped to rebuild the financial health of the company following the recession. A strong relationship developed between Bird Construction and Walmart, and the Bird team became adept at dealing with the compressed schedules and changing requirements of these projects and were able to maintain uninterrupted operations in the stores during renovations.

The scope of work on new construction included a wide array of foundation systems that changed according to the region of the country. A variety of exterior finishes including masonry, stucco, and insulated metal wall panels were applied. Site development work was also provided, such as surface parking, landscaping, and site services.

Bird was also able to upgrade new acquisitions to Walmart's corporate standards. One such project entailed renovations to 25 stores across Alberta, British Columbia, Manitoba, Ontario, and Quebec. Completed in sequence over 21 weeks, the upgrades included new flooring, refurbishing lighting systems, upgrading ceiling and sprinkler systems, adding pharmacies and photo laboratories, renovating stock rooms and public areas, and painting exteriors. All renovations were completed on schedule with the stores maintaining uninterrupted shopping hours.

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| 1 | 1. Walmart Squamish, British Columbia |
| 2 | 2. Walmart Wasaga Beach, Ontario |
| 3 | 3. Walmart Quesnel, Alberta |
| 4 | 4. Walmart South Surrey, British Columbia |





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GAINING STRENGTH COAST-TO-COAST: THE 2000s

The decade got off to a roaring start: for the seventh year in a row a new profit record was set by Bird in 2000 and, for the fifth consecutive year, a new volume of work record was established. The construction industry as a whole enjoyed a better year than expected, as gross construction output increased by nearly 10 per cent over the previous year. The company therefore anticipated steady growth going forward. This rosier picture was reflected in the performance of a number of district offices. The Vancouver district office began the decade with the biggest backlog of any district office in the company and enjoyed the highest volume of work in 2000. The Edmonton industrial district office substantially increased its work volume, and a separate office was established in Edmonton midway through 2000 to focus principally on commercial and retail construction, with the industrial and commercial district offices operating independently of one another. The Toronto district office increased its work volume as well, while Calgary and Winnipeg remained stable.



Paul Raboud

At the corporate level, Mr. Paul Charette continued to provide overall leadership as President and Chief Executive Officer of the company. He was elected as the Chairman of the Board in 2001, a position he still held at the company's centennial.

In 2006, Mr. Paul Raboud stepped into the role of President and Chief Operating Officer, before becoming Chief Executive Officer in 2008. He had been with the company since 1984, starting out as a field engineer before moving up through various roles including estimator and project manager. He managed the Vancouver district office throughout the 1990s, returning to the Toronto corporate office in 2000.

The shocking events of September 11, 2001 had an immediate adverse impact on consumer spending and investor confidence. Perhaps the most specific consequence for the construction industry was the tightening of underwriting conditions by insurance and surety companies in an effort to reduce risk and increase premiums to recover losses they incurred due to the events of 9/11. This raised concerns about the potential lack of availability of surety support for the industry, although Bird Construction's strong track record for managing construction risks alleviated this to an extent.

Towards the middle of the decade, economic conditions became more uncertain. The Canadian dollar appreciated against the US dollar, and factors such as the Northeast power blackout of 2003 and the western forest fires and floods had an undeniable negative impact. For the construction industry in particular, fiscal restraints imposed at all levels of government resulted in decreased capital spending for institutional projects. This was tempered slightly by the higher levels of economic activity in western Canada, especially in petroleum extraction and refining, and the water and waste water sectors in northern Alberta. This created some buoyancy in the industrial construction market, as evidenced by the awarding to Bird of a \$242.5-million contract for a water reclamation facility in Alberta and a number of major contracts at oilsands plants, such as the 9,755-square-metre Albian Sands Truck Shop Complex pictured here.

On February 27, 2006, the company was reorganized and continued operations as an open-ended income trust through Bird Construction Income Fund, listed on the Toronto Stock Exchange (BDT.UN).



Immediately following this conversion, 2.5 million new trust units were issued under an initial public offering, raising \$27.6 million.

Rideau Construction was acquired on February 1, 2008, expanding Bird's Canadian operations into the Atlantic region with district offices in Halifax and Saint John. The two companies had worked in partnership prior to this, completing complex projects such as the Maritime Helicopter Support Facilities at 12 Wing Shearwater in Dartmouth, Nova Scotia and the St. Stephen Border Crossing in New Brunswick. As part of the acquisition, about one hundred project management and support personnel were added to the Bird team, and they quickly made a substantial contribution by facilitating the execution of the Alberta Schools Alternative Procurement project that involved the construction of 18 schools in 24 months across Calgary and Edmonton, Alberta.

By the end of the decade, the company was pursuing and obtaining more Public-Private Partnership (P3) and institutional contracts. The general retail and commercial markets were slowing down due to the global recession, although the industrial sector remained steady despite the reduction in capital expenditure in the Alberta oil and gas sector. There were a number of opportunities related to engineering and procurement activities that were expected to accelerate into 2010. The company had solidified its position as a market leader in large-scale industrial projects and was gaining a well-deserved reputation for effectively executing complex P3 projects.

LIEUTENANT-COLONEL GEORGE TAYLOR DENISON III ARMOURY

Toronto, Ontario

The Lieutenant-Colonel George Taylor Denison III Armoury is one of the largest design-build projects ever constructed for the Department of National Defence. The Downsview Training and Administrative Facility was the main component of the consolidation program for the Land Forces Central Army, responsible for training combat-ready land forces and providing support services. It functioned as the headquarters for the 4th Canadian Division and the Joint Task Force Central. It was also home to the 32 Canadian Brigade Group, which included the Governor General's Horse Guards (an armoured reconnaissance, and the most senior reserve, regiment in Canada); 2 Intelligence Company (a Canadian Forces Primary Reserve Intelligence Branch responsible for tactical and combat intelligence); 32 Combat Engineer Regiment; and 2 Military Police Regiment.

Bird Construction secured the design-build contract for the new \$36-million facility in September 2000, partnering with Kasian Architecture Interior Design and Planning. The multi-user space covered more than 30,000 square metres and contained warehouses, vehicle maintenance areas, training and classroom space, administrative areas, mess facilities, and a drill hall. The administrative wing was a structural steel frame building clad with insulated metal panels; the armoury included a 9,300-square-metre vehicle maintenance area and warehouse; and the vehicle maintenance area was designed for heavy vehicles and equipment and included overhead cranes and a 28-centimetre reinforced concrete floor slab.

Bird was commended for outstanding performance by the Department of National Defence Project Manager, Major Mark Zoledowski, who specifically noted the efficient response of the company to over \$5 million of user-initiated scope changes. Despite these changes during construction, Bird still delivered the project on the original schedule, completing the facility in June 2002.



BRANDON COURTHOUSE ADDITION AND RENOVATION

Brandon, Manitoba

The Brandon Courthouse was designed by provincial architect Samuel Hooper in 1908, and the concrete and masonry building was completed in 1910. The \$8-million contract for a much-needed expansion and renovation of the historical structure was awarded to Bird Construction in late 1998 and would be completed within 18 months in early 2000.

The project was completed in two phases, allowing court functions to continue uninterrupted. During the first phase, the new three-level, 4,700-square-metre building connecting the southern and western sections of the original structure was built. This doubled the number of courtrooms to eight. A new secure holding facility for prisoners was constructed, as well as new court administration offices. The materials used on the exterior of the addition were chosen to reflect the neo-

classical design of the existing courthouse. For example, the well-defined base of the addition was clad with precast concrete panels, which echoed the heavy stone base of the original structure.

The 2,500-square-metre renovation of the original building constituted the second phase. A modern and functional facility was created through the use of state-of-the-art technology, although great care was taken to respect the architecture of the existing building. The complex renovation also remedied challenges with security, fire and safety compliance, and barrier-free accessibility.



SOUTH FISH CREEK RECREATION COMPLEX

Calgary, Alberta

The South Fish Creek Recreation Complex came about due to a unique partnership of community organizations that aimed to provide recreation, education, and library services under one roof. Financed with the City of Calgary, this \$43.3-million project included twin ice arenas, the Bishop O'Byrne Catholic High School that served 1,700 students in grades ten through twelve, and a public library that included fireside and café reading areas, study rooms, and public access computers. The Shawnessy YMCA offered access to a 25-metre swimming pool, leisure pool, whirlpool, two full gymnasiums, a climbing wall, weight training floor, running area, multipurpose

rooms, and licensed childcare facilities. The complex also included the Chinook Learning Centre, and the South Fish Creek Recreation Association, truly making this a hub for community activities. This large and complex multi-purpose facility covered more than 30,000 square metres, and was completed by Bird and handed over in phases over a 26-month period, wrapping up in 2002. It is one of the many recreation complexes that have been successfully completed by Bird and is an example of the meticulous and diligent planning and execution that have set the company apart.

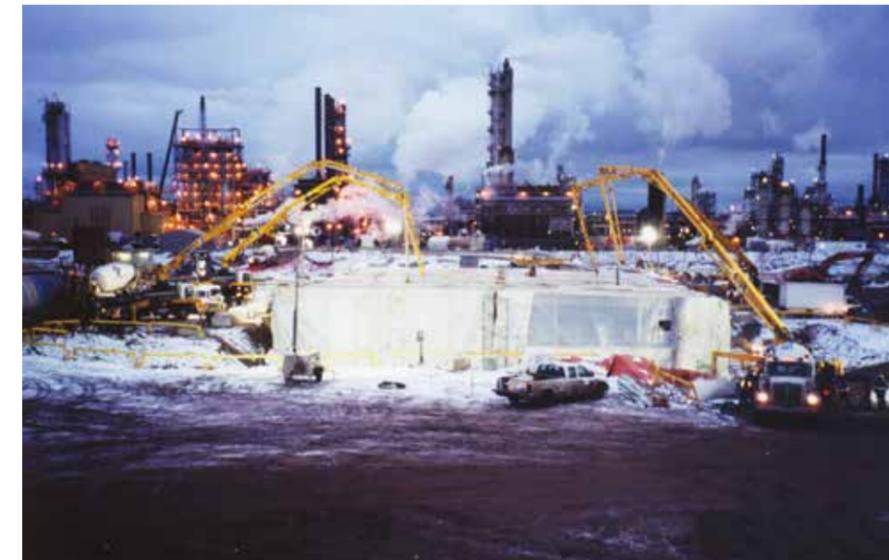
SYNCRUDE UE-1

Fort McMurray, Alberta

Bird Construction's relationship with Syncrude stretches back to the 1970s, when an operations building was erected at the Mildred Lake site near Fort McMurray. Syncrude is one of the largest producers in the world of crude oil from oilsands and the largest single source producer in Canada, with the capacity to meet 15 per cent of the country's total oil needs. Among the processes undertaken are surface mining, extraction, upgrading, utility production (electricity, steam, air, water and nitrogen), and reclamation. It is the only oilsands operation to have received certification for permanently reclaimed land.

In 2002, Bird Construction was awarded the contract for a major expansion to Syncrude's plant operations at their Fort McMurray oilsands mining and upgrader facility. The \$92-million Upgrader Expansion (UE-1) project entailed the construction of the civil works for several plants on the site, including almost 5,200 metres of underground piping, extensive excavation and backfill work, electrical grounding, and concrete foundations. Over 34,400 cubic metres of concrete was poured, a large volume of which was performed during the winter months and therefore required significant winter heating and hoarding. This component of the project was completed in January 2005.

In addition, Bird poured the 2,600-cubic-metre concrete foundation for the reactor and burner in 2002, erected the \$14-million industrial plant control centre and \$2.2-million compressor building in 2003, and completed an \$11-million structural/architectural package for a number of buildings in 2004.





BMW TORONTO

Toronto, Ontario

BMW's first vertical showroom in North America was completed in June 2003, and the flagship \$15-million facility was the largest of its kind in Canada.

This showstopper featured a unique attention-grabbing façade: display windows of ultra-clear, lead-free glass framed in crisp white created a “matchbox” display of six illuminated cars in the centre of the building. The 167-square-metre vehicle display was carefully lit to minimize colour distortion and maximize visibility from the major Toronto highways and roadways next to which it sat. There was also a three-storey backlit vinyl billboard integrated into the north façade of the building. The clean aesthetic of the building design was reinforced using blue-tinted glazing on the curtain walls that wrapped around three sides of the building.

It was critical to preserve the original frame of the building as a new structure would be subject to additional setback rules, reducing visibility from the busy highway. The former Sunlight Soap factory building was stripped down to the structural steel frame and pre-cast

concrete slabs. A heavy steel moment frame system was installed, and seismic upgrades were put in place.

The project sprawled over 9,290 square metres and required major structural modifications to the existing six-storey structure in order to create a 3,700-square-metre double-height showroom on the fifth floor, office space, lifestyle boutique, 24 service bays, two motorcycle bays, and seven wash bays. Two stainless steel oversized hydraulic freight elevators and a scenic glass elevator were also installed.

The building was awarded the Best of the Best Award by the Toronto Construction Association, as well as the Ontario Association of Architects Award of Excellence. Project architects, Quadrangle Architects, noted that “BMW Toronto demonstrates how an older urban artifact can successfully be reinvigorated and reintegrated as a beacon of contemporary design, thought and consumer appetites”. Ian Chodikoff of Canadian Architect magazine described it as “provocative and appropriate for an automobile facility that flies in the face of existing showroom design”.

DOUG MITCHELL THUNDERBIRD SPORTS CENTRE

Vancouver, British Columbia

The \$44-million sports centre, situated on the University of British Columbia campus, was a year-round sport and recreational facility. The main arena had an international-size ice rink (61 metres by 30 metres) overlooked by 5,500 permanent spectator seats. The configurable space could be adjusted to seat 8,000 people for concerts. The centre contained two additional facilities: the Father Bauer Arena with a 980-seat NHL-sized rink, and the Olympic-surface Protrans Arena that could accommodate 200 seated spectators. The venue also included a 558-square-metre multi-purpose room, 465-square-metre high performance training centre, sprint lanes with resistance harnesses, dressing rooms and coaches' rooms, office space, and a 600-square-metre mezzanine level space.

Bird Construction led the design-build project, and the design team included Kasian Architecture Interior Design and Planning. Built to meet Leadership in Energy and Environmental Design (LEED®) Silver

requirements, the almost 14,000-square-metre centre incorporated many sustainable features to minimize environmental impact. For example, energy consumption and operating costs were reduced by installing an “Eco-Chill” system that recycled waste energy from the ice-making process to heat the building and hot water for showers. Construction was completed four months ahead of schedule in 2008, and the project won the Canadian Design-Build Institute's Award of Excellence in 2010.

The centre was used for various events at the 2010 Winter Olympics and Winter Paralympics, including for the sledge hockey finals. It also hosted the Canadian Interuniversity Sport Championship Men's Final 8 Basketball Tournament in 2016. The UBC Thunderbird Arena was home ice for the UBC Thunderbirds ice hockey team and was also used as a practice facility by the Vancouver Canucks, the local NHL team.



NORTHERN AND SOUTHERN ALBERTA JUBILEE AUDITORIA

Calgary and Edmonton, Alberta

Originally built in 1955 to commemorate the 50th anniversary of the founding of the province of Alberta, both auditoria were in need of renovation and refurbishment after half a century of extensive use. Both projects were commissioned by the Alberta government and were tendered independently by the respective Calgary and Edmonton district offices. Bird Construction was awarded both contracts in a competitive bid process.

The combined \$65-million project entailed major mechanical and electrical upgrades, and extensive modernization. The scope was huge: each theatre seated approximately 2,500 patrons in the main chamber and covered over 6,070 square metres. The stage spanned 36.5 metres and had a depth of 15 metres, with a backstage ceiling height of almost 37 metres. Specialized trades were required given the complex technical requirements of theatres. As few concert halls are built in a year, long delivery times were experienced when ordering equipment and materials for two large projects at once, and careful coordination

was essential. This played to Bird's strengths as the company had a breadth of experience successfully executing multifaceted construction management challenges.

