CULTURAL HERITAGE EVALUATION REPORT

LEES AVENUE UNDERPASS, MTO SITE No. 3-225
HIGHWAY 417 (OTTAWA QUEENSWAY)

LOT G, CONCESSION D, RIDEAU FRONT
GEOGRAPHIC TOWNSHIP OF NEPEAN
CITY OF OTTAWA, ONTARIO
GWP 4320-06-00 / GWP 4091-07-00

July 2011

Prepared for:
MMM Group Limited

Prepared by:

UNTERMAN McPHAIL ASSOCIATES
HERITAGE RESOURCE MANAGEMENT CONSULTANTS

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1.0 INTRODUCTION

MMM Group Limited retained Unterman McPhail Associates, Heritage Resource Management Consultants, to undertake a cultural heritage evaluation report (CHER) for the Lees Avenue Underpass, MTO Site No. 3-225, on behalf of the Ministry of Transportation (MTO). A detailed design is being carried out for improvements to Highway 417 within the City of Ottawa. The project consists of widening Highway 417 by one lane in each direction from Nicholas Street to the Vanier Parkway (GWP 4091-07-00) and from the Vanier Parkway to Ottawa Road 174 (GWP 4320-06-00). In addition, operational improvements, structure replacements and noise barrier retrofits have been identified through the Highway 417 corridor within the City of Ottawa. The study is being carried out in accordance with the requirements for a Class B project under the Class Environmental Assessment for Provincial Transportation Facilities (2000).

As part of the Detailed Design Report, MTO requested the preparation of Cultural Heritage Evaluation Reports (CHERs) for seven (7) structures within the Highway 417 corridor. From east to west, the structures identified of potential heritage value are:

- Belfast Road Underpass, MTO Site No. 3-071;
- Vanier Parkway Underpass, MTO Site No. 3-069;
- Rideau River (Hurdman's Bridge) Overpass, MTO Site No. 3-073;
- Lees Avenue Underpass, MTO Site No. 3-225;
- Nicholas Street Underpass, MTO Site No. 3-224;
- Kent Street Overpass, MTO Site No. 3-062; and
- Booth Street Overpass, MTO Site No. 3-057.

MTO has requested an individual CHER be prepared for each of the seven (7) structures. The structures relate to the construction of Highway 417 in the 1950s and 1960s as part of the Trans-Canada Highway. The 10-mile stretch of the Trans-Canada Highway through the City of Ottawa was named the Queensway in Honour of Queen Elizabeth II. This report fulfills the requirements for a separate CHER for the Lees Avenue Underpass.

The Lees Avenue Underpass was identified as Bridge No. 39 at the time of construction and the three-span steel plate girder structure was completed in 1966. It is located just west of the Rideau River on Lot G, Concession D, Rideau Front of the geographic Township of Nepean ***(Figure 1)***. The Lees Avenue Underpass is not included in the Ontario Heritage Bridge List for provincially owned bridges and has not been identified as a Candidate Class A, B or C structure in the *Heritage Bridges Identification and Assessment Guide 1945-1965, Ontario*. Consultation with the City of Ottawa confirms the Lees Avenue Underpass has not been identified by the municipality as having heritage value.

This Cultural Heritage Resource Evaluation Report (CHER) includes a historical summary of the bridge and its setting, an evaluation of the cultural heritage value of the bridge, a summary of cultural heritage value and mitigation recommendations. Historical

maps, photographs and drawings are included in Appendix A. Appendix B contains a Bridge Survey Form with photographs of the structure and Appendix C has a list of comparable steel plate girder structures in the East Region provided by MTO. The Heritage Bridge Evaluation Criteria, *Ontario Heritage Bridge Guidelines for Provincially Owned Bridges* (Interim, January 2008) are found in Appendix D.

Highway 417 is considered to run in an east to west direction in the vicinity of the Lees Avenue Underpass.