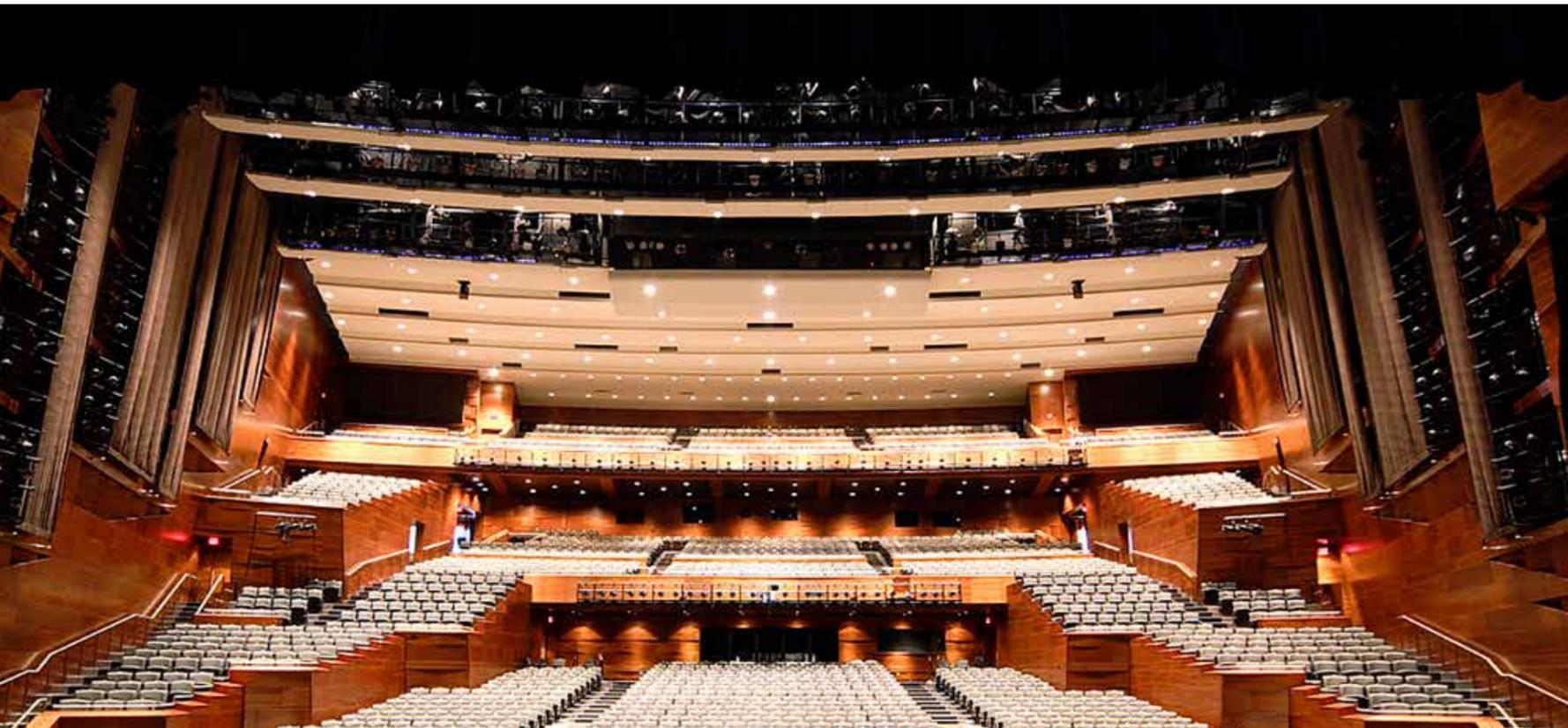
The demolition, dismantling, and reconstruction of the existing ceilings and catwalk systems necessitated stringent safety procedures, as did the extensive asbestos abatement. The renovations encapsulated all the seating, lighting, décor, and theatre rigging. To get a sense of the scale, there were 22.5 kilometres of wire rope in the fly lines hidden above the stage and almost 300 new lighting circuits were added to the front-of-house area.

Most mechanical systems underwent significant upgrades. The traditional orchestra pit was modified to enable it to be raised to form part of the stage or lowered to provide additional audience seating when flush with the main floor. A state-of-the-art displacement ventilation system ensured quiet and consistent heating, cooling and ventilation.

The Jubilee Auditoria had a well-deserved reputation for showcasing the best local, national and international artists. To continue this proud tradition, a thorough upgrade of the sound system was in order. Almost 305 kilometres of audio wiring were utilized in each hall. All the original American walnut side panelling had to be carefully removed, refurbished and thickened, and then remounted. By adding more than 35 centimetres, the natural acoustics of the performance space were significantly improved. Each acoustically transparent ceiling panel weighed 136 kilograms and took five hours to install. In addition, retractable curtains were installed along the walls and ceiling to produce a variable acoustic dampening system. These new features ensured the perfect sound clarity for performances ranging from symphony orchestras and rock shows to Broadway productions.

Among the challenges encountered on this project was the absence of a complete set of "as built" documents of the original construction, which meant that some unforeseen issues needed to be addressed in real time as they were discovered. Space constraints impacted the demolition process as all equipment had to fit through the same standard double doors used by the public to access the performance chamber. Compact equipment and a lot of handwork were therefore required. For example, rubble was hand-wheeled out of the building in wheelbarrows and scaffolding had to be chain-hoisted and bolted in place piece by piece. Each performance stage had thousands of metres of fly wire, theatre rigging, and counterweights that were left in place throughout the renovation process, with new steel and mechanical and electrical systems being installed around these existing obstructions.

Construction was on a tight 14-month schedule, necessitating double shifts for almost half the project and seven-day-a-week schedules for the duration of the project. At the peak of construction, the workforce exceeded 200 workers on each site and, in total, over 350,000 man-hours were worked at each project by over 1,000 trades people. It was all completed without a single lost time accident. The revamped arts facilities had a grand re-opening during Alberta's Centennial celebrations in 2005.





CANADIAN PLAZA AT THE PEACE BRIDGE

Fort Erie, Ontario

The Peace Bridge at Fort Erie is the third busiest commercial vehicle crossing on the U.S. – Canada border and is fully operational 24-hours a day all year. The redevelopment of the Canadian Plaza included the construction of a dramatic 4,900-square-metre canoe-shaped canopy that anchored the various structures including the tollbooth system, Canada Customs building, Peace Bridge Authority administration building, primary and secondary inspection lines, and an impounding garage for detailed inspection of vehicles. A two-storey refugee processing facility was also constructed.

Designed by NORR Architects, the visually striking precast concrete canopy was supported by a glulam beam structure supported by angled steel columns. The PVC-clad wood deck roof was supported by this steel structure.



On either side of the central “canoe” were adjoining post-tensioned precast canopies that sheltered the primary inspection line. Consisting of 15 radial units, these 11.5-metre by 2.8-metre slabs were installed in two phases to allow the border crossing to continue operating without interruption. Each slab weighed more than 30 tonnes. Due to the historical significance of the area for the First Nations People, Bird Construction employed a caisson and grade beam system to elevate the plaza foundations and protect archaeological remains.

The Peace Bridge Canadian Plaza, completed in 2007, won numerous awards and accolades, including the Precast Concrete Structural Design Innovation Award (2007 Ontario Concrete Awards); the Institutional Wood Design Award (2007 Canadian Wood Council); the Project of the Year Award in Transportation greater than \$10 million (2007 Ontario Public Works Association); the Ontario Steel Design Award (2008 Canadian Institute of Steel Construction); and the World Architecture Community Award (2008 20+10+X World Architecture Community).



WOOD BUFFALO WASTEWATER TREATMENT PLANT

Fort McMurray, Alberta

The immense water reclamation facility is situated on the Athabasca riverfront in Fort McMurray. Bird Construction was responsible for all aspects of construction on this \$242.5-million project, with the first phase commencing in 2006.

The scope and complexity of the work undertaken to complete this project was a testament to the continuously expanding expertise of the company and its ability to effectively and efficiently execute major industrial projects.

The scope of work on the first phase included the following systems: influent distribution and pumping station; headworks; primary treatment; biological nutrient removal bioreactor; secondary clarifiers; effluent pumping; UV disinfection; outfall; fermenter; solids handling facility; indoor aerated static pile composting; and the hauled waste handling. Part of the construction, expansion, and upgrading of these systems included extensive structural, electrical, and mechanical

work. Additional access roads were built to enable the growing facility to operate more efficiently.

During a later phase of the project, a 1,200-square-metre facility upgrade was undertaken that included the installation of a chamber to evenly distribute wastewater to the drain field.

The project was awarded LEED® Silver certification based on its design and construction. One of the strategies employed at the facility to reduce the environmental footprint was the inclusion of a composting facility. This was an indoor aerated static pile composting system that integrated a feedstock recovery system, compost stabilization, energy recovery systems, a sulphuric acid storage facility, and wet scrubber and biofiltration odour control system. Bird also installed all the associated hoppers, mixers, blowers, pipes, valves and instruments that went along with these advanced systems. The multi-phase project was concluded in early 2010.



ACQUISITION OF RIDEAU CONSTRUCTION

Rideau Construction was a successful general contractor in the Atlantic region with offices in Nova Scotia and New Brunswick. It was established in 1993 by John Furneaux and Jim Brennan in Bedford, Nova Scotia, and quickly built an excellent reputation in the commercial, retail, institutional, light industrial and tilt-up markets. Rideau was the first general contractor in Atlantic Canada to achieve ISO certification.

Rideau brought its values of craftsmanship, performance and innovation to a multitude of projects, such as technically advanced educational institutions, healthcare facilities, automobile dealerships, airport terminals, and residential developments. For example, the \$35-million Bishop's Landing Complex on the Halifax Waterfront in Nova Scotia was a major 37,161-square-metre development that formed part of the broader revitalization of the area as a place to live and work and was the only residential complex on the harbourfront in 2002. There was also the \$21-million St. Francis Xavier University Physical Sciences Complex in Antigonish, Nova Scotia, which was the largest construction project in eastern Nova Scotia in 2003. The 9,290-square-metre complex housed laboratories, classrooms, advanced research facilities, and study areas. Complex mechanical and electrical systems were required, including 40 fume hoods, the

largest number included in any ventilation system east of Montreal. In the 2005 expansion of the Millidgeville Waste Water Treatment Plant in New Brunswick, Rideau doubled the capacity of the plant by adding seven separate concrete structures, a new building, and numerous extensions and additions to the processed pipes and associated mechanical and electrical systems. A variety of commercial projects were undertaken as well, including 16 Walmart stores across Nova Scotia, New Brunswick, and Prince Edward Island. Rideau also built the first hotel in Quispamsis, New Brunswick in 2007.

In 2007, Bird Construction and Rideau secured two significant projects together, valued at over \$120 million in total. The largest of these was the Maritime Helicopter Support Facilities at 12 Wing Shearwater in Dartmouth, Nova Scotia. The second was the St. Stephen Border Crossing in New Brunswick. The productive and collegial relationship that developed between Bird Construction and Rideau was indicative of the close cultural fit between the two companies, and the shared commitment to client service, workplace safety, and meaningful investment in employee training and welfare. There was also a mutual respect in their abilities to effectively execute complex projects.

Bird Construction and Rideau announced the decision for Bird to purchase the company on December 17, 2007. By acquiring Rideau and its more than 100 full-time employees, Bird Construction extended its reach from coast to coast. The company also benefitted from the innovative human resources approach that had been implemented within Rideau. For Rideau, agreeing to join Bird would provide the

opportunity to pursue larger and more complex projects within and outside of the Maritimes. Rideau's senior leadership continued to head operations in the Atlantic region: Jim Brennan served as the Vice President of Operations, Atlantic; Ian Boyd headed up the Halifax district office; and Durck de Winter led the Saint John district office.



Jim Brennan



Ian Boyd



Durck de Winter

MARITIME HELICOPTER SUPPORT FACILITIES AT 12 WING SHEARWATER Dartmouth, Nova Scotia

The first project undertaken in partnership with Rideau was the Maritime Helicopter Support Facilities at 12 Wing Shearwater in Dartmouth, Nova Scotia. This \$104-million design-build expansion project involved the construction of three new buildings and the upgrading of an existing structure within a strict 24-month timeframe on an active military airfield. Bird Construction continued its long-standing relationship with Kasian Architecture on this project, as the firm was part of the design team.

The multi-use maintenance facility accommodated the new Sikorsky CH-148 helicopters that replaced the decommissioned King helicopters. This was not only one of the largest contracts undertaken by Bird at the time, it was also the biggest contract ever awarded by Defence Construction Canada up to this point.

The project began in May 2007 with extensive site preparation. A 1950s-era, asbestos-laden hangar was demolished and contaminated soil removed, with mass excavation in some areas going as deep as 7 metres. The first building was constructed using a combination of concrete tilt-up panels, structural steel, and masonry. It contained a 6,700-square-metre office, 3,345-square-metre workshop, and 2,000-square-metre warehouse facility. This building was substantially completed one month early, just ahead of the harsh Atlantic winter, during which a lone 43-metre high masonry wall elsewhere on the site successfully withstood the 120 km/hour winds of Hurricane Kyle.

The second building had a 5,800-square-metre workshop, 3,000-square-metre office facility, and 4,700-square-metre 6-bay maintenance hangar. The final building included a 5,800-square-metre office area and 7,060-square-metre hangar. The hangar area in this building had a clear span of 70 metres and a floor-to-roof height of 15 metres, which was constructed with pre-assembled trusses bolted together in sections and hoisted into position in six 100-tonne lifts.

The complex was designed to meet LEED® Silver certification, which involved implementing features such as a rainwater collection system for washing the helicopters and the installation of a low-level fire suppression system known as Hi-Fog. The water used in this fire protection system is less impactful on the environment than the previously used foam. It was the first time that this technology was employed in such a big space and under concrete: the stainless-steel sprinkler heads were installed directly within the slab on grade within the hangar areas of the buildings. The project was substantially completed in the spring of 2009.



ALBERTA SCHOOLS ALTERNATIVE PROCUREMENT I AND II

Calgary, Edmonton, Langdon, and Okotoks, Alberta

The Alberta Schools Alternative Procurement project was the largest Public-Private Partnership (P3) undertaken by the company at the time. The massive logistical requirements were a key consideration, and the acquisition of Rideau (and the experienced staff who were now key assets to the Bird team) made the pursuit and delivery of this multi-site project possible.

The project demonstrated Bird's affinity for developing innovative solutions to meet a client's specific needs. Departing from the traditional procurement model that would entail building these schools one at a time, Phase 1 of this initiative involved building 18 schools concurrently in just 24 months, providing the community with much-needed, high-priority infrastructure.

A consortium of companies including Bird worked together to deliver this \$634-million project, which included a long-term maintenance contract. Bird resources were mobilized from both Alberta district offices (Calgary and Edmonton) as well as the two Maritime district offices (Halifax and St John), and a total of 85 full-time staff served on Bird's design-build project team.

Covering a total of almost 90,000 square metres, careful consideration was given to optimizing the construction schedule and decreasing project costs. The fundamental design for all the schools was the same: a core design that would also allow for the use of customizable modular classroom space. The modular classrooms had the appearance of permanent classrooms on the inside with painted drywall, drop ceilings and large windows. However, classrooms could be added or removed as needed to accommodate fluctuating student enrolment. There was also a shift in the regular school design model: load-bearing masonry was replaced with structural steel and infill block, and the foundation work was also substantially decreased through the use of



piles and grade beams. All schools and modular classrooms were built to LEED® Silver certification.

Using this standardized core design enabled the development of efficient work processes to speed up construction. A series of protocols were established to prevent the duplication of tasks and to streamline the sharing of information between the various teams. Phase 1 of the Alberta Schools Alternative Procurement project was successfully completed on schedule in June 2010. It received the Gold Award for Infrastructure from the Canadian Council for Public-Private Partnerships later that same year.

The second phase of the project followed the same financing and construction model. In this phase, ten new schools were built in Calgary, Edmonton, Langdon, and Okotoks over a 31-month period. Covering a total of almost 70,000 square metres, this \$160-million project served 8,000 students when classes started in September 2012. While this phase of the project also targeted LEED® Silver certification, the majority of the schools constructed achieved the higher level of LEED® Gold certification.



BORDER CROSSINGS

The construction of border crossings comes with a specific set of complex challenges. Maintaining security at border crossings is a central concern, a challenging proposition when considering that these facilities usually remain fully operational during the construction process. The site is typically massive, as it must accommodate inspection and office facilities and large areas for food and animal inspection. By 2010, Bird was one of the most prolific builders of border crossings in Canada and completed facilities in the United States as well, including in Michigan, Minnesota, and Utah.

SWEET GRASS-COUTTS BORDER CROSSING

Sweet Grass, Montana and Coutts,
Alberta

This first-of-its-kind shared border crossing straddles the border between Canada and the United States of America. It was built almost a decade after an agreement between Prime Minister Jean Chrétien and President Bill Clinton calling for these types of cooperative border crossings. This particular crossing is one of the busiest in North America: over a million people and 400,000 commercial shipments move through this post annually.

Construction of the 9,290-square-metre border crossing began in late 2001. The \$39-million facility, delivered as a design-build project, was situated at the intersection of six northbound and five southbound inspection lanes on a ten-hectare site that underwent extensive redevelopment. Five new buildings were constructed in strict compliance with the laws of each respective jurisdiction.

The three-storey main port administration building literally bestrode the border. It housed inspection booths and separate U.S. and Canadian facilities for commercial and secondary inspections. About



twenty per cent of the structure was shared Canadian/U.S. space. A central plant met the requirements of both operating facilities and all outbuildings: Canada supplied all the water and natural gas while the U.S. supplied all the electricity. Hot water lines were distributed underground while a closed-loop glycol system under the booth areas fed the heating coils, air handling units, domestic hot water, radiant heaters, and in-slab heat. An underground exhaust system dispersed fumes from the booth areas.

Coordination was a critical concern: there were 30 stakeholders, 80 points of contact with decision-making authority between the two countries, and 400 directly involved participants, including separate crews for each side of the border due to visa restrictions. A project website was used to keep everyone up-to-date, together with weekly and monthly meetings to review progress, address issues, and coordinate schedules. A cooperative “no-blame environment” ensured that any problems were addressed quickly and collaboratively. The project was completed on time and on budget in September 2004.

This border crossing was one of the first projects in Alberta to receive LEED® certification, which included recognizing that no potable water would be used for irrigation, and overall water consumption was reduced by about one-quarter as a result of the installation of low-flow and water-efficient fixtures and appliances. In addition, low-emitting paints, carpeting and composite wood were used.

The project was awarded the U.S. Green Building Council Environmental Award for Sustainable Building. The U.S. General Services Administration bestowed the National Construction Excellence Award and the Sustainability Design Award on this project in 2004. The following comment was made by the awarding jury:

“Completing a project on the border of two countries while maintaining the integrity of that border is a tremendous feat. Doing so with a design-builder in one country, at least five different clients, and materials and labour from both countries, while maintaining an aggressive schedule and ending without any claims is even more remarkable. It is an extraordinary project.”

ST. STEPHEN BORDER CROSSING

St. Stephen, New Brunswick

This design-build project began as one of the two partnership projects undertaken with Rideau prior to the acquisition of the company. It was the largest civil contract managed by Bird in New Brunswick to that point. The \$19-million contract covered the construction of four new buildings totalling 3,400 square metres, 2.5 kilometres of new road construction to connect to the provincial highway system, and an 8,800-square-metre parking lot.

The remote location presented some challenges, such as a lack of electrical power for six months, limited accessibility of utility services, and the worst winter in decades. On average, two work-days were lost each week in the winter due to the impediments of up to 3.6-metre-high snowdrifts and site snow clearing. The ingenuity of the Bird team enabled the project to remain on schedule: a rock crusher and asphalt plant were erected on site to ensure the continuous availability of materials for the roadwork; generator-powered dewatering pumps dealt with the excessive groundwater that threatened to delay the foundation work; and crews were doubled up in the spring to accelerate construction.

The project achieved LEED® Silver certification and featured geothermal wells for mechanical heating and cooling. The St. Stephen Border Crossing was completed in August 2009.





1920s

1930s

1940s

1950s

1960s

1970s

1980s

1990s

2000s

2010s

10s

EXPANSION AND DIVERSIFICATION: THE 2010s

This decade was a period of significant revenue growth for Bird Construction: acquisitions, expansion, and diversification all contributed to the continued development of the company. This growth reflected the improving economic climate in Canada, which saw a general increase in capital spending and more opportunities in the market following the global recession of 2008. However, the construction market continued to be highly fragmented and there was stiffer competition from many local, regional, national, and international firms.

The company continued to actively pursue infrastructure projects to compensate for the reduced opportunities in the retail and commercial markets throughout the decade. The institutional sector was a key area of strength for the company at this time, accounting for 61 per cent of company revenue in 2010. Government stimulus programs and Public-Private Partnership (P3) projects created excellent opportunities for the company and, in addition to serving as the design-builder, the company sought to invest in an equity

position on these P3 projects. This would provide a means to support construction operations and generate additional construction opportunities. Among the P3 projects successfully executed during this decade were the Ontario Provincial Police Modernization Project, the Saskatchewan Joint Use Schools Project, and the Jim Pattison Outpatient Care and Surgery Centre.

As the decade progressed, the institutional sector received a boost as all levels of government acted to address infrastructure deficits, which led to new opportunities for the company to pursue. In 2016, this sector represented 56 per cent of total company revenue, and significant projects awarded mid-decade included the Whitby Rail Maintenance Facility in Whitby, Ontario; the Stanton Territorial Hospital Renewal Project in Yellowknife, Northwest Territories; and the Avenir Centre in downtown Moncton, New Brunswick.

There was a noticeable reduction in capital expenditure in the Alberta oilsands at the start of the decade, and low commodity prices would

be a recurring theme in the years that followed. Nevertheless, the industrial sector represented an area of competitive strength for the company, and overall company revenue from industrial work would increase from 32 per cent in 2010 to 57 per cent by 2014. The company's capabilities increased substantially following the acquisition of H.J. O'Connell (HJOC) on August 31, 2011. HJOC had been a leader in the heavy construction, civil construction, and contract surface mining construction sectors for the general contracting industry since 1931, with operations primarily in Newfoundland and Labrador, northern Quebec, and Manitoba. HJOC had offices in Montreal, Quebec, and Wabush and St. John's, Newfoundland and Labrador. The products and services offered by Bird and HJOC complemented each other, as HJOC could apply their earth-moving expertise to Bird projects and Bird could offer their industrial building expertise to HJOC projects. Bird's relative financial strength also enabled the pursuit of larger scale projects than HJOC had previously been able to undertake.

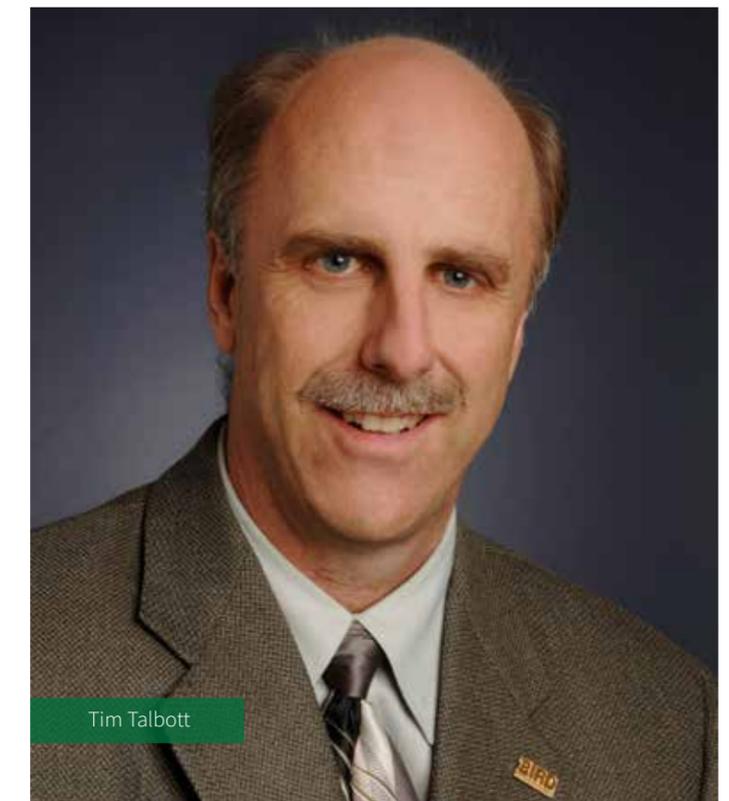
This strategic acquisition was fortuitously timed as the industrial sector began improving, particularly in northern Alberta. As the decade progressed, the company self-performed a greater proportion of heavy civil construction operations, including earth-moving. Bird also actively pursued larger scale opportunities in Canada's resource sector and hydropower markets. This component of the business became more significant and assisted in diversifying operations and generating higher returns. The company continued actively growing the maintenance services provided in support of oilsands clients, which made the company less dependent on new construction programs and further built customer relationships.

The diversification of the company's industrial work portfolio was aided by the acquisition of Nason Contracting Group Ltd. on January 17, 2013. Nason was a recognized leader in the construction of water and wastewater facilities in western Canada, with a 40-year track record of successful construction projects throughout Alberta, British Columbia, Saskatchewan, Yukon, and the Northwest Territories. Nason self-performed the majority of its work, having particular strength in the execution of mechanical, electrical, and instrumentation work. Its head office, shops and yard were located in St. Albert, Alberta. The addition of this multi-discipline company facilitated the pursuit of

contracts for the construction and servicing of environmental facilities on a larger scale than was previously possible and provided a platform for Bird to enter the industrial mechanical business.

Bird Construction acquired 50 per cent of the outstanding shares of Stack Modular Structures Ltd. and 50 per cent of Stack Modular Structures Hong Kong Limited on September 13, 2017. This investment opened up new opportunities in the growing modular market, as this construction method offers advantages in terms of build time, budget control, and risk mitigation. The Stack Modular units had already been successfully deployed in the residential, hospitality, commercial, and resource sectors.

Bird Construction continued evolving at the management level throughout the decade. On February 3, 2010, Mr. Tim Talbott was appointed to the position of President and Chief Operating Officer. He had been with the organization for over 28 years at that point, starting as a project coordinator in the Edmonton district office. He was the District Manager in Winnipeg from 1992 and, in 2001, relocated to the Toronto corporate office to assume executive operational roles. Mr. Talbott became CEO on July 1, 2010, and Mr. Paul Raboud moved into the role of Vice Chair.



Tim Talbott



Ian Boyd

The company's long-standing practice of retaining and developing talented individuals was further formalized early in the decade through the establishment of the Bird Leadership Academy program in 2012, and the Bird Site Management program in 2015. High-performing candidates were identified on an annual basis for training and progression into more senior positions within the company, and these initiatives provided a forum for high-potential candidates to develop their leadership skills.

On January 1, 2015, Mr. Ian Boyd was appointed to the position of President and Chief Executive Officer, following the retirement of Mr. Tim Talbott on December 31, 2014. Mr. Boyd was a partner in Rideau at the time of the company's acquisition by Bird in 2008 and assumed the role of Vice President of Bird's Atlantic operations shortly thereafter. He became Executive Vice President and Chief Operating Officer in 2013.

On June 30, 2019, Mr. Boyd moved into the position of Executive Vice President – Major Projects. Mr. Terrance McKibbon was appointed President and Chief Executive Officer after serving as Chief Operating Officer since joining Bird in June 2017. Mr. McKibbon had over 35 years of experience in the construction industry, including leading a large publicly-traded construction company.

As the company approached its 100th year in business, the focus remained on maintaining Bird's long-standing record of operational excellence. The diversification and expansion of the company had strengthened Bird's position in a number of key sectors and Bird had consolidated its position as a premier Canadian builder.



Teri McKibbon

KINNEAR CENTRE FOR CREATIVITY AND INNOVATION Banff, Alberta

The Banff Centre for Arts and Creativity was situated on a beautiful 17.4-hectare campus within a UNESCO World Heritage site. The 77-year-old learning organization had a global reputation for excellence in artistic and creative development, and the construction of the Kinnear Centre for Creativity and Innovation was part of the Banff Centre's expansion.

The multidisciplinary learning centre was designed by Jack Diamond of Diamond + Schmitt Architects Inc. and his vision was to create a structure that trod lightly on its surroundings and could shape winds and capture light. Given the location of the campus, there were several environmental, aesthetic, and heritage considerations to take into account during the design process. For example, no structure on the campus was permitted to exceed three storeys, resulting in a fairly large footprint for the new building.

The 8,157-square-metre facility included learning and meeting rooms, rehearsal and performance spaces, informal gallery areas, an internet café and pub, and the Paul D. Fleck Library and Archives. The library, which was totally enclosed by glazing to make the most of the sweeping mountain views, was screened by a series of exterior wood slats. Glare from the multitude of windows was reduced through the addition of balconies. The use of zinc cladding complemented the weathered cedar used elsewhere on the campus and blended beautifully with the mountain setting and the Rundle Rock retaining walls. Ipe wood from South America was also featured in the cladding; this wood is so dense that it has a Class A fire rating, which is the same certification given to concrete and steel. The use of these materials contributed to the LEED® Gold accreditation for the building. Other factors included the innovative stormwater management system, restoration of the natural montane vegetation following construction,



green housekeeping practices, and significant reductions in energy use through sun shading.

The bedrock site provided a few challenges prior to the foundation phase, as three months were spent excavating to a depth of five metres. However, the rocky terrain did allow rapid drainage during rainy weather. A system of fences had to be created both to control erosion and to direct the flow of wildlife such as bear, cougar, and elk through the campus. A special edible form oil had to be used due to concerns that animals would lick the formwork. The project was substantially completed by the end of June 2010.

The Banff Centre President and CEO, Mary Hofstetter, described the Bird crew as, “a sensational team who completed the Centre on time and on schedule. They did so due to their skill and their devotion to pre-planning, which was extensive. They really owned this project.”

ST. FRANCIS XAVIER UNIVERSITY GERALD SCHWARTZ SCHOOL OF BUSINESS

Antigonish, Nova Scotia

Since its founding in 1853, St. Francis Xavier University had consistently ranked near the top of undergraduate educational institutions in Canada. It also had a renowned business program and the popular demand for the program necessitated a larger facility.

Bird Construction was awarded the design-build contract to renovate an existing 7,432-square-metre building and construct a 1,858-square-metre addition in December 2008. The company had already completed four major projects for the university, and there was therefore a high level of trust and confidence in the abilities of the Bird team. A participatory design process brought together the project team and university stakeholders, and a series of design workshops were held to advance the pre-construction phase as there was an aggressive fast-tracked schedule for completion.

The new state-of-the-art facilities included four 100-seat classrooms, two computer labs, a 300-seat auditorium, seminar rooms, teaching labs, and common areas that included a gallery and café. The Frank McKenna Centre for Leadership Studies was housed on the fourth floor. The facility could accommodate 725 business students and 100 staff members. New curtain wall glazing was installed on the exterior envelope of the building and custom masonry units were fabricated to match the original weathered brick. A 10.7-metre 24k-gold gilt-domed cupola tower weighing 20,411 kilograms capped the building.

Among the challenges overcome on this project were the limited floor to floor heights. This became an issue as the installation of new and updated mechanical and electrical systems threatened to reduce valuable ceiling height.

In order to reduce the need for large duct runs, 77 heat pumps were installed throughout the building. In addition, a plenum system (rather than ducts) was used to achieve air distribution in the large volume spaces. Apart from keeping the finished ceilings high, it reduced the noise associated with air supply ducts. Another measure utilized to

maintain ceiling height was the use of dimensionally shallower beams, as opposed to open web steel joists.

Innovative design strategies were employed in order to achieve sustainability targets and LEED® Gold certification. Heating and cooling were provided by 26 geothermal wells drilled to a depth of 183 metres, supplemented by a district steam system fuelled by fish oil. Electrical consumption and maintenance costs for lighting the vast interior and exterior spaces were significantly reduced through measures such as the installation of an LED lighting system, motion sensors and photo cells that controlled lighting and mechanical systems, and an advanced carbon dioxide monitoring system.

The handsome facility was completed on time and within budget in November 2010. It was awarded the Canadian Design-Build Institute Award of Excellence in Construction (second place) in 2011.

Bird's in-house design team, based in the Halifax district office, offers complementary support to design partners as a value-added service. During this project, the team drafted drawings to show proposed ideas for finishes, mechanical duct routing, and lighting systems.



ACQUISITION OF H.J. O'CONNELL LTD.

H.J. O'Connell Ltd. (HJOC) was established in 1931 and rapidly grew into one of Canada's leading heavy civil engineering construction firms with diversified experience in the mining and energy sectors. The company also had experience with roads and bridges, and municipal, industrial, northern, and project-management related work. HJOC operated primarily in Newfoundland and Labrador, northern Quebec, and Manitoba, and had developed relationships with clients such as the Iron Ore Company of Canada, Wabush Mines, ArcelorMittal Mine, Manitoba Hydro, Vale Inco, Voisey's Bay Nickel, and Fortis Inc.

Bird Construction acquired the company on August 31, 2011. At the time, there was no geographic market sector overlap between the

two companies, and the combination of Bird's recognized expertise in industrial building construction and HJOC's experience in earthwork, hydroelectric, heavy civil concrete, marine work, and surface mining projects provided compelling opportunities for growth. These prospects were further enhanced by the addition of HJOC's large fleet of heavy civil and mining equipment, and the onboarding of key members of the HJOC executive and 600 project management and support personnel. The combined talents and resources of the new division, Bird Heavy Civil Limited, could better serve new and existing clients.



WUSKWATIM GENERATING STATION

Thompson, Manitoba

H.J. O'Connell was working on the general civil works for the construction of the Wuskwatim Generating Station in Thompson, Manitoba around the time of the acquisition by Bird Construction. The massive \$400-million contract involved the mobilization of all construction equipment and plant necessary to complete the concrete supply and construction of the spillway, service bay, and intake and powerhouse structures. The construction of the main dam and all remaining excavation for the principal structures were also included in the scope of work. The project used 106,000 cubic metres of concrete, 6,800 tonnes of reinforcing steel, and 65,000 square

metres of formwork. Completed in late 2012 as part of a joint venture with Neilson Excavation and EBC Inc., the project encountered some challenges in obtaining sufficient local skilled labour. In co-operation with Manitoba Hydro, several initiatives for young First Nations workers were instituted. By placing these workers under the supervision of experienced carpenters and tradesmen, they gained valuable trade skills and contributed to the general success of the project. This philosophy of giving back to the community and promoting skills transfer and development was an indication of the close cultural fit and shared value system between HJOC and Bird Construction.





FIRE LAKE MINING PROJECT

Fire Lake, Quebec

From 2005 to 2015 Bird/HJOC operated the Fire Lake Mine, located approximately 70 kilometres south of Mont-Wright, Quebec. The scope of the project included the full operation of the Fire Lake Mine: drilling and blasting, excavation, hauling, loading of iron ore into rail cars, as well as the operation of a camp site for the workforce. The mining fleet on the site moved between 10 to 15 million tonnes of material annually.

TAILINGS CONFINEMENT PROJECT

Mont-Wright, Quebec

Bird/HJOC has been involved with the construction of the tailings management facility in Mont-Wright since its inception and has been awarded contracts annually since 1981. Bird/HJOC has been, and continues to be, the only contractor involved in the construction of the tailings management facility in Mont-Wright for nearly 40 years.

The scope of the project involved the construction of dams, dykes, canals, and concrete decantation structures to confine red water and mine tailings within a closed loop basin. As the volume of tailings storage needed to be increased, the crests of the retaining structures were raised. Between 500,000-cubic-metres and 2,000,000-cubic-metres of material were placed in the structures on an annual basis. Materials management and procurement were critical, as the main dam incorporated 10 different types of rock, aggregates, and soils.