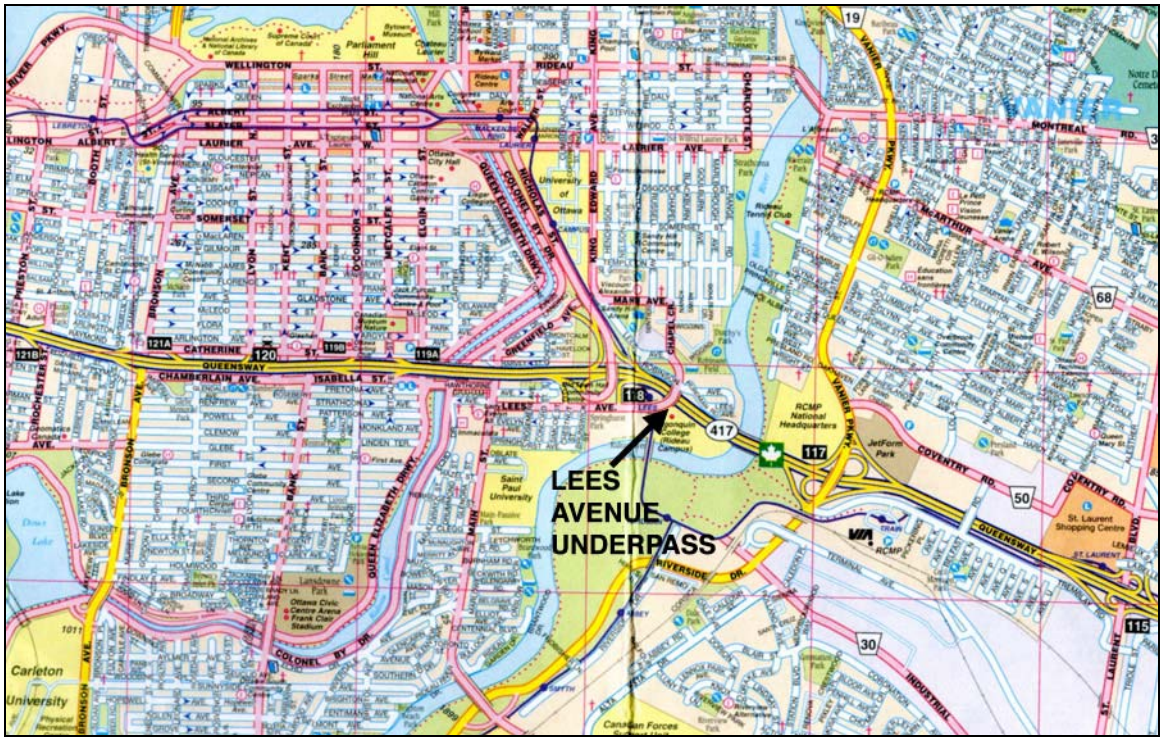

Figure 1. Location plan of the Lees Avenue Underpass, MTO Site No. 3-225 [Ottawa-Hull & Environs, Rand McNally Canada Inc., 2003].

2.0 HISTORICAL SUMMARY

2.1 Nepean Township

Known initially as Township D, Nepean Township was surveyed in 1792. The township, which was laid out in one and-a-quarter mile concessions, was numbered from two fronts, the first from the Ottawa River to the north and the second from the Rideau River to the east. It was named after Sir Evan Nepean, Under-Secretary at the Home Office of the British government in London from 1782 to 1794, Secretary of the Admiralty from 1795-1894 and Governor of the State of Bombay from 1812-1819. While serving with the Home Office, Nepean was responsible for affairs in the British North American colonies.

Settlement was delayed in the 1790s due to the entire township being granted to George Hamilton, an Irish veteran of the American Revolutionary War. While Hamilton claimed to represent 143 settlers, none of the prospective colonists arrived. After Hamilton's death most of the township was returned to the control of the Crown. The government tried again to encourage settlement in Nepean by granting lands to descendants of the Loyalists. Between 1800 and 1812, more than 200 grants comprising half the land in the township were awarded to Loyalist families; however, very few of the Loyalist heirs took up their land grant in Nepean Township. Speculation characterized the land sales through the first part of the 1800s. By 1822, the township's population was only 191 people.[1]

The first settlement in the township occurred along the Richmond Road that ran from the Richmond military depot, established in 1818 to the southwest of Nepean in Goulbourn Township to Richmond Landing on the Ottawa River below the Chaudière Falls. The construction of the Rideau Canal (1826-1832) and the growth of the square lumber trade provided impetus for much of the early development in the Ottawa area. Bytown was established in 1826 in the northeast part of the township as a depot on the Rideau Canal. Initially servicing a transient population, Bytown was named the district town of the Dalhousie District in the late 1830s and replaced Richmond as the administrative centre of the region.