The Wabush Mines Overburden Removal project in Newfoundland and Labrador was one of the ongoing contracts that the Heavy Civil division was regularly awarded and involved the supply of heavy construction services to Wabush Mines, specifically the overburden removal program. This entailed the removal of between 1.3 million to 3.3 million tonnes of earth to expose the mineral-rich aggregate below for mining. This contract has been awarded to HJOC annually since 1968, and then to Bird Heavy Civil Limited following Bird's acquisition of HJOC.

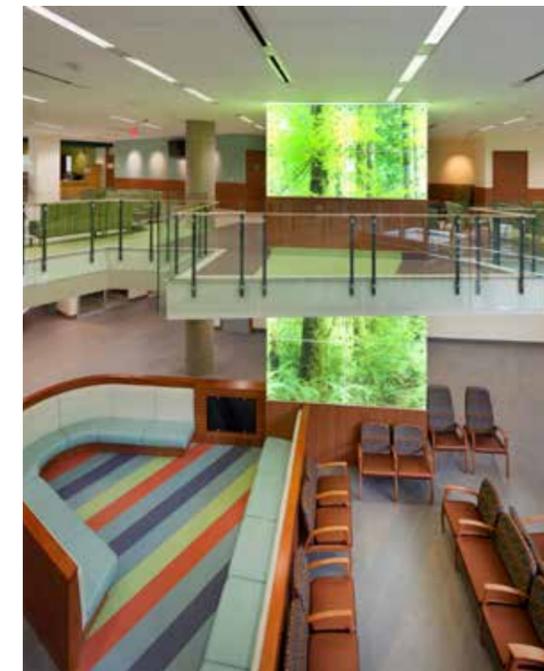
JIM PATTISON OUTPATIENT CARE AND SURGERY CENTRE

Surrey, British Columbia

The first standalone clinical outpatient care and surgery centre in Canada was nestled in the Green Timbers, an expansive heritage forest in the Fraser Valley. Three private consortium partners (Bouygues Building Canada Inc., ETDE Facility Management Canada, and HSBC Infrastructure) formed BC Healthcare Solutions to deliver this P3 project. Bouygues Building Canada Inc. partnered with Bird Construction on the design-build component, and Kasian Architecture Interior Design & Planning Ltd. undertook the design work. The project had a 30-month fast-track schedule.

At over 30,000 square metres, the new medical facility played an essential role in the provision of healthcare services for the community. The five-storey building had state-of-the-art medical imaging facilities, six operating rooms for minimally invasive day surgeries, 10 minor procedure rooms and recovery areas, educational and meeting spaces, a pharmacy, gym, laboratories, and health clinics. These clinics provided specialized care related to maternal health, chronic disease management, and neurology, amongst others. There were also three-and-a-half levels of below-grade parking.

From a design perspective, the intention was to create an inviting space that was easily navigable. Each floor had a unique interior theme based on a specific tree and colour that was incorporated into the wall and floor coverings. The main reception desk was positioned so that it was visible from all entrances to the building. Extensive glazing and warm wood finishes contributed to the welcoming atmosphere. Waiting areas were clustered towards the west side of the building to take advantage of the natural light and the view. Expansive open spaces added a feeling of lightness to the facility, which was achieved through the use of a nine-by-nine metre column grid and by placing the seismic shear walls along the perimeter.



There were a few technical design challenges to consider. Specific requirements for some of the medical equipment had to be accommodated. At the same time, maximum flexibility in the design enabled the client to purchase the latest equipment closer to the building completion date; a key consideration given the pace at which medical technology evolves. As a medical facility, post-disaster provisions and redundancy measures had to be incorporated. For example, maintaining power was critical. There were therefore two 1,500-kVA transformers for the building as a whole, individual transformers for the imaging equipment, separate transformers for lighting, and two 600-kilowatt generators in parallel. The extensive use of concrete accommodated the demands of the high floor loads and also minimized vibrations that could affect sensitive equipment.

As the needs of the community would change over time, the future adaptability of the facility was a priority. The key challenge in this respect would be mechanical: future changes would be restricted by the placement of ventilation shafts, which traditionally run inside the building. By shifting the shafts to the exterior of the building, future redesigns would be less encumbered by the existing building structure.

LEED® Gold certification was taken as the baseline standard throughout the project, from the bidding to the design to the selection of finishing materials. Among the measures implemented were low-voltage lighting throughout the public areas, timers to turn lights off overnight, and occupancy sensors in theatres and offices.

The project was completed on budget and three months ahead of schedule in December 2010. Bird Construction, together with joint venture partner Bouygues Building Canada Inc., received the 2011 Vancouver Regional Construction Silver Award of Excellence for the Jim Pattison Outpatient Care and Surgery Centre.^[35,36]

EMERGENCY OPERATIONS CONTROL CENTRE

Calgary, Alberta

The Calgary Emergency Operations Control Centre was a state-of-the-art multi-agency disaster management facility. It housed the city's Disaster Services Unit, which included police, fire, ambulance, and health agency personnel, as well as representatives from up to 60 related agencies. The 4,900-square-metre facility could be self-sustaining for up to 72 hours: there was off-grid power, water, food storage, and cleansing areas. A media centre was located above grade.

Designed by Manasc Isaac Architects, the facility was situated primarily underground, both improving security and minimizing heating costs. This contributed to the structure's LEED® Gold certification, as did innovations to reduce the building's carbon footprint. For example, concrete with high cement replacement by recycled materials was used, and all structural steel and concrete reinforcing were specified to contain a high amount of recycled content. The building was designed with future utility in mind: higher live load capacities at all levels and

demountable interior partitions ensured flexibility for expansion and changing uses.

Bird used an economical earth retention system that utilized shotcrete to deal with the difficult soil conditions on site – primarily clay underlain with wet silts and flowing sands. This approach enabled zero ground loss and minimal water infiltration around the site.

The project received numerous accolades, including Alberta Construction magazine's Top Projects Award for Institutional Project under \$50 Million and the Top Projects Award for Sustainability; and the 2013 Award of Excellence in Concrete Buildings by the Alberta Chapter of the American Concrete Institute. Completed in October 2011, the facility played a key role in the city's disaster management response to the record-breaking floods in 2013.



8 WING CANADIAN FORCES BASE TRENTON MAINTENANCE HANGAR NO. 1

Trenton, Ontario

The construction of the new maintenance hangar adjacent to the northwest apron at 8 Wing Trenton was the largest single-building construction project ever awarded in the history of the Canadian Forces. The construction contract represented approximately 10 per cent of the announced Airlift Capability Program infrastructure recapitalisation at the base. The Hangar 1 multi-use facility would house the maintenance section of 429 Transport Squadron, known as the Bisons. The hangar was primarily designed to cater to the CC-177 Globemaster III, one of the largest aircraft in the world at the time. It could also shelter any Canadian Forces aircraft, including the Airbus and Hercules fleets operating from 8 Wing.

The complexity of the project stemmed from the immense scale and specialized requirements of the facility. The hangar bays had a clear span of 10 storeys, while the building reached a height of 13 storeys, standing almost 29 metres high. About 17,000 cubic metres of concrete was used during construction, and almost 3,000 tonnes of steel. Designed by SNC Lavalin, the 23,040-square-metre structure housed two massive maintenance bays and office, administration, and shop support space along three perimeter walls. More than 370 drawings and 2,800 pages of specifications went into planning the facility.

Each of the two maintenance bays could completely contain a CC-177 Globemaster III. The Corrosion Control Hangar Bay and the Fuel Cell Hangar Bay enabled specialized maintenance on fuel cells, corrosion control, long-term maintenance, and Home Station checks every 120 days. Among the advanced technologies installed at Hangar 1 was Canada's first telescoping platform. Two telescopic platforms were mounted on an overhead rail gantry, and this provided workers with increased overhead access to all aircraft within the hangar. A specially engineered foam fire suppression system was also installed. Hangar 1 was completed in March 2012.^[37]



ACQUISITION OF NASON CONTRACTING GROUP LTD.

M.R. Nason Construction Ltd. was founded in Edmonton, Alberta in 1965 and, by the 1980s, the company was a specialist in water and wastewater treatment projects. Nason constructed its first water treatment plant in Brule, Alberta in 1981, and then ventured into northern Canada to build a water reservoir and pumphouse in Mayo, Yukon in 1988.

By 1991, Nason had expanded its pool of specialists within the company to include mechanical and electrical divisions, and began operating as Nason Contracting Group Ltd. The growing expertise within the company enabled a scaling-up of operations and a number of firsts for the firm, including the large-scale water treatment facility at the Canadian Forces Base in Suffield, Alberta; a water treatment facility at Port Hardy, British Columbia (the company's first design-build); a municipal membrane water treatment plant in Fort McKay, Alberta; and the membrane bioreactor wastewater treatment plant in Southshore, Alberta – the first of its kind in western Canada. In 2010, a new specialist division was added to perform excavation, earthworks, and underground piping for environmental projects. The following year, the company constructed the first surface water plant in the

world to utilize a biological treatment process at the Saddle Lake Water Treatment Plant in Alberta.

After almost fifty years, Nason had a well-established reputation as a successful western Canadian-based multi-discipline construction company specializing in the construction and servicing of environmental facilities. Atypical to many general contractors, Nason had in-house major trades, which ensured that the company could offer enhanced quality control and competitive costing as it was able to undertake a greater proportion of the components of a project.

Bird Construction acquired Nason on January 17, 2013. Nason's proven abilities in the mechanical, electrical, and instrumentation works, and Bird's civil construction and general contracting expertise presented a propitious opportunity. The shared values of quality, safety, schedule, and cost augured well for the success of the acquisition, as did the mutual focus on client service and employee development and retention. One example of this synergy was the Calgary Composting Facility, completed in 2017, which fully leveraged the complementary expertise of the combined team.



SAINT JOHN LAW COURTS

Saint John, New Brunswick

In December 2010, Bird was awarded the contract to build a new facility in Saint John that would consolidate the provincial and federal law courts within a 100-kilometre radius. The almost 14,000-square-metre, six-storey, high security structure housed 13 courtrooms, the Department of Public Safety and Policy, and office space for the judiciary, public prosecutors, and court and sheriff services.

The design by Murdock & Boyd Architects blended classical entablature and concrete colonnades with modern elements. The external skin of the structural steel building was an elegant combination of different finishes: precast concrete, curtain wall, brick siding, decorative quarry stone, and distinctive copper siding. The interior of the three-storey atrium lobby featured a replica façade of the 19th century Saint John jail, incorporating original stones from the historic prison that was demolished in 1970. Vaulted wood ceilings and stained wood panelling were among the high-end finishes that added a dignified sense of gravitas to the new space. Careful interior spatial planning was required to maintain separate circulation routes for the public, the accused, and judges and legal personnel.

LEED® Silver accreditation was achieved on this project through the installation of superior insulation, high efficiency HVAC systems, and the use of low-E or low-emissivity glass that reflected heat, reduced infrared and ultraviolet light entering the space, and maximized natural light. Another important element was the regional and ethical sourcing of materials. For example, the Forest Stewardship Council Canada (FSC) certified that all the wood finishes were sourced from renewable forests.

The Bird crew had to contend with an extremely tight job site: revitalisation efforts were ongoing in downtown Saint John, and the new police headquarters was also under construction adjacent to the site. As part of the scope of work, Bird constructed half of the underground tunnel linking the new court building to the police headquarters (another contractor built the rest of the tunnel from the other side).

The site did not have space for materials lay-down, requiring deliveries to be scheduled on an as-needed basis. Bird took the lead in coordinating schedules and logistics amongst the slew of contractors working in the area, including hosting meetings to figure out evening and weekend work and material deliveries among the contractors. By working together to mitigate risks and minimize disturbance to the local landowners and community, projects proceeded unhindered and timelines were met. The new Law Courts were officially opened in September 2013.





MUSKRAT FALLS HYDROELECTRIC GENERATING STATION BULK EXCAVATION AND CIVIL WORKS

Happy Valley-Goose Bay, Newfoundland and Labrador

The Lower Churchill Project is a critical element of Newfoundland and Labrador's energy resource portfolio. Phase One, the Muskrat Falls Project, included the construction of an 824-megawatt hydroelectric generating facility in central Labrador and over 1,600 kilometres of transmission lines across the province.

The contract for performing the bulk excavation and civil works on the Muskrat Falls site was awarded to the Bird Heavy Civil division, which served as the lead partner for the IKC-ONE Earthwork Constructors consortium, and also involved the participation of the Labrador Innu.

The scope of work included overburden and rock excavation of the intake, powerhouse, spillway, separation wall, switchyard, and converter stations. In addition, 175,000 cubic metres of earthfill cofferdams and 37,000 cubic metres of roller compacted concrete cofferdams were built. Almost 300,000 linear metres of rock was drilled with 75 to 165 millimetre holes for blasting. The rock removal commenced at 20 metres above the river level and concluded at 38 metres below water level. Over 2.7 million cubic metres of earth was moved, more than 1.9 million cubic metres of rock blasting and removal was completed, and 17,000 cubic metres of underwater rock removed to complete this project that concluded in 2013.

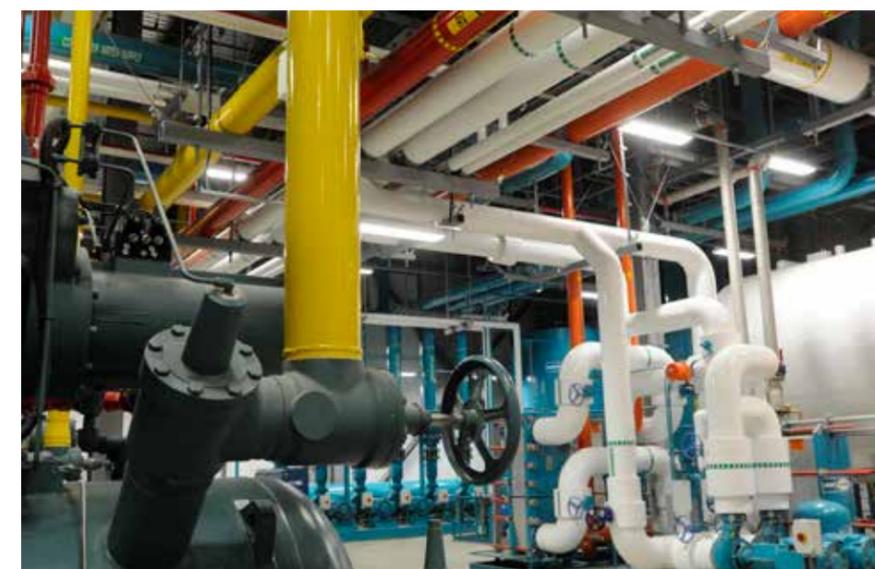
MAPLE LEAF FOODS PROCESSING PLANT

Hamilton, Ontario

The 49,000-square-metre Maple Leaf Foods Processing Plant was one of the most advanced food processing plants in North America. More than 400 products were made at the plant, including hotdogs, ham, turkey, pastrami, as well as a range of processed deli meats. One of the key deliverables for the new facility was the simplification of Maple Leaf Foods' distribution network through the improvement of supply chain efficiencies.

Bird Construction was awarded the contract for this complex facility in 2012. Ninety per cent of the building was occupied by refrigeration and freezer space, presenting a challenge for Bird and the Stellar Group, the latter providing engineering design and architectural services on the project. Only the dry ingredients, packaging material, and office areas were tempered. The plant's structural steel frame was clad with insulated panels, and the interstitial space above each process area housed the mechanical and electrical systems. The new facility increased the safety of the whole food process through extensive automation, as the reduction in human handling minimized the scope for contamination. The Canadian Food Inspection Agency (CFIA) certified that the meat processing facility met strict food safety standards. LEED® Silver certification was achieved through measures such as stringent erosion control during construction, water and energy efficiency, comprehensive recycling and waste management programs, and the utilization of recycled and locally sourced materials.

Bird Construction delivered this mammoth project in three phases delineated by production lines (wiener, deli, and bologna). As each phase was delivered, CFIA requirements for the active production line had to be maintained while adjacent production lines were completed. Exacting safety procedures and intricate coordination ensured that all process equipment installation proceeded smoothly, and all systems were fully coordinated, commissioned, and certified. The Maple Leaf Foods Processing Plant was completed in March 2014.





SUNCOR

Bird Construction's reputation for integrity and professionalism has fostered long-term relationships with its clients over the years, including Suncor, Canada's leading integrated energy company. Bird's work and project scope with Suncor has evolved over the last 25 years from non-process buildings, to self-perform civil works, to process mechanical and electrical work. Since implementing the program and policy for Indigenous engagement, Bird's Indigenous employment supporting Suncor projects has reached 28 per cent. Bird's team members from across the country have supported the work with Suncor in a variety of roles at the Fort Hills site, including additional supervision and management personnel from Bird's mining division headquartered in Montreal.



Fort Hills Infrastructure Block

LONG HARBOUR NICKEL PROCESSING PLANT SITE

Long Harbour, Newfoundland and Labrador

Multiple complex projects have been completed for this long-standing client on the Long Harbour Processing Plant site. The majority of the contracts awarded centred around the provision of concrete and earthworks, including extensive excavation and backfill, although the scope of work went beyond these tasks on almost all the projects. Work was completed at the port site, Rattling Brook, and Sandy Pond, amongst others. During the construction phase for the Long Harbour Processing Facility, Bird Heavy Civil completed a construction program in excess of \$300 million.

Among the many earthworks, concrete and electrical work contracts that Bird completed on the port site were the concentrate/limestone

storage building, sulphuric acid storage tanks, and external utility racks. The scope of work also included the installation and construction of underground utilities and piping. Careful removal of phosphorous was required during the earthworks, while the concrete foundations and electrical grounding necessitated intricate logistical management as large modules arrived on site weekly and had to be installed on strict deadlines. Over 17,700 cubic metres of concrete were poured, 21,500 square metres of formwork constructed, and 135,300 cubic metres of excavation and backfill conducted on this part of the port site contract.

On the Rattling Brook big pond overland pipeline and pumphouse project, underground piping was laid, a pumphouse constructed, and a raw water intake installed for the processing facility. More than 40 metres of 1,200-millimetre HDPE flanged intake pipe and 1,350 metres of 450-millimetre HDPE fused force main pipe were installed. The underwater placement of an intake pipe required precise survey data to determine proper placement locations and elevations. During the port to plant project, the construction of the wet well structure proved challenging as the tall, narrow chambers required careful coordination

of materials, equipment and workforce. Providing confined space training for all carpenters and labourers ensured that there were no manpower shortages and the job was completed ahead of schedule.

The development of Sandy Pond into a residue storage area included the construction of three earthfill dams, an emergency spillway, and a runoff diversion channel, in addition to overburden stripping and pond dewatering. About 122,000 cubic metres of excavation was performed, and almost 30,000 square metres of bituminous geomembrane liner was used on this project. Quick mobilization of additional human and material resources ensured the project was completed before the onset of winter.

The Bird Heavy Civil division repeatedly demonstrated its technical expertise, professionalism, problem-solving abilities, and commitment to safety on these projects that spanned between March 2010 and April 2013. Coping with geotechnical condition changes, a remote site, harsh weather conditions, evolving client needs, and unexpected challenges were all taken in stride. This ability to do what it takes to safely deliver the project on-time, on-budget, and to the highest standards is the reason why Bird has maintained its competitive advantage in this market sector.



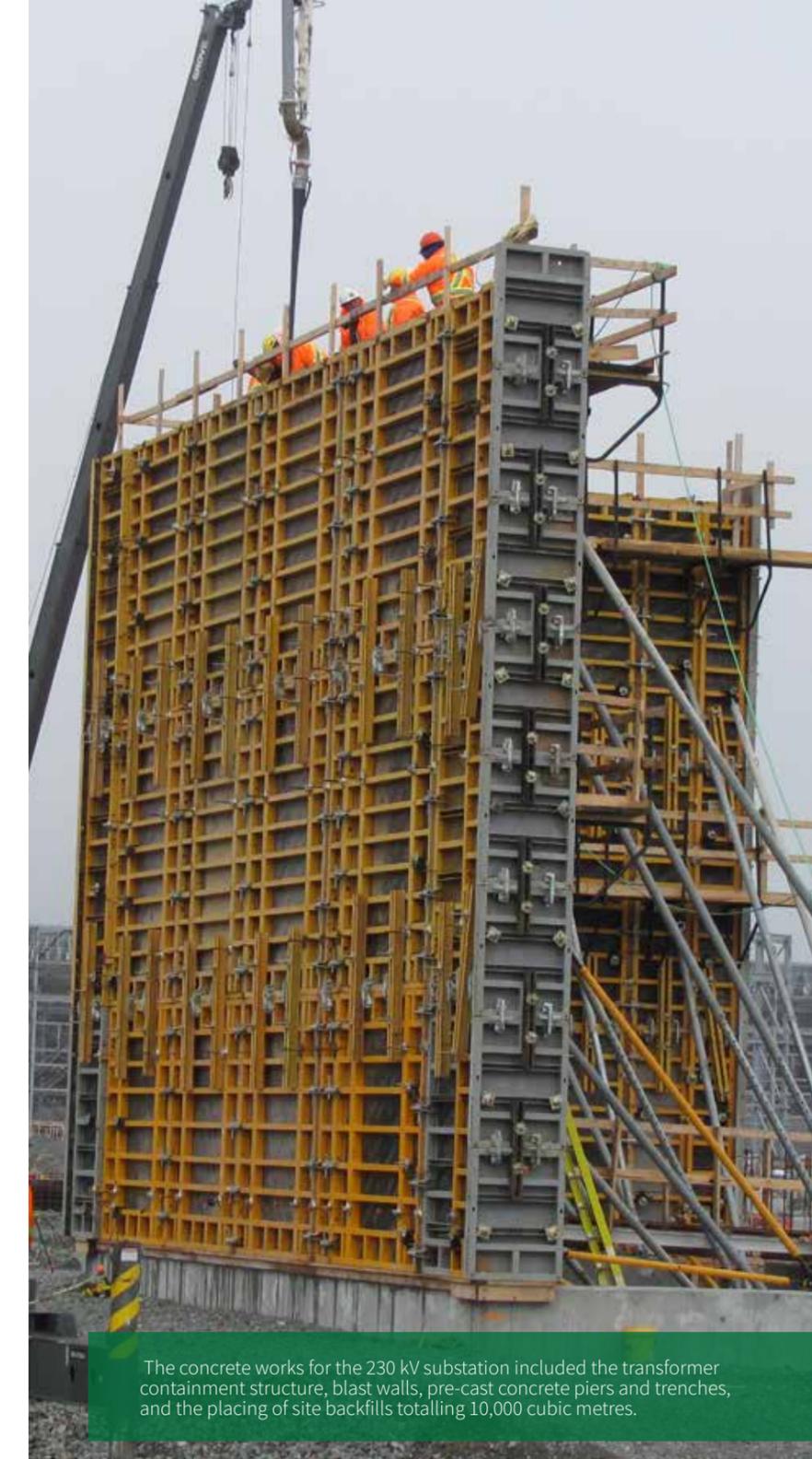
Formwork for the sulphuric acid storage tanks



Port site Storage Facility concrete foundations



Construction of the residue storage area



The concrete works for the 230 kV substation included the transformer containment structure, blast walls, pre-cast concrete piers and trenches, and the placing of site backfills totalling 10,000 cubic metres.

CANADA POST PACIFIC PROCESSING CENTRE

Richmond, British Columbia

The Postal Transformation Program, initiated in 2008, aimed to dramatically modernize Canada Post facilities and operations across Canada. Among the pressing needs of the 150-year-old service was a consolidation of the existing facilities in Richmond and Vancouver. In 2011, Bird began construction on the immense Canada Post Pacific Processing Centre next to the Vancouver International Airport in Richmond. The facility sprawled across a 170,000-square-metre site and would be able to handle the volume of mail processed on the West Coast within this one facility. On average, 648,000 letters, 10,000 parcels, and 12,000 packets may be processed every hour.

The building included a 48,000-square-metre mail processing plant and a 15,000-square-metre two-storey office building. The site also included docking space with 116 shipping and receiving bays, secured heavy vehicle parking, parking for 750 employees, and paved truck circulation roads. Bird led this design-build project, and the design

team included Kasian Architecture Interior Design & Planning Ltd., Gustavson Wylie Architects, and Williams Engineering.

The interior featured a complex array of sophisticated equipment and technology. State-of-the-art automation relieved the previous pressure on manual and labour-intensive tasks. The conveyor system alone stretched a distance of about 10 kilometres. The mass of machinery inside required mechanical cooling, which was provided by means of a chiller plant: three 650-tonne chillers with a cooling tower were housed in mechanical rooms. Some cooling was achieved by ventilating the space with cooler air from outside, which provided a surprising amount of energy savings as the busiest time of the year for the centre was Christmas, when the cold air outside was almost sufficient to meet all cooling needs. The heat generated by the machines was circulated to keep the building at a comfortable working temperature.



A challenge was presented by the fact that almost 1,400 square metres of the facility were dedicated to the Canada Border Services Agency (CBSA), a space where officers screened mail items to assess admissibility, applicable duties, and completed enforcement measures as required to protect the health, safety and security of Canadians. Bird ensured physical security protocols of the CBSA space were met.

The facility attained LEED® Silver certification and implemented various sustainability and environmentally-conscious measures such as an efficient building envelope and high-efficiency HVAC equipment. The particular needs of the highly specialized working environment had to be considered when installing some of these features. For example, there was a high density of outlet requirements and footcandle lighting levels in the plant and parking areas had to be higher than usual. Means to reduce energy consumption and heat output had to be investigated, as well as ways to limit the amount of light pollution emanating from the plant that was operational 24-7. A fully integrated lighting control system with occupancy sensors and light-pollution-reducing fixtures was installed. A number of measures

to improve indoor air quality, maximize natural light, and reduce waste were also instituted.

The project had to be completed with strict adherence to a demanding schedule to accommodate Canada Post's commitments to their equipment vendors. This meant that various areas of the processing plant had to be handed over at earlier dates to allow equipment and conveyor installation to commence, before being handed back to Bird to finish installation of systems that co-ordinated with the processing equipment. Among the strategies employed to meet each milestone date was pre-ordering major structural steel sections prior to design finalization, constructing the building out-of-sequence, and strategically accelerating critical work activities.

Canada Post was a repeat client: Bird had already completed the North Van Delivery Depot in North Vancouver, British Columbia, and the operational transition works facility in Calgary, Alberta. The company's reputation for delivering quality work within tight timeframes was maintained when the facility was completed precisely on schedule in January 2014.

THE NEST AT UNIVERSITY OF BRITISH COLUMBIA

Vancouver, British Columbia

The elegant and unique Alma Mater Society Student Nest was a new student union building nestled in the heart of the University of British Columbia campus. The five-storey, mixed-use building was jointly designed by DIALOG and B+H Architects through an intensive Integrated Design Process that drew input from a variety of stakeholders, including the students who would be using the facility.

The 20,900-square-metre building incorporated study areas, eateries, shops, offices, a theatre, art gallery, daycare, and broadcast facilities. The three-storey climbing wall on the north side of the building rewarded climbers with a breathtaking view of English Bay and the North Shore Mountains thanks to the full height glazing. An almost 1,000-square-metre rooftop garden on the fourth level of the building included a water feature and crop area that produced an organic harvest for use in the food venues. There was also an in-vessel composting facility.

The most distinctive feature of this project was the exposed wood nest perched atop three slender steel columns that appeared to float two-storeys above the mezzanine floor. A spectacular showcase of mass timber construction, the custom wood soffits surrounding the Nest were meticulously engineered and required painstaking fitting and shop finishing. The floating glass staircases and four-storey-high, boomerang-shaped glulam columns added to the feeling of openness and light, as did the sawtooth roof of glulam trusses and cross laminated timber panels. On the southern side of the structure was the 743-square-metre Great Hall, supported by a concrete structural V-column and three steel trusses weighing 50 to 80 tonnes each. There were 220 tonnes of steel in the truss system, and it was so large that it had to be assembled on site.

The building was LEED® Platinum certified and featured a range of innovative sustainability and energy efficiency measures throughout the building's design. About 30 per cent of the total energy

consumption for the building was supplied by a combination of solar thermal and photovoltaic arrays, with passive ventilation and daylight harvesting contributing to the energy efficient system. The atrium roof was designed to provide solar hot water and solar cooling. Hydronic heating and cooling were incorporated into the structural slabs. Heat was also extracted from the low temperature return condensate system as a by-product of UBC's district steam system. This had the added benefit of lowering the condensate water temperature of the system thereby improving energy efficiency. A cutting-edge Computational Fluid Dynamics (CFD) model ensured that the optimal internal temperature was maintained.

Forest Stewardship Council-certified wood was used, ensuring that the wood was responsibly sourced. The use of Portland Limestone Cement (PLC) for all concrete work furthered the sustainability goals. The higher limestone content, particularly when used in conjunction with Supplementary Cementitious Materials (SCM), reduced carbon dioxide emissions by up to 10 per cent in comparison to General Use Portland Cement. It is also worth noting that the structure was built using 83 per cent recycled steel.

Another of the many innovative features on this project was the use of Building Information Modelling (BIM), which enabled the architects, engineers, and construction professionals to create intelligent 3D models that assisted with efficient planning and management. Related to this was the use of the multi-disciplinary design-construction performance modelling technology of Virtual Design and Construction (VDC), which focused more specifically on construction planning elements such as cost estimation and scheduling. Bird Construction once again leveraged its technological capabilities to ensure that all aspects of this complex build were intricately mapped out. This careful planning and rigorous execution were among the many reasons UBC repeatedly engaged the services of Bird.

As well as being a popular addition to the campus following its completion in 2015, the building received numerous accolades, including the 2015 Steel Design Award from the Canadian Institute of Steel Construction for the outstanding steel structure, and the 2016 General Contractor Award from the Vancouver Regional Construction Association.^[38]



Image courtesy of Ema Peter

SASKATCHEWAN JOINT USE SCHOOLS PROJECT

Regina, Saskatoon, Martensville, and Warman, Saskatchewan

In 2013, the Premier of Saskatchewan announced that 18 new schools would be built on nine joint use sites in the high-growth communities of Regina, Saskatoon, Martensville, and Warman. The new publicly-owned infrastructure was essential to meet the rapid growth in student enrolment in Saskatchewan. The decision to construct joint use facilities, which are typically shared between Catholic and public school divisions, was based on the need to lower short- and long-term maintenance costs, as well as promote stronger partnerships between school divisions. The central shared spaces included multi-purpose rooms such as gymnasiums, community resource centres, and child-care centres.

The Saskatchewan Joint Use Schools Project 1 and 2 would be the largest concurrent build of new schools in the province's history. A P3 model was chosen for the complex project to ensure on-time and on-budget delivery and promote innovation, creativity, and efficiency.

The P3 was between SaskBuilds and the Joint Use Mutual Partnership (JUMP), a consortium led by Concert Infrastructure Ltd. The consortium designed, built, financed, and maintained the bundle of 18 schools on nine sites. The design and construction took two years, and then a 30-year maintenance period commenced. Bird Capital provided the financing, together with Concert Infrastructure Ltd. The construction was delivered by Bird Construction with consortium partner Wright Construction Western Inc.

The almost \$400-million project was split into two bundles. The first bundle covered six schools on three sites in Regina; the second bundle included eight schools on four sites in Saskatoon, two schools on one site in Martensville, and two schools on one site in Warman. The new facilities accommodated 11,100 students from kindergarten to grade eight who resided under the purview of the Public and Separate Saskatchewan School Divisions in Regina and Saskatoon



and the Prairie Spirit School Division, which draws students from 28 communities around Saskatoon including three First Nations and eight Hutterite communities.

The state-of-the-art educational facilities were based on three prototypical models designed by GEC Architecture. Each design was then modified to meet the specific needs and approaches of the particular school, maximizing flexibility without sacrificing efficiency. The key design element was to promote collaboration through interconnected learning spaces, making the most of the advantages offered by the joint use sites.

All the schools met LEED® Silver requirements. Among the environmental efficiencies instituted were large windows that allowed more natural daylight and created bright learning spaces, automated lighting systems, high-efficiency water fixtures and landscape designs

that reduced water consumption, and multiple recycling points throughout each school. An interesting feature on this project was the launch of nine 24/7 webcams that enabled people to view the real-time construction progress being made on all the sites.

Bird Construction had previously demonstrated the ability to successfully execute complex multi-site P3 projects, including the Ontario Provincial Police Modernization Project and the Alberta Schools Alternative Procurement Project. This endeavour once again affirmed the company's exceptional skill in meeting the particular challenges of bundled P3 infrastructure projects. The project was completed on time for the new school year in September 2017.



CALGARY COMPOSTING FACILITY

Calgary, Alberta

The largest composting facility of its kind in Canada, this immense plant processed more than 145,000 metric tonnes of source-separated organics and dewatered biosolids every year. Source-separated organics are primarily composed of residential food and yard waste, while the anaerobically digested and dewatered biosolids are a nutrient-rich by-product of the wastewater treatment process.

The facility was a Public-Private Partnership project awarded by the Calgary City Council to the Chinook Resource Management General Partnership, which was a consortium led jointly by Bird Construction and Maple Reinders Group. The contract was to design, build, finance, and operate the facility, and the consortium brought together the best sector expertise and resources required to successfully execute the project. Bird Capital and Maple PPP were the developers; Nason Contracting Group (a wholly owned subsidiary of Bird Construction) and Maple Reinders Inc. were the design-build contractors; and Stantec was the design and permitting liaison.

The whole facility covered 150,000 square metres, and the main composting building had a 31,000-square-metre footprint. The core

facility covered an area equivalent to eight football fields and included a tipping floor where organic intake was performed, a shredding area, sealed in-vessel concrete composting tunnels with underfloor aeration and sprinklers, a curing building, and a storage building. Acid baths and large biofilters treated all outflowing air to eliminate odours. There was also an outdoor learning garden and classroom overlooking the composting facility that was used as part of a public education initiative.

This was the first LEED® v4 registered commercial building in Alberta. Among the sustainability features incorporated into the facility were the water-saving measures that enabled all of the water used in the composting process to be sourced from recovered stormwater. This also relieved some strain on the sewer system. The state-of-the-art facility did not produce any net liquid or dry waste. In addition, waste heat from the composting process was captured and used to heat the main building areas, with minimal supplemental heating required.

The Calgary Composting Facility was completed in July 2017. It received the Silver National Award for Innovation and Excellence in Public-Private Partnerships from the Canadian Council for Public-Private Partnerships and an Award of Excellence from the Canadian Consulting Engineers. These awards acknowledged the excellence and innovation in project development, financing, service delivery, infrastructure investment, and economic benefit that resulted in the enhanced quality of public services.