The Township of Nepean also benefited with the abolition of the free land grants in 1826 and the release of Clergy reserves for sale. The population of Nepean jumped from 580 people in 1827 to 2,758 in the following year.[2] While many of the new residents were attracted to Bytown, lands along the Ottawa and Rideau Rivers were being cleared for agricultural purposes. The early farmers of American or British origin made a living growing wheat supplemented by work in the timber trade.

[1] Bruce S. Elliot, *The City Beyond: A History of Nepean, Birthplace of Canada's Capital, 1792-1990* (Nepean, ON: City of Nepean, 1991) 13.
[2] Ibid, 16.

Smith's *Canadian Gazetteer* (1846) described Nepean Township as,

> *"…..well settled and contains some good farms; the great demand for provisions at Bytown, occasioned by the extensive business carried on in lumber in the District always ensuring the farmer a good price for his produce."*[3]

Smith noted the population of the township, including Bytown, was 7,294 people in 1842. The Township of Nepean and The Town of Bytown were incorporated as separate municipalities in 1850. Bytown became the City of Ottawa in 1855.

By the 1870s, the settlement period of Nepean was complete. *The Illustrated Historical Atlas of the County of Carleton* (1879) noted that of the total 60,774 acres of land in the township, 31,962 acres or just over one-half were improved.[4] Nepean had the highest assessed value of any township in the county and a population of 7, 031 people. The map of Nepean Township in the *Illustrated Historical Atlas* shows a well-established rural landscape with a grid pattern of local roads along concessions and sideroads and numerous churches and schoolhouses. By the late 1800s, many Nepean farmers had switched from wheat production to dairy and livestock farming providing Ottawa with milk, cheese and meat. While Nepean remained primarily rural, those portions of the township closest to Ottawa came under development pressure as the city experienced a land boom through the 1870s.

A number of subdivision plans were drawn up for lands in Nepean including in 1871, the 200-acre farm of McLeod Stewart that was subdivided to become the village of Stewarton and in 1872, Archibald Stewart's land on the Rideau River subdivided for the community of Archville. The *Illustrated Historical Atlas* described Archville as a suburb of the city located between the Rideau River and the Rideau Canal.[5] An Archville post office was established in 1884. Crown Attorney Robert Lees, the area's largest landowner and most prominent citizen made the case to Carleton County Council for the incorporation of the community as an independent village. Council supported the petition and Archville, comprising Lots F, G, H and I, Concession D, Rideau Front was incorporated as the Village of Ottawa East on December 7, 1888.[6] The village had a population of 1,800 people, two schools, a town hall, good streets with sidewalks and a drainage system.[7] A privately owned waterworks serviced most of the residents. Main Street ran through the centre of the community and industries included two brickyards and some business supported by the Canada Atlantic Railway shops. A road that was laid out across the Lees, Kealey and Stewart farms connected Ottawa East to Hurdman's Bridge, which was constructed in 1875 across the Rideau River. By 1891, 25% of the

[3] W. H. Smith, *Smith's Canadian Gazetteer* (Toronto: H. & W. Rowsell, 1846) 121-122.
[4] *Illustrated Historical Atlas of the County of Carleton* (Toronto: H. Belden & Co., 1879) xxxiv.
[5] Ibid, xxxv.
[6] Bruce S. Elliot, *The City Beyond: A History of Nepean, Birthplace of Canada's Capital, 1792-1990*, 135
[7] Ibid, 186.

adult males in the village worked in the building trades, notably the nearly brickyards.[8] Others found employment in the Canada Atlantic Railway workshops and in market gardening. The City of Ottawa annexed large areas of Nepean between 1907 and 1911 and Ottawa East was absorbed into the municipality in 1907.