88 SCOTT STREET

Toronto, Ontario

This landmark condominium in a prime downtown location was an exceptional example of urban in-fill and sustainability: the 58-storey, 525-unit mixed-use building extended to the property limits on three sides. It was situated at the bustling intersection of the financial district and the historic St. Lawrence neighbourhood, with Berczy Park across the street.

Designed by Page + Steele/IBI Group, the residential units and amenity facilities on the upper floors included a seamless edge pool, various exercise facilities such as yoga and spin rooms, a screening room, and private dining and party rooms. A spacious outdoor terrace included areas for barbecuing, exercising, and alfresco dining. The units had high-end finishes and open concept floor plans, with expansive windows offering spectacular views.

The residential areas in the cosmopolitan 48,300-square-metre building sat atop five levels of underground parking, retail units and restaurant facilities, and three floors of office units. The podium base of the tower assimilated the granite and limestone façade of the Royal Sun Alliance Insurance building that used to occupy the site.

Bird Construction brought its usual high standard of stewardship to this project, contending with a tight worksite, myriad regulations governing construction in the downtown core, and the intricate requirements of creating a vertical neighbourhood in the building tower. LEED® Gold certification was achieved, as Bird utilized eco-friendly materials and energy-efficient operating systems throughout. The building was ready for occupancy in 2018.



INVESTMENT IN STACK MODULAR STRUCTURES

Stack Modular Structures is a leading manufacturer of purpose-built, large-scale, modular construction projects across North America. The Stack Modular units have durable, high-grade structural steel frames that have been engineered to stack over 25 storeys high, and have been successfully deployed in the residential, hospitality, commercial, and resource sectors.

Founded by Edmontonian Jim Dunn in Shanghai, China in 2009, it was the first Wholly Foreign Owned Enterprise (WFOE) in China owned solely by a Canadian. The company's production facilities are located two-and-a-half hours north of Shanghai in Zhangjiagang.

Modular construction offers a number of advantages and opportunities, particularly in terms of risk mitigation and budget control. For example, there is a much shorter build schedule, a reduction in on-site deficiencies as units can be completed within a manufacturing plant environment, and a faster deployment rate that can minimize site disturbances and traffic congestion. There are also opportunities specific to construction in remote locations, where access can be severely restricted by weather and lack of infrastructure.

On September 13, 2017, Bird Construction acquired 50 per cent of the shares of Stack Modular Structures Ltd. and 50 per cent of Stack Modular Structures Hong Kong Limited. This partnership was a means for both companies to grow, diversify, and seize emerging opportunities created by their respective competitive advantages.

Such an opportunity arose within six months. Bird was awarded the contract to construct a hotel and conference centre in Iqaluit, Nunavut for the Qikiqtaaluk Corporation. Stack Modular would provide modular units for the project.





INDIGENOUS RELATIONS

Bird Construction's engagement with Indigenous communities across Canada has evolved over the last century. In earlier years, interaction was largely limited to building in communities, such as during the construction of Inuvik in the Northwest Territories in the late 1950s. By the 1970s, the company was more actively working with Indigenous communities through initiatives that supported training and empowering community members, such as with the Grouard Houses in northern Alberta. Over the last few decades, the company has developed a collaborative and participatory approach that is respectful and proactive. One example of this is the Enbridge Line 3 Replacement Program project in Manitoba and Saskatchewan.

Bird Construction adopted a National Indigenous Engagement Policy to ensure a consistent and culturally appropriate approach across all operations. This policy was based on provisions of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and the Truth and Reconciliation Commission's Call to Action #92. The policy

guides Bird in respecting the diversity of the Indigenous landscape in Canada and was an important step towards positioning the company to be a positive contributor to the well-being of Indigenous people in the communities in which Bird operates. A key pillar of the policy was the understanding that economic reconciliation includes employing Indigenous peoples, purchasing from Indigenous businesses, doing business with Indigenous partners, and conducting meaningful engagement with all stakeholders.

It was important to the company leadership that the policy would inform the conduct of employees. Bird developed and implemented a mandatory Indigenous Cultural Awareness Training Program to educate management and employees about the history, rights, and culture of Indigenous peoples in Canada. This training is also made freely available to subtrades. By building respectful relationships and promoting open communication, mutually beneficial business opportunities are increased. Bird is also committed to building

capacity within Indigenous business communities and investing in community programs that support Indigenous skills development through in-kind and financial contributions.

Bird is dedicated to investing in the development of young people in Canada, particularly young people from Indigenous communities. The Bird Heavy Civil Division annually awards scholarships to three full-time Indigenous post-secondary students. This scholarship currently has gender parity and targets students enrolled in technical or trade programs. Some of the recipients have also gained valuable work experience by completing work-terms with Bird. Bird Construction also awards an annual scholarship to students enrolled in the University of New Brunswick's Bachelor of Science in Engineering Program, with preference given to female Indigenous students. A similar scholarship has been created at Langara College in British Columbia in support of Regular Studies Program students demonstrating financial need, with preference given to Indigenous students. Bird Industrial West created



the Scott Ferguson Memorial Scholarship in 2019 to assist Indigenous post-secondary students in Alberta. The selection criteria include community leadership, financial need, extra-curricular activities, and how the individual contributes to reconciliation within Canada. In conjunction with the 100th anniversary celebrations, Bird developed a National Scholarship Program that will assist in addressing the financial barriers experienced by Indigenous students across Canada. Partnering with Indspire, Bird will be able to leverage funds to provide more educational opportunities going forward.

Bird is proud to be part of the Canadian Council for Aboriginal Business' Progressive Aboriginal Relations (PAR) certification process. PAR is a certification program that confirms corporate performance in Indigenous relations and indicates to communities that participating companies are good business partners, a great place to work, and committed to prosperity in Indigenous communities. It signals that the company is building strong and progressive relationships within Indigenous communities that are resulting in measurable improvements. Bird's membership in the Aboriginal Procurement Champions Group provides assurance that procurement opportunities are made available to those businesses that are

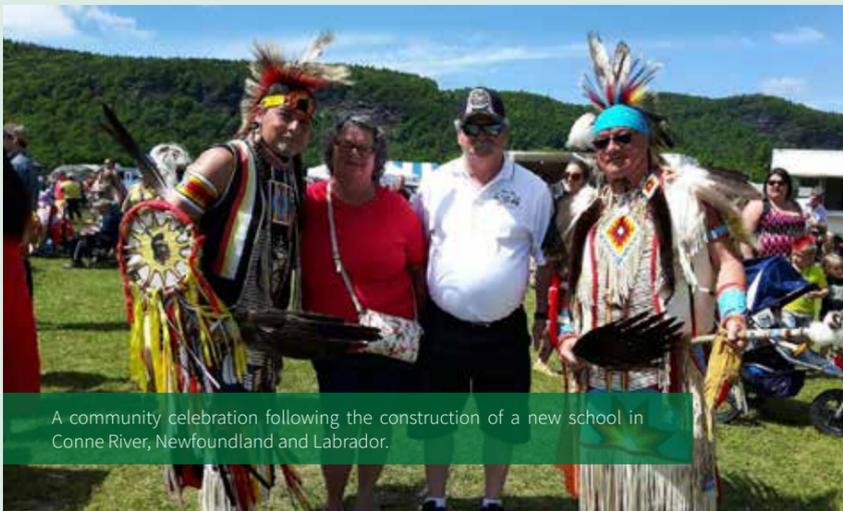


independently pre-certified as at least 51 per cent Indigenous owned and controlled.

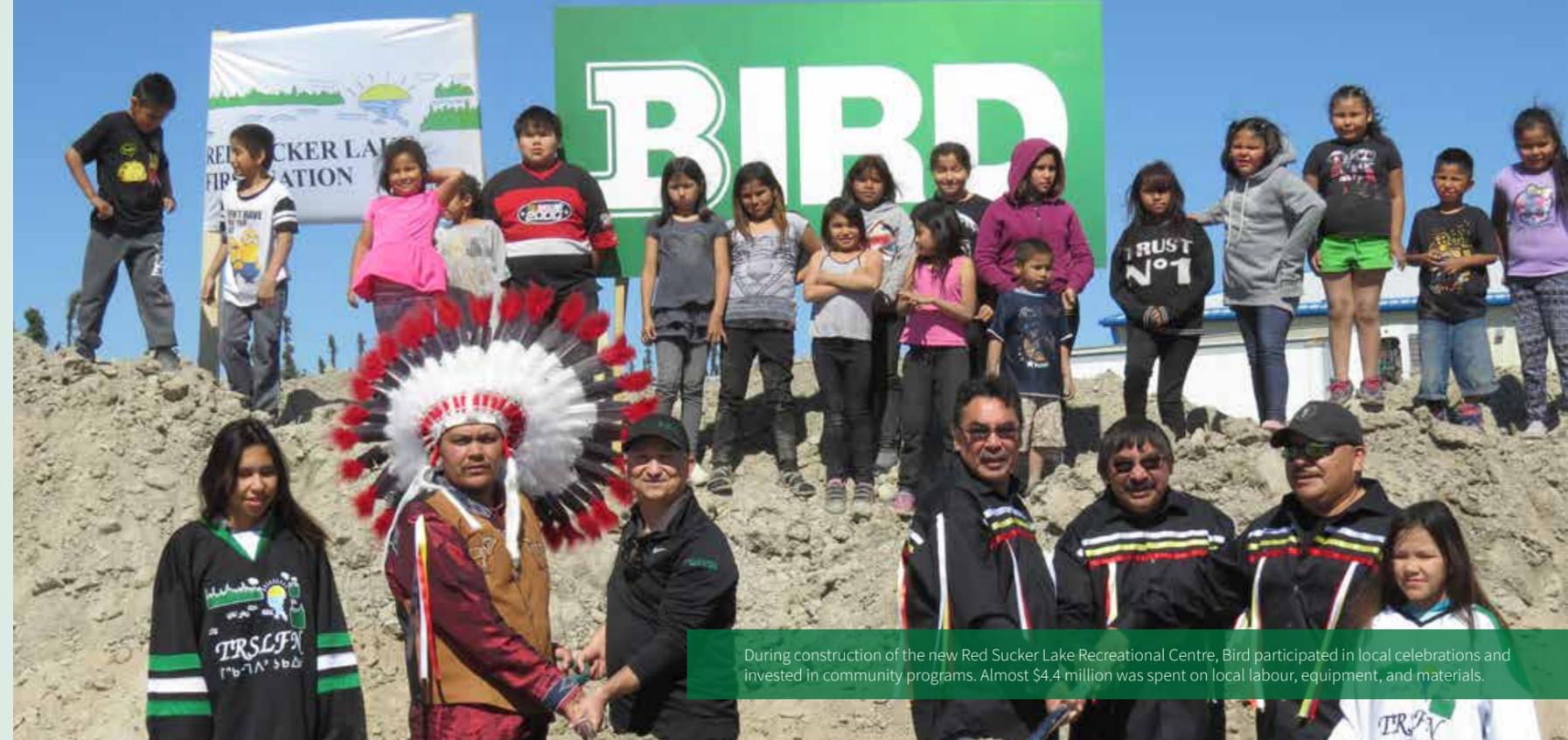
Bird seeks to engage and consult with Indigenous peoples to ensure that there is active participation in the workforce and subcontracting opportunities. For example, Timmiak is a long-standing partnership between the Nunatsiavut Group of Companies, which is the business arm of the Nunatsiavut Government, and Bird Heavy Civil. Timmiak has completed infrastructure and concrete works in Voisey's Bay in Newfoundland and Labrador, during which both partners contributed equipment, labour, and construction methodologies to the project. The partnership provided opportunities for extensive Inuit engagement and the inclusion of qualified Inuit (as well as other local Indigenous) labour force. Timmiak has recently pursued several opportunities in the northern Labrador region of Newfoundland and Labrador. Bird Heavy Civil has been executing work with Timmiak since 2006 and recent examples include the construction of the Illusak Cultural Center in Nain, and being selected as the preferred contractor for the Voisey's Bay Mine Expansion Civil Works Package for Vale.

Bird Construction's approach to Indigenous relations is closely aligned with the core values of the company to operate with integrity, provide stewardship, and invest in people. It is the vision of the company that

respectful engagement with Indigenous communities and groups becomes an integrated element of all projects, and the company is continuously setting new targets to ensure that this goal is attained.



A community celebration following the construction of a new school in Conne River, Newfoundland and Labrador.



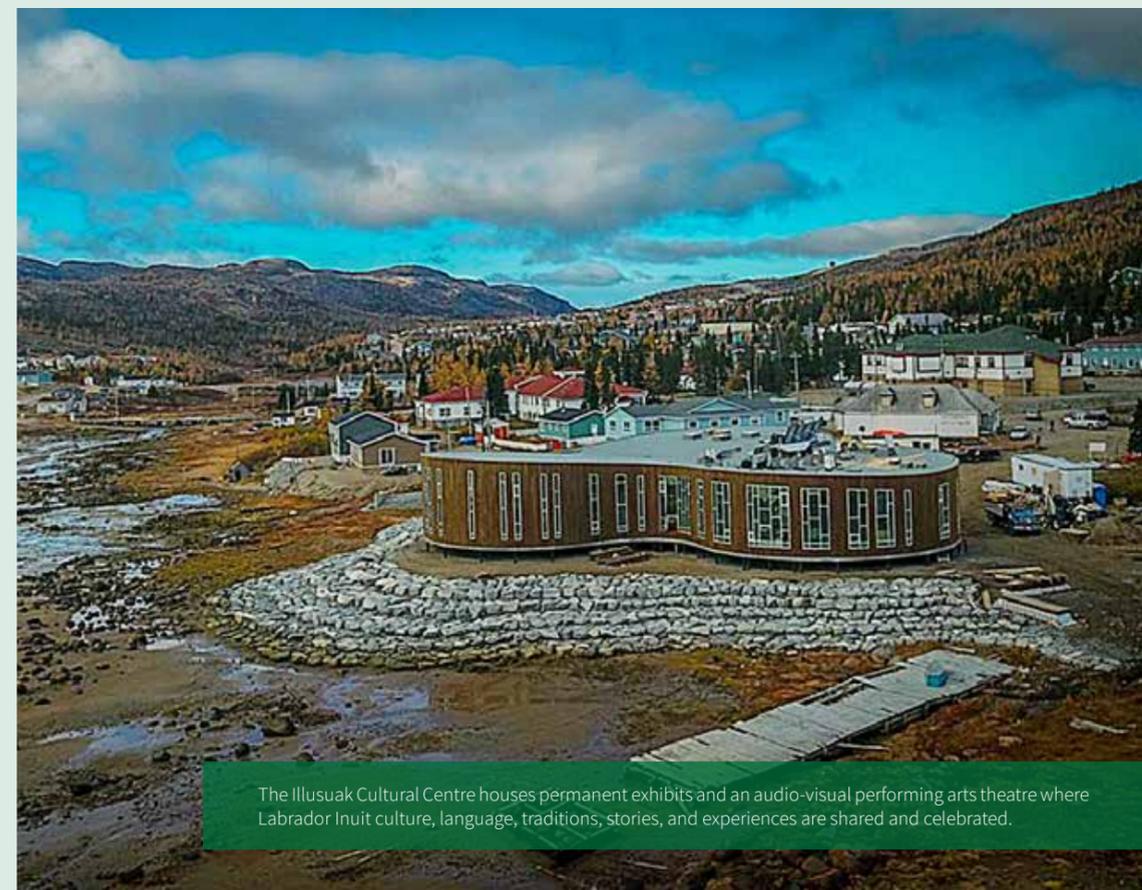
During construction of the new Red Sucker Lake Recreational Centre, Bird participated in local celebrations and invested in community programs. Almost \$4.4 million was spent on local labour, equipment, and materials.



Bloodvein First Nation community celebrated as Pimachiowin Aki (Land that gives life) in Manitoba was awarded World Heritage Site status in 2018. This was an Indigenous-led project that resulted in the protection of the largest intact boreal forest in the world. Bird was honoured to be the only outside organization invited to the celebration as a result of the strong relationship developed with the community.



Bird staff celebrate National Indigenous Peoples Day in Mont Wright, Quebec.



The Illusak Cultural Centre houses permanent exhibits and an audio-visual performing arts theatre where Labrador Inuit culture, language, traditions, stories, and experiences are shared and celebrated.



Following the principles of respect, understanding, and transparency, all parties were able to agree on a common plan. A framework for engagement was utilized by the project team and guided meaningful engagement and relationship development with the communities.

Overall, Bird achieved 20 per cent Indigenous employment on the Enbridge Line 3 project, including 42 Indigenous direct hires by Bird and 31 Indigenous direct hires by subcontractors. There was 25 per cent sub-contracting spend on Indigenous-owned businesses, including eight Indigenous service partnerships and four Indigenous subcontractor partnerships. Further engagement was achieved by supporting cultural events, school field trips, and sponsorship of elder events. By the end of the project, ongoing relationships were established with eight communities.



ENBRIDGE LINE 3 REPLACEMENT PROGRAM

Glenavon, Cromer, West Souris, Langbank, Saskatchewan
Glenborom St. Leon and Gretna, Manitoba

The Enbridge Line 3 Replacement Program was the largest project in Enbridge history and involved the replacement of Line 3 between Hardisty, Alberta and Superior, Wisconsin. It spanned over 1,070 kilometres on the Canadian side alone and required the construction of new pump stations and associated infrastructure.

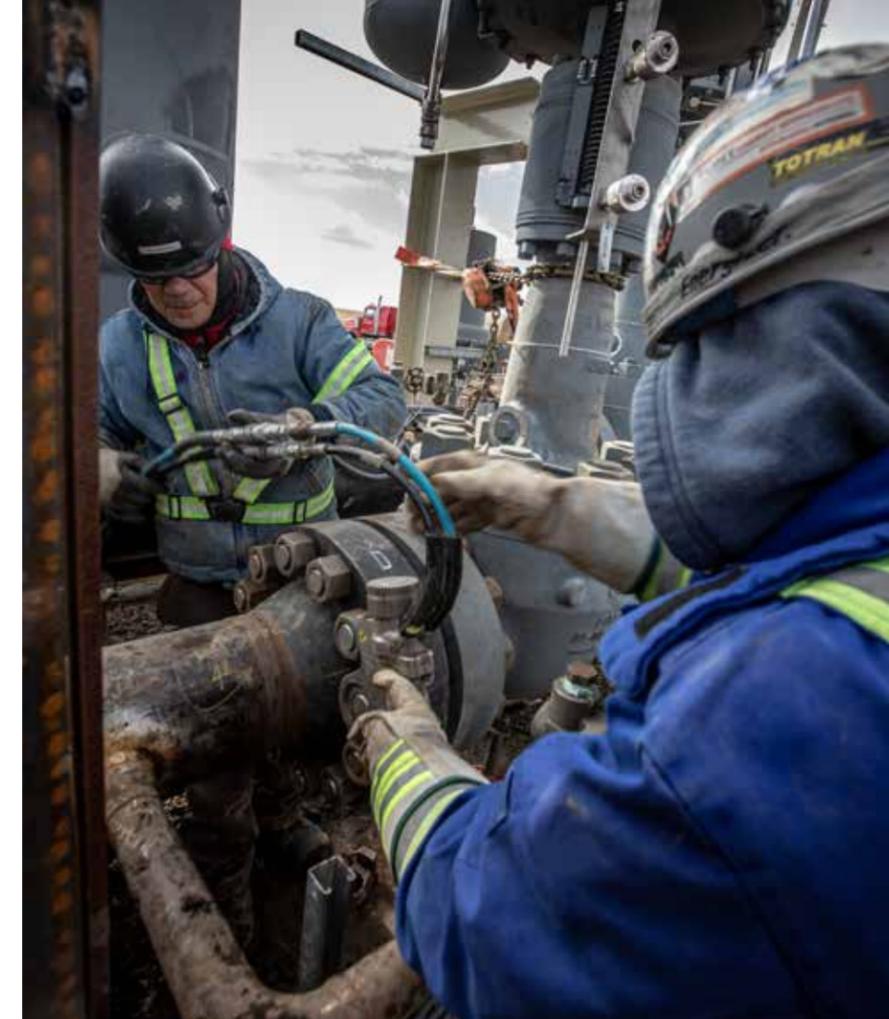
Bird was awarded the contract to construct seven pump stations in Saskatchewan and Manitoba. This included fabrication, civil, structural, mechanical, and electric works, as well as large and small bore piping, pump installation, pipe supports, structural steel platforms, cable tray supports, and cable and instrument installation.

Bird's engagement with Indigenous communities to meet internal goals and client expectations with respect to investment, employment, and business development during this project was indicative of Bird's general approach to Indigenous relations. Throughout the procurement process, Bird reached out to over 145 Indigenous communities and organizations to discuss sub-contracting and employment opportunities. Relationships were built with Carry the Kettle First Nation, Birdtail Sioux First Nation, Peguis First Nation, White Bear First Nation, Swan Lake First Nation, Ochapowace First Nation, Manitoba Métis Federation, as well as the Nations represented by the Saskatoon Tribal Council.





The Production Phase scope included a major fabrication package completed by BFL, Bird's fabrication shop in Nisku, Alberta. The fabrication components included several fully constructed process modules that were assembled on site by the field team. Bird self-performed all mechanical scopes to connect the pre-fabricated modules, as well as the installation of several pieces of large owner-supplied equipment, including molecular sieve vessels and a flare stack. The piling, concrete foundations and earthworks, and site mechanical, structural, and electrical works were all completed by Bird. The injection facilities included an ethane injection pumping and brine system (storage ponds, brine degassing, and pumping), as well as utilities (flare system, instrument air, and nitrogen supply). The retrieval facilities included a molecular sieve dehydration system complete with regeneration. All divisions within the Bird Edmonton district office were involved in this project that concluded in 2018.



ETHANE STORAGE CAVERNS

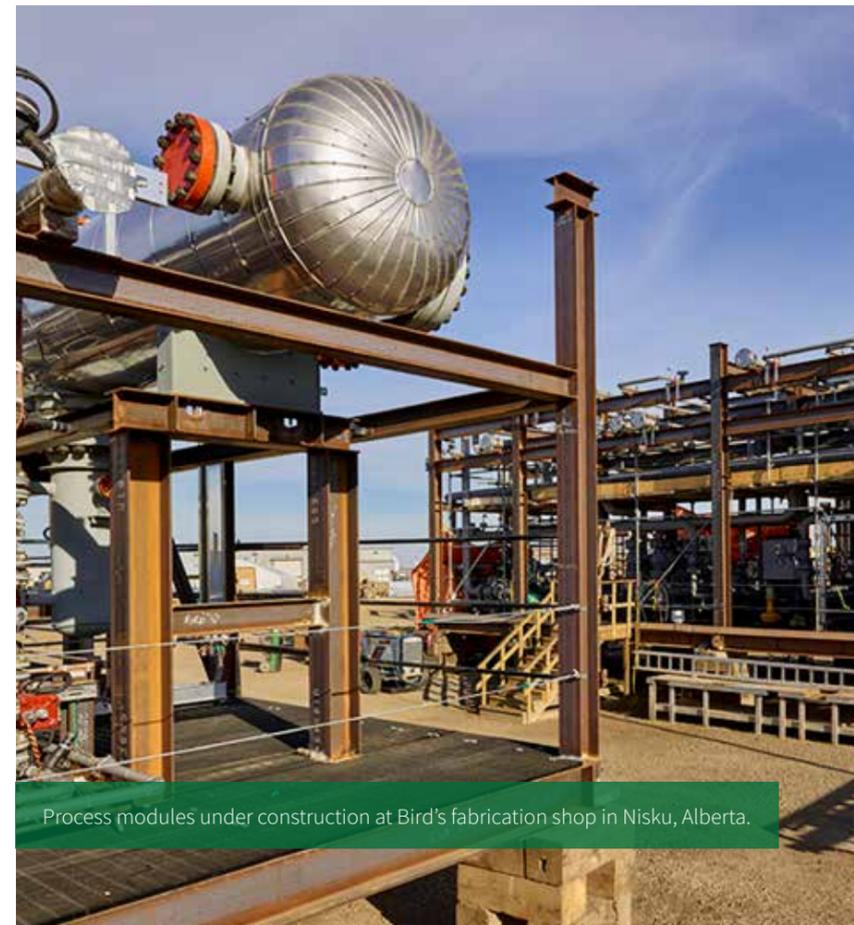
Burstall, Saskatchewan

Bird was awarded the contract for the construction of the washing infrastructure for two new ethane caverns near Burstall, Saskatchewan, each with a storage capacity of 500,000 barrels. As part of the washing process, water was pumped from the South Saskatchewan river, up a hill, and into the wash water building. This water was then pumped underground through the drill casing where it mixed with the natural underground salt to form a brine mixture. Water was continuously pumped underground to erode the cavern formations, which would later store ethane gas. All of the washing infrastructure was constructed by Bird and after commissioning the washing phase took over a year to form the caverns. Later, once the production phase began, the brine in the cavern was replaced with ethane gas, with brine being pumped back in to maintain the equilibrium as the stored gas was removed.

Bird's scope of work for the surface facilities and major components included a wash water pumping station, brine disposal pumping station, cavern and disposal wellheads, river water intake and settling

tanks, instrument air compressor building, and two motor control centre buildings. This phase of the project also included concrete foundations, mechanical piping, setting owner supplied equipment, and electrical components.

This was the first project undertaken for this major industrial client, and late in the first phase Bird was awarded an additional contract for a significant earthworks program to complete underground piping, roads, and site works. Following the success of the Wash Phase construction, Bird worked with the client's subsurface engineering group and two separately contracted engineering groups for the above ground works, which included the brine disposal ponds and gas processing facility. Working with these groups and the client, Bird established a risk-sharing contracting strategy that enabled Bird to make constructability recommendations that reduced additional costs, increased efficiency, and capped the risk for all parties.



Process modules under construction at Bird's fabrication shop in Nisku, Alberta.

It was discovered that rattlesnakes had taken up residence in the desert-like conditions at the Saskatchewan worksite. To maintain safety, the Bird crew instituted a "Kick it before you pick it" rule, giving pipes and other materials a firm nudge before touching to encourage the critters to skedaddle.

WHITBY RAIL MAINTENANCE FACILITY

Whitby, Ontario

The Whitby Rail Maintenance Facility was a critical component in the Go Transit expansion plan for the Greater Toronto and Hamilton area, which would be the biggest expansion in the regional commuter rail's history. The facility provided maintenance, repair, and additional storage for the GO Transit local rail system.

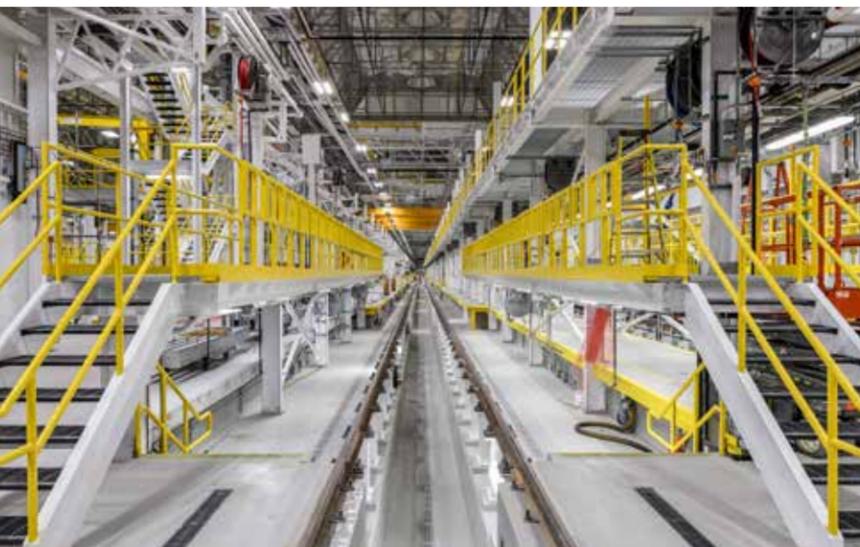
The P3 project with Infrastructure Ontario and Metrolinx was awarded to Bird Construction and joint venture partner Pieter Kiewit Infrastructure Co., with Bird serving as the managing partner of the design-build element. Bird was also a minority equity partner in the concession for the facility.

The 46,450-square-metre facility incorporated progressive maintenance bays, coach maintenance shops, locomotive maintenance shops, paint booths, wheel shop, fuel storage, a track maintenance building, crew centre, and administrative space. Over 16 kilometres of track was laid. Wayside power systems provided plug-in power for the trains after the engines have been shut down. The specialized equipment installed for vehicle servicing included drop tables, wheel profile and measuring, automatic wheel brake systems, and a wheel truing machine. Extensive under slab drainage pipe and process fluid systems had to be installed in close coordination with other mechanical and electrical system installations.^[39]



The facility achieved LEED® Gold certification through measures such as the installation of reflective roof materials to limit solar radiation, maximization of natural light within the main building, diversion and storage of rainwater to lower the impact on municipal infrastructure and for use in the wash stations and washrooms, the creation of dedicated car pool parking locations, and the provision of electric car charging stations.

The project was completed in 2018 on a fast-track schedule that required more than 50 project management staff and approximately 1,000 workers on site.



Notable numbers

- 16 kilometres of track
- 13 on-site storage bays
- 12 bays for coach repair
- 11 bays for locomotive repair
- 11 canopy tracks for storage
- 2 preventative maintenance bays

AVENIR CENTRE

Moncton, New Brunswick

A catalyst for reviving Moncton's downtown core, the 23,000-square-metre Avenir Centre was a multi-use event and entertainment facility built by Bird Construction under a design-build-finance contract, with Bird Capital serving as the sole developer and arranging the financing. The project also incorporated a facilities management component and the City of Moncton benefitted from Bird's knowledge and experience of lifecycle considerations.

Designed by Stantec Architecture Ltd., it featured a plaza that could be used for a variety of seasonal events including outdoor skating in winter, basketball in summer, public art, concessions, outdoor

concerts, and other sports and entertainment events. The centre also contained an NHL-sized ice surface with 8,800 permanent seats that became home ice for the Moncton Wildcats when it opened in 2018. Indoor amenities included a club lounge and private boxes.

As the site was a former railyard, specific environmental controls had to be implemented to deal with contaminated soil and water, such as limiting the excavation required, reusing in situ material where possible, and finding appropriate disposal sites. By working in partnership with the City of Moncton, the cost of the contamination was mitigated.





ONTARIO PROVINCIAL POLICE MODERNIZATION PROJECTS

27 sites across Ontario

The Ontario Provincial Police Modernization Project was a long-term undertaking by Infrastructure Ontario, the Ministry of Community Safety and Correctional Services, and the Ontario Provincial Police (OPP). The project aimed to improve community safety and support modern policing operations by updating OPP facilities across the province, including newly built detachments, regional command centres, and forensic identification units.

The project was undertaken in two discrete phases, both of which entailed fast-tracked design-build project delivery across multiple

sites. The first phase, completed in November 2012, included 18 facilities on 17 sites in 16 communities, and had a contract value of around \$300 million. The second phase, valued at \$150 million, involved the construction of nine new detachments, with a tenth detachment added to the scope of work during project execution. This latter phase broke ground at the end of November 2018 and is scheduled to be completed by late 2020.

An alternative finance and procurement model was utilized for each phase of the OPP Modernization Project. Bird Construction served

as the design-builder for both phases and provided financing for the second phase through Bird Capital. With NORR Architects & Engineers Limited acting as the lead design consultant on both phases, this massive venture further established Bird as a leader in multi-site Public-Private Partnership projects, particularly given the intricate logistical planning required to coordinate the various sites dispersed across the province. Not a single building was completed behind schedule during phase one, and some were ready for occupancy two months ahead of schedule.

In setting the schedule, Bird determined that the most efficient method was to first have one detachment and one forensic identification unit built as prototypes. This meant fast-tracking these two projects so that the lessons learned could be transferred to all the other projects. This approach was extremely valuable and led to all other sites having a smoother build period.

The client was keen to ensure that small local general contractors were involved in the project. Bird developed a modified joint venture arrangement with four local contractors to enable their participation, as they did not have the credit capacity to support an efficient debt structure. This approach has since become a model in Ontario for how bundled projects are expected to be developed.

The nature of the services provided by the OPP required high security buildings with complex information technology and communications

systems, specialized security considerations, and public and functional space separated by security barriers. The structures were constructed with progressive collapse design considerations to withstand an earthquake and could act as post-disaster facilities. Extensive energy modelling was also undertaken on all buildings to ensure environmentally-sensitive energy design and construction and that LEED® Silver certification would be achieved. In some cases, Bird exceeded the Silver certification requirements, delivering a few detachments in accordance with LEED® Gold certification.

Bird Construction was awarded the prestigious Ontario Builder Award by the Ontario General Contractors Association for its design and construction of phase one of this project, based on criteria that included site safety, environmental design, and owner satisfaction.

The disparate locations of the various sites presented complex logistical challenges. For example, the Moosonee site could only be reached by plane or by a train known as the Polar Bear Express.



STANTON TERRITORIAL HOSPITAL

Yellowknife, Northwest Territories

This fast-track P3 project aimed to meet the increasing healthcare needs of the residents of the Northwest Territories. Bird Construction was part of the Boreal Health Partnership, the consortium that was awarded the contract by the Government of the Northwest Territories. Bird Capital was an equity provider, while Bird worked with joint venture partner Clark Builders to complete design and construction.

As part of the consortium, Kasian Architecture Interior Design & Planning Ltd. designed the 27,270-square-metre structural steel facility, which consisted of a two-storey podium and three-storey inpatient tower that featured a number of wood elements to create a welcoming atmosphere. The freestanding wood entrance and wooden cladding forged a connection with the surrounding landscape, while the low building profile reflected the character of the surrounding neighbourhood and rendered the building less intimidating. The glass-enclosed cafeteria overlooked the gardens, providing a light and open gathering place. There were floor-to-ceiling windows in multiple parts of the hospital to improve the patient experience by allowing natural light to flood in. A glass-enclosed “half-teepee” was also constructed for use as a meditation room or sacred space. Specialized ventilation systems enabled the room to be used for traditional smudging ceremonies. Each floor had a distinctive interior theme: an animal, colour, and topography indigenous to the area provided visual cues to help visitors orient themselves within the building.