Four rail lines entering Ottawa from the east crossed the Rideau River in the vicinity of Ottawa East. Three railway bridges, one to the north of Hurdman's Bridge and two to the south were constructed to carry the rail lines over the Rideau River. The Canada Atlantic Railway (CAR) owned and operated by J. R. Booth connected Ottawa with Montreal, Boston and New York. Formed in 1879, construction on the line was completed to Elgin and Catharine Streets in Ottawa in 1882. It was later extended to the west across the south side of Ottawa. Tracks were built at later date along the east side of the Rideau Canal to Ottawa's new Central Station, which was constructed in 1896 on Rideau Street. The CAR shops including a roundhouse were located at the junction of the cross-town and downtown tracks. The Canadian Atlantic Railway became part of the Grand Truck Railway system in 1905, and was incorporated into the Canadian National Railway (CNR) in 1921.

A second line constructed between Montreal and Ottawa c1898 was acquired by the Canadian Pacific Railway. Known as the Lake Shore Line it crossed the Rideau River on a bridge to the south of the road bridge. The Ontario Pacific Railway was chartered in 1882 and renamed the Ottawa & New York Railway (O&NYR) in 1898. It linked New York State to Ottawa with a bridge over the St. Lawrence River at Cornwall and entered Ottawa from the southeast at Hurdman's Bridge. It operated under a lease to the New York Central Railway from 1905 to 1957; after this date the line was abandoned and the property was sold. The line appears to have used the CPR Bridge over the Rideau River. The Canadian Northern Railway (CNoR) completed its line from Ottawa to Hawkesbury en route to Montreal in 1909. The line became part of the Canadian National Railway in 1917. The CNoR Bridge over the Rideau River was located to the north of the road bridge.

Industrial lands bordered the railway rights-of-way in Ottawa East. After acquiring the Canada Atlantic Railway, the Grand Trunk Railway built a roundhouse, which had a 70-ft. diameter turntable and 27 stalls, four at 88-ft. long and the balance at 74-ft. at the Mann Street service yard c1911.[9] Two stalls opened onto a machine shop shed. The walls were described as wood lined with brick and the floor was planked. A boiler house, stores and warehouse were located nearby. The Canadian Northern Railway had extensive land holdings between Hurdman Road and the Rideau River. The Ottawa Gas Company's coal gasification plant and city owned incinerator were situated to the south of the rail lines. As well as railway-associated industries, the area was also known for its brickyards. The

[8] Ibid, 138.
[9] Edward Forbes Bush, *Engine House & Turntables on Canadian Railways 1850-1950* (Erin, ON: The Boston Mills Press, 1990) 63.

Illustrated Historical Atlas (1879) shows a brickyard on A. Stewart's property. The Cain Brick Company operated a yard that produced roughly 2.5 million bricks per year in 1906.[10] The brick were noted of excellent quality. By the mid 1900s, Harry Harvey & Sons Ltd. produced artificial stone and concrete block on a triangular site bounded by Hurdman Road and the railway tracks, Lees Avenue and the Rideau River.

In 1946, the Federal District Commission (FDC) established a National Capital Planning Committee with membership from both local and federal governments to draw up a master plan of the National Capital District. The committee hired Jacques Gréber, a French Beaux-Arts planner with extensive experience in North America. As a result of Gréber's recommendations, the FDC was reformulated as the National Capital Commission (NCC) and the National Capital District was doubled in size to include land on both the Québec and Ontario sides of the Ottawa River. Submitted in 1950, Gréber's *Plan for the National Capital* was an urban planning exercise intended to transform Ottawa and Hull from industrial towns to an attractive modern capital. Among other recommendations, Gréber proposed the creation of a greenbelt around Ottawa, the development of a scenic parkway system, the relocation of the railway system and industries from the inner city to the suburbs, improvements to transportation and decentralization of government offices.

In August 1948, the Federal District Commission expropriated large tracts of land in Nepean Township along the Ottawa and Rideau Rivers for park and parkway development. The FDC acquired additional land later in the same year for industrial development and government offices. The City of Ottawa annexed close to 7,500 acres of land in the northern part of the township.

One of the first tasks of the new NCC, working in partnership with the cities of Ottawa and Hull, was to remove much of the railway infrastructure from the central core areas and to convert former railway routes for vehicular traffic. The first stage of railway relocations took place between 1950 and 1956 and resulted in removal of the CNR cross-town tracks through the city. This action freed land for scenic driveways and government buildings and the construction of the Queensway. The initial plans did not envision the removal of tracks from the downtown core and relocation of the passenger terminal for another 25 years. The scope of the project changed dramatically with Prime Minister Diefenbaker's announcement in 1959 that the NCC would proceed with the construction of a new railway station in the east end of the city. This second stage of rail relocation released 6.5 hectares of land in the heart of the city. Similar developments proceeded in the Quebec portion of the National Capital Region.

Railway facilities in the Ottawa East area changed significantly as a result of these activities. The New York Central line was abandoned in 1957 and the land sold. The

[10] M. B. Baker, "Clay and the Clay Industry of Ontario", *Report of the Bureau of Mines 1906*, Vol. XV, Part II (Toronto: L. K. Cameron, 1906) 61.

CNR was authorized to close the Hurdman Line in 1966 and the former CNoR Bridge over the Rideau River to the north of the road bridge was removed. The tracks of the Lakeshore line of the CPR and the former CAR line of the CNR remained in use in Gloucester Township to the east although trains no longer passed over the Rideau River into Ottawa. The CNR bridge was removed and the former CPR bridge was converted to pedestrian use. As part of the rail relocation activities, the rail yards in Ottawa East were removed and the NCC constructed new facilities for the Canadian National Railway on Russell Road in 1957. Most other industrial activities in the area were relocated as well. Ottawa's new train station and freight terminals were opened in the area of Hurdman's Bridge in Gloucester Township and beside the Queensway in 1966.

Algonquin College was established on former railway lands on the west side of Rideau River just south of the Queensway in 1964. The first segment of the Transitway rapid busway operated by the Ottawa-Carleton Transit Commission, known as OC Transpo, was opened in 1983 between Carling Avenue and Algonquin College and across the Rideau River. The Lees and Hurdman stations were located in the vicinity of the Rideau River. The Lees station occupies the former site of the Ottawa Gas Company. The Department of National Defence operated an armoury at 160 Lees Avenue that was located between Lees Avenue and the Rideau River.

Lees Avenue is named after Robert Lees, a prominent 19th century resident of the area. Robert Lees (1816-1893) was born in Dalkeith, Scotland and came to Upper Canada with his father in 1817.[11] His family is noted as being early settlers of Lanark County. He grew up at Fallbrook, near Perth in Lanark County and received his legal training at Perth. He settled in Bytown after he was called to the bar in 1848 and established a law practice. In 1852, he married Jessie Dickson, daughter of Sheriff Dickson of Pakenham. Lees was appointed county crown attorney in 1857. He began to acquire land in Concession D of the Rideau Front in 1859 and in 1863, built "Wildwood", a brick residence with three gable fronts.[12] The *Illustrated Historical Atlas* (1879) shows Lees as the owner of 29 acres of land with a building in the northwest part of Lot G, Concession D. Lees owned a second parcel of 36-acres in the southeast part of the lot with others. The Lees residence was subsequently acquired by the NCC and was demolished in 1963 as part of the highway construction activities.

2.2 The Queensway and the Lees Avenue Underpass

The Ontario Department of Public Highways (DPHO) was established in January 1916. The following year DPHO began to assume ownership of numerous roads in Ontario. The first stretch of road acquired was from Kingston Road in the County of York to Port Hope in Northumberland County as the provincial highway. In 1919, the federal

[11] "Death of Robert Lees, Esquire, Ottawa", *Perth Courier*, October 15, 1893, http://www.rootsweb.ancestry.com/~onlanark/NewspaperClippings/Spencer/PerthCourierOne.htm.
[12] T. Ritchie, "Brick Wall Construction of Old Houses in Ottawa", *Building Research Note* (Ottawa: National Research Council, no date, c1963) 2, www.nrc-cnrc.gc.ca/obj/irc/doc/pubs/brn/brn43/brn43.pdf.

government, under the *Canada Highways Act*, provided funds to the provinces on a pro rata basis providing the provinces designated an official highway system. The Province of Ontario immediately approved the first highway system in Ontario in February 1920 in order to take advantage of 40% of construction costs for road improvements offered through the federal program. Existing roads in the Ottawa area were designated Provincial Highway No. 17 in 1920 and the new highway connected the city with Pembroke to the west and Point Fortune to the east. The eastern portion formed the old Montreal Road, the main connection between Ottawa and Montreal. Within Ottawa, Provincial Highway 17 followed local roads, namely, Carling Road, Bank Street, Rideau Street and Montreal Road ***(Appendix A)***.

The Ontario Legislature authorized an Act that changed the name of the highways of Ontario from 'Provincial Highways' to 'the King's Highway' in 1930. The Department of Public Highways became the Department of Highways (DHO) in 1931 with its own minister who reported directly to the Legislature. DHO was given the responsibility for the planning, construction and maintenance of all highways and secondary roads throughout the Province of Ontario. Provincial Highway No. 17 was renamed King's Highway 17 at that time.

The *Trans-Canada Highway Act* was approved in 1949. It was based upon the idea of establishing better communications between provinces and promoting economic development across Canada. The federal and provincial governments agreed on a set of minimum standards and construction time schedule. The Trans-Canada Highway (TCH) agreement was signed between the Federal and Ontario governments on April 24, 1950. Ottawa subsidized one Trans-Canada route in Ontario at a rate of 50% of the total cost of construction provided the road met the prescribed standards. In areas where there were no existing roads, the federal government offered 90% subsidies to close gaps in the route. The standards for the TCH included a minimum 100-foot right-of-way, pavement width between 22 and 24 feet, desirable curvature of 3º with a maximum 6º curvature and maximum gradient of 7%.[13]

In Ontario, federal officials wanted a northerly road from Ottawa through the Ottawa River to North Bay and onto Lake Superior by Kirkland Lake and Hearst before heading to the Manitoba border crossing. Since this route missed the most populated area of Ontario and did little to assist local motorists or American tourists, the Province pushed for and won a more southerly route.[14] The federally sponsored route that was eventually approved incorporated a number of existing King's highways:

- Highway 17 TCH (King's Highway 17) east from the Manitoba border to Dryden and Thunder Bay, along the shore of Lake Superior to Nipigon, Marathon, Wawa, Sault Ste. Marie and Sudbury;

[13] *Footpaths to Freeways*, 86.
[14] Daniel Francis, *A Road for Canada: The Illustrated Story of the Trans-Canada Highway* (Vancouver: Stanton Atkins & Dosil Publishers, 2006) 80.

- Highway 69 from Sudbury through Parry Sound;
- Highway 12 through Orillia; and
- Highway 7 east through Peterborough, Perth to Ottawa B ***(Appendix A)***.[15]

Reconnecting with Highway 17, the TCH reached the Quebec border near Point Fortune. In addition to the main TCH route, Ontario financed several branches, also constructed to TCH standards. One of these alternatives connected Ottawa and Sudbury via Highway 17. Construction activities commenced on the Trans-Canada Highway in 1950. The route was opened through Ontario in 1962, although construction activities continued until 1971. The delay in the completion of the TCH in Ontario was due to other costly provincial and urban projects that used up money and expertise such as the completion the Queen Elizabeth Way and the construction of Highway 400 and Highway 401 in the post World War II era.[16]

As part of the federally sponsored Trans-Canada Highway route, Highway 17 was reconstructed through Ottawa as a controlled access, dual-lane freeway. DHO retained De Leuw, Cather & Company of Canada Limited of Toronto to develop the new route. The consultants set out their results in a document titled *Report on the Queensway-Limited Access Highway, Ottawa, Ontario: Functional Plan and Estimates* and dated July 1955. Within the city limits, i.e., St. Laurent Boulevard in the east to east of Richmond Road in the west, construction proceeded under a joint agreement signed on March 19, 1957, between the Federal Government, the Province of Ontario, the Federal District Commission (renamed the National Capital Commission in 1959), and the City of Ottawa. This agreement set out the responsibilities of the participating parties and confirmed that the route, plans and specifications would conform to the July 1955 report.[17] The Department of Highways was responsible for building connecting links with Highway 17 to the east and west of the capital. Beyond these points Highway 17 was upgraded to TCH standards as a conventional two-lane highway.

Developing from Gréber's plan for the capital, a new expressway was envisioned extending across the city connecting with the scenic parkway system. The road was designed in accordance with standards developed in the mid 20th century for the construction of limited access highways, namely a four-lane freeway with depressed grass median and grade separated interchanges. Much of the route through the city was constructed on the former right-of-way of the Canadian National Railway, originally the Canada Atlantic Railway. The availability of the existing right-of-way, continuous for approximately eight miles through the centre of the city was seen as a great advantage to the highway planners.[18] Both the section through the city and the connecting links were constructed to the same standards.

[15] *Footpaths to Freeways*, 87.
[16] *A Road for Canada: The Illustrated Story of the Trans-Canada Highway*, 96.
[17] *DHO Annual Report* (1957/58), 32.
[18] De Leuw, Cather & Company of Canada Limited, *Report on the Queensway-Limited Access Highway, Ottawa, Ontario: Functional Plan and Estimates* (Toronto: July 1955) 18

The *Functional Plan* (1955) prepared by De Leuw, Cather & Company of Canada Limited identified four basic types of structures for the new highway, namely, steel girders, steel and concrete, concrete rigid frame and concrete rigid frame bents.[19] The typical underpass structures were proposed to be steel or composite construction and the overpass structures were concrete rigid frame or rigid frame bents. Steel girder structures were preferred to meet accelerated construction schedules. Open type abutments were recommended at interchanges. The road structures were designed for H-20-S-16 loading and rail structures were designed for E-72 loading.[20]

The 10-mile stretch of the Trans-Canada Highway through the City of Ottawa was named the Queensway in Honour of Queen Elizabeth II. An official ceremony launching the construction of the route was held just east of the Hurdman's Bridge during the monarch's trip to Ottawa in 1957.[21] Formally, the Queensway designation was applied to that portion of the highway within the city limits and constructed under the joint agreement between the Federal Government, the Province of Ontario, the Federal District Commission and the City of Ottawa. Under this agreement, the FDC/NCC contributed the former right-of-way of the CNR cross-town tracks, widened to 180-ft., and the land for the section east from the Rideau River to the city limit at St. Laurent Boulevard, as well as the future landscape construction and maintenance of the right-of-way. The DHO was responsible for the highway design and construction. The *Functional Plan* recommended:

> *"…. the Queensway be landscaped in accordance with the most modern practices of roadside development. Trees, shrubs and grass should be selected and planted in a manner which will be in keeping with the present park-like setting of the National Capital Region."*[22]

Work on the Ottawa Queensway and the Highway 17 connecting links preceded in sections.

1. Work commenced on the east end of the project in 1957 and included the Highway 17 east approach from the east city limits to east of Montreal Road and Stage 1 of the Queensway itself from the east city limits to the Hurdman's Bridge. The 5.7-mile section included 4.5 miles of connecting link and 1.2 miles of the Queensway, and included three interchange and two underpass structures. It cost over 6.5 million dollars to complete. An official opening was held on November 25, 1960.

[19] *Report on the Queensway-Limited Access Highway, Ottawa, Ontario: Functional Plan and Estimates,* 42.
[20] *Report on the Queensway-Limited Access Highway, Ottawa, Ontario: Functional Plan and Estimates,* 34.
[21] A Historical Timeline for the Township of Gloucester, www.gloucesterhistory.com/history.html.
[22] *Report on the Queensway-Limited Access Highway, Ottawa, Ontario: Functional Plan and Estimates,* 43.

2. The west end of the project included the Highway 17 west approach from the west city limits to Highway 15 and Stage 2 of the Queensway from the west city limits to the Carling-Kirkwood Interchange. Grading activities started in 1958 and this section of highway with eight structures was opened to traffic on October 2, 1961.
3. Stage 3 of the Queensway extended from Carling Avenue easterly to Bronson Avenue. Work commenced on the 2.75-mile section in 1960. Eleven structures were constructed within Stage 3. This section was completed in 1964.
4. During the 1965 construction season work was carried out to complete the construction of the bridge over the Rideau Canal and the section from O'Connor Street on the west to Concord Street on the east was opened.
5. The final section of the Queensway from Concord Street on the west to the Alta Vista Drive interchange was completed in the fall of 1966 although some minor trim work was undertaken in 1967 ***(Appendix A)***.

The 1959 decision to remove the railway tracks from the downtown core and relocate the passenger terminal to the east end of Ottawa had a significant impact on the functional design of the section of the Queensway between the Rideau Canal and the Rideau River. The *Functional Plan* (1955) worked on the assumption that the downtown tracks