The facility offered outpatient and inpatient services, including medical imaging, dialysis, obstetrics, pediatrics, cardiology, and mental health departments. An emergency department with two trauma bays and day procedure and surgery suites were also included in the design. Some of the major equipment in the main operating rooms was suspended from the ceiling by articulating arms to improve mobility, provide greater flexibility in configuring the room for different procedures, and maximize floor space. One innovation that had been utilized in other hospitals, but was a first in the Northwest Territories, was the network of pneumatic tubes connecting nursing stations, clinical areas, the pharmacy, and lab diagnostic services. Sealed capsules could be

sent from one area to another through the use of air pressure, greatly reducing the time and effort that was previously spent moving these items around the hospital, sometimes referred to as “sneaker time”.

The new state-of-the-art Stanton Territorial Hospital was completed on time and on budget. It represented the largest capital investment in the history of the Government of the Northwest Territories. The opening ceremony on July 12, 2019, featured a traditional fire-feeding ceremony, qulluq lighting, the unveiling of a commemorative sculpture, and musical performances. Elected Chief of the Lutselk'e Dene First Nation, Felix Lockhart, led the fire-feeding ceremony that honoured the air, land, water, and all creations. Prayer songs and drumming accompanied the event. Mary Kudlak, an Inuit Elder from Ulukhaktok, lit the qulluq. This is a traditional Inuit soapstone lamp with an oiled groove upon which an arctic cotton and moss wick is laid before being lit. Used for a variety of everyday activities including cooking, washing and providing light, it has a deeper symbolic significance as an expression of the strength of women and their tender care, particularly within the context of family well-being.



Drummers performing during the fire-feeding ceremony.

Image courtesy of Sarah Pruys/Cabin Radio





WHITLA WIND FARM MV COLLECTOR SYSTEM

County of Forty Mile, Alberta

The Whitla Wind Farm is part of a Renewable Electricity Program that will generate enough electricity to power 67,000 homes in Alberta every year. The power will be generated by 56 Vestas: these 3.6 MW-wind turbines have a hub height of 105 metres and blade rotor diameter of 136 metres.

Bird was awarded the contract to install the Medium Voltage (MV) Collector System that connects the wind turbines to the wind farm substation. The MV Collector System is comprised of a trefoil MV electrical cable bundled together with a ground cable and a fiber optic innerduct. Bird employed its innovative trenching solution to complete

this project, as it could perform the installation in a single trenchless pass with a 300 by 300 millimetre sand bedding. This specialty one-pass trenchless equipment is exceptionally environmentally friendly – it reduces the construction footprint, creates minimal ground disturbance, and enables fast regrowth of vegetation once the MV Collector System has been installed. The use of this cutting-edge technology enabled over a kilometre of the collector system to be installed per working day. Construction on Whitla Wind 1 was completed in 2019.

CAPITAL REGIONAL DISTRICT RESIDUALS TREATMENT FACILITY

Victoria, British Columbia

The Residuals Treatment Facility is part of the Wastewater Treatment Project located within the footprint of the Hartland Landfill in Saanich. The McLoughlin Point Wastewater Treatment Plant will treat up to 108 megalitres of wastewater per day through primary, secondary, and tertiary treatment processes.

The new state-of-the-art Residuals Treatment Facility will process residual solids from the McLoughlin Point Wastewater Treatment Plant and produce thermally dried Class A biosolids using anaerobic digestion processes. The dryer process that follows will be fueled by biogas generated during the digestion process. The resulting biosolids could ultimately be used as an alternate fuel source.

Bird was part of a joint venture that was awarded the design, build, finance, operation and maintenance contract, and was therefore involved in all aspects of the project. This included initial planning, design and construction management, environmental approvals, site safety, and quality control, amongst other considerations. For example, as part of the rigorous site safety and quality control measures there is regular monitoring of the water quality, and a stringent containment and spill planning and response plan specifically for the Residuals Treatment Facility. The project is slated for completion in 2020.



BRUCE POWER MAJOR COMPONENT REPLACEMENT OFFICE COMPLEX Kincardine, Ontario

Bruce Power is an electricity company that provides clean, reliable, low-cost nuclear power to the province of Ontario. Together with the Independent Electricity System Operator (IESO) and the Ministry of Energy, Bruce Power established the coordinated Major Component Replacement (MCR) Program. This initiative aimed to refurbish five units at the plant over 13 years to ensure that electricity could be produced until 2064. The project was also seen as a force for local economic development, providing jobs and training to hundreds of people, and contributing to the establishment of the region as a hub of innovation for the nuclear industry.

In order to achieve these goals, a unique training environment was required where skilled personnel could gain hands-on, in-depth practice executing the highly technical MCR programs. The training would ensure that the MCR program was delivered safely, on time, and on budget.

Bird was part of a consortium led by Concert Infrastructure to design, build, finance, and maintain Bruce Power's new office complex and training facility. In addition to the training facility, the almost 12,000-square-metre complex included a two-storey office area with office space, classrooms, amenities, and facilities for 500 employees. Site development included site services, a stormwater pond, the extension of a municipal road into the site, parking, and landscaping.

The complex officially opened on April 25, 2019. This marked the first major nuclear project on which Bird served as the Engineering, Procurement and Construction (EPC) contractor. Bird had previously completed projects for Atomic Energy Canada, including the Whiteshell Nuclear Research Laboratory near Pinawa, Manitoba.



AQSARNIIT HOTEL AND CONVENTION CENTRE Iqaluit, Nunavut

Six months after Bird Construction acquired a 50 per cent stake in Stack Modular in September 2017, Bird was awarded the contract to construct a hotel and conference centre in Iqaluit, Nunavut for the Qikiqtaaluk Corporation. The Qikiqtaaluk Corporation is an Inuit birthright development corporation created by the Qikiqtani Inuit Association. The Association represents 15,500 Inuit in 13 communities from Grise Fiord to Sanikiluaq, and it aims to promote Inuktitut, Inuit language and traditions, and the economic and social well-being of the Qikiqtani Inuit. This will be the first Inuit-owned full-service hotel and conference centre in the city.

The decision to utilize a modular approach saved significant amounts of time and money. It was estimated that it would take an additional year to construct the hotel rooms using mainstream construction methods and, with a limited labour pool in the remote region, many tradespeople would need to be brought in at significant cost. The transportation of construction materials and equipment was also a serious consideration given the accessibility limitations of the geographically isolated city.

The facility will include a 465-square-metre conference centre, 94-room full-service hotel, lounge, restaurant, commercial space, and gym. Visual art throughout the interior space will reflect the 13 communities of the region, and the support of local artists will contribute to the economic development of the local community. The rooms within the modular storeys will arrive on site fully fitted out with beds, chairs, flooring, and amenities such as televisions and microwaves. The modules also feature excellent insulation, which assists in creating an energy-efficient building envelope and provides soundproofing.

The facility will include an 8,350-square-metre steel frame structure, metal siding, vinyl windows, and a flat roof membrane. The first floor will be set approximately 1.2 metres above grade on a drilled pile foundation. A service road was built for hotel access and underground services for power and utilities were installed. Bird's scope of work for this project includes the management of all pre-construction tasks, design development, construction and civil work, as well as site management.

After receiving design drawings and material selections, Stack produced a prototype in less than four weeks for client approval. Full modular unit production commenced in the fall of 2018, and 62 modules were delivered in July 2019, travelling from Shanghai through the Panama Canal to Iqaluit. Substantial completion of the facility is expected in the spring of 2020.



CANADA'S DIVERSITY GARDENS

Winnipeg, Manitoba

The Canada's Diversity Gardens project spans approximately 35 acres in the south-east corner of Assiniboine Park, blending extraordinary indoor horticulture displays with community gathering space, iconic architecture, state-of-the-art design, and breathtaking gardens. Bird Construction broke ground on this project in the summer of 2017.

"The Leaf" forms the centrepiece of the new addition to the 111-year-old park. The 8,250-square-metre structure will have four components: a tropical biome that creates a hot and humid rainforest environment and features an 18-metre waterfall; a Mediterranean biome celebrating different plants endemic to Greece, Italy, South Africa, Australia, Chile, and California; the Babs Asper Display House that will feature rotating floral exhibits; and the Shirley Richardson Butterfly Garden where visitors can interact with a multitude of butterfly species year round.

A key design element of the structure is the ethylene tetrafluoroethylene (ETFE) roof. The roof is made up of three layers of the NASA-

developed ETFE material that allows the formation of air pockets. This flexible pillow-like polymer resin composite can inflate and deflate based on the outside temperature, making it ideal for the extreme variations of Winnipeg weather. It is very lightweight, allows maximum penetration of natural light, and provides excellent insulation. It also requires minimal maintenance as it is resistant to corrosion and atmospheric pollution, and does not degrade with exposure to UV light. The roof will be supported by a 36.5-metre diagrid tower and cable net system. The light roof and the design of the supporting cable system eliminates the need for columns, creating an open and immersive space within the biomes.

The Indigenous Peoples' Garden will lie just south of the structure and will celebrate the historical and contemporary relationships of Indigenous cultures with the environment, providing a space where knowledge, practices, and perspectives can be shared.



Participants of the North End's Eagle Urban Transition Centre work experience program help to construct the boardwalk in the Indigenous Peoples' Garden.

Image courtesy of Mike Sudoma, Winnipeg Free Press



The North End's Eagle Urban Transition Centre, which provides opportunities for young people to gain work experience, participated in elements such as the construction of the wooden boardwalk that meanders through the Indigenous Peoples' Garden, and the planting of 40 trees, 280 shrubs, and more than 1,000 grasses.

Other featured outdoor gardens include a Kitchen Garden, Seasonal Garden, Performance Garden, and Sensory Garden. The multiple garden vignettes showcase plants that thrive in Manitoba's climate, teaching visitors about plants that contribute to health and well-being, sustainability and conservation, food and drink, beauty and expression, and spirituality and consciousness. Other outdoor features will include event spaces and courtyards, a viewing terrace, and The Grove, a garden dedicated to the majesty of trees.

Environmental stewardship is a key element of this project, and Canada's Diversity Gardens is targeting LEED® Silver certification. The planned energy-efficient building will be equipped with on-site renewable energy. Among the planned measures are a sophisticated HVAC system that will include passive ventilation, earth ducts, a geothermal energy system, and cisterns to collect rainwater and snow melt for irrigation.



LNG CANADA CEDAR VALLEY LODGE

Kitimat, British Columbia

In the spring of 2019, Bird Construction broke ground on the largest contract the company has ever signed. The project will be completed through a joint venture with ATCO Structures. The Workforce Accommodation Centre is being built to house the 4,500 people involved with the construction of LNG Canada's natural gas liquefaction and export facility in Kitimat, British Columbia. Once complete, it will be one of the biggest accommodation facilities ever built in Canada.

The Cedar Valley Lodge will cater to all the workers' needs, providing executive rooms with private washrooms, a 7,432-square-metre kitchen and dining area, 3,252 square metres of entertainment areas, and a 5,200-square-metre sports and recreational facility. Healthcare facilities will also be provided at the Lodge, which will have a total floor space of more than 111,484 square metres. The project scope also includes site civil works, underground utilities, and water and wastewater plants.

The attractive and sustainable facility aims to provide a home-away-from-home, as comfortable and appealing accommodation is a key factor in recruiting and retaining skilled personnel. The lodge will open with accommodation for 1,500 workers in the spring of 2020 and will expand to accommodate 4,500 people by the spring of 2021.



COMMUNITY INVOLVEMENT

Bird Construction is committed to contributing to the communities in which we live, work, and build. Through donations, scholarships, fundraising activities, and volunteer work, Bird employees consistently demonstrate a passion for giving back. Bird supports national charities, health care foundation initiatives, food and clothing banks, community festivals and events, youth and community sports, and much more.

Among the scholarships sponsored by the company are the Bird Build Your Future Alumni Award and the Bird Build Your Future Scholarships. These are in support of students in the Architectural/Engineering Technology or Construction Management programs at Red River College in Manitoba. Bird Construction also sponsors a number of scholarships in support of Indigenous post-secondary students across Canada, including the Scott Ferguson Memorial Scholarship, the Bird Heavy Civil Scholarship, the Langara College Scholarship, and the University of New Brunswick Scholarship.

Bird employees have played a major role in driving the company's philanthropic successes across the country over the past 100 years. This passion will continue throughout the next 100 years as the strength of a community is determined by the individuals who live in it.



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4	5	6
7	8	9

1. Ronald McDonald House Charity "Home for Dinner" initiative (Toronto)
2. SickKids "Heatwave Volleyball Tournament" (Toronto)
3. Threads of Life "Steps for Life Walk" (Winnipeg)
4. Wing Kei Walkathon fundraiser for senior care (Alberta Commercial)
5. Calgary Food Bank (Alberta Commercial)
6. Habitat for Humanity, Carter Place (Alberta Commercial)
7. The Gathering Place (St. John's)
8. Threads of Life "Steps for Life Walk" (New Brunswick)
9. "Siloam Sleepout" for homelessness (Winnipeg)



SAFETY

Bird promotes a culture of personal responsibility for safety wherein safety considerations are interwoven into the very fabric of operational processes and every person at every level takes ownership for safety. From planning to execution, effective communication, documentation, orientation, training, and ongoing review and analysis of all work activity is vigorously undertaken to ensure continuous improvement in all facets of operations.

The reality is that construction can be a high-risk industry and safe production does not just happen; it is the result of dedication combined with sound policy, best practices and ongoing improvement. By continuously identifying, assessing, and effectively eliminating or controlling all hazards, risks and inefficiencies, a healthy and safe workplace can be achieved and maintained. Implementing a robust safety program and fostering a collaborative organizational culture ensures that a shared understanding is reached that safe production is everybody's responsibility, every minute of every day, on every job.

Safety and production are viewed as complementary objectives, and both are pursued in order to achieve and sustain a positive and safe work environment. A team-based safety commitment is essential in order to achieve successful business outcomes and ensure that high quality work is delivered on schedule.

The creation of a collaborative and participative safety culture requires going beyond the technical aspects of safety such as process engineering, hazard identification, and compliance with legislation. Person-based approaches must be integrated into the organizational safety strategy to promote an ingrained culture of personal responsibility for safety.

Bird's approach to safety continues to evolve in response to new technologies, tools, and strategies. Incorporating the latest innovations for ensuring the safety of our people, the communities we work in, and the environment, has made Bird a recognized safety leader.





Left to right:
Teri McKibbin, President and Chief Executive Officer
Wayne Gingrich, Chief Financial Officer
Ian Boyd, Executive Vice President – Major Projects
Paul Bergman, Executive Vice President – Buildings
Gilles Royer, Executive Vice President – Industrial
Charles Caza, Senior Vice President and General Counsel

AFTERWORD

Executive Leadership

Following the contemplation of our last 100 years reflected in the pages of this book, we now look toward the future, to the next 100 years and beyond. It is a testament to any organization to grow and thrive as long as we have, through economic cycles and massive social and technological change. Bird's Board of Directors and Management look forward to continuing this legacy.

Collaboration between our districts, a key to future success and growth, will continue to be a focus at Bird, leveraging our strengths and collective experiences across regional and national opportunities to better serve our clients, and to succeed together. The formidable skills of our workforce across regional and national opportunities heightens our strategic advantage in key sectors.

The diversification and expansion of the scopes and services that we offer remain key initiatives to minimize the impact of the cyclicity of our industry and the markets in which we operate. To support this focus on diversification, and to drive value for our clients, we will continue to develop more self-perform scopes of work as part of our overall service offering.

Bird's investment in people, and creating a culture of personal and professional support and growth, has been the cornerstone of Bird's success. Since its early days under the leadership of H.J. Bird, we have been a company whose success depends on people and this core value will continue to be nurtured as the foundation on which our future plans rest.

Technology and innovation are significantly transforming how we build throughout the project lifecycle, and the effective use of technology and innovation go beyond the latest apps and software. Global innovation, for example, include opportunities such as modular construction, which prompted Bird's investment in Stack Modular. Similarly, pursuing strategic partnerships with innovative and like-minded partners can revolutionize how we operate within the industry. We are at the precipice of major change, and Bird will continue to look for opportunities to increase investment in advanced technologies and innovation, and to leverage these to improve what we do and how we do it.

Bird is committed to redefining how socially responsible construction companies operate in Canada. A keen awareness of environmental and social issues is critical to this philosophy, not only on our work sites but also within the communities in which we build and live. Being aware of the impact of our activities on our communities and the environment, and constantly seeking ways to reduce our footprint, will be an integral component of all undertakings. As part of our holistic environmental, social, and corporate governance approach, we will continue working with communities, our employees, and other stakeholders to ensure we are operating with integrity and accountability.

Our steadfast commitment to our values will continue to guide decision-making at all levels. It all comes down to our people, as the root of our business is providing a service. By keeping a quality workforce, and strategically seizing opportunities, we will continue generating value for all clients, strategic partners, staff, and shareholders.

It is our honour to build on the proud legacy of Bird Construction that has been recognized and celebrated in this book, and we look to the future with optimism and determination to continue building Canada for the next 100 years and beyond.

25 YEAR CLUB MEMBERS (1956 – 2020)

Wayne Aasland	Paul Charette	John Grismer	Jerry Korade	Sigmund Neumann	Norm Sigurdson
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Leo Campbell	William Greenfield	Fred Klein	Ken Nakagawa	J. Shandroski	
Ben Chae	Linda Greenwood	Mike Koots	H. Neilson	J. Shaw	

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1920s

1930s

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1920-2020

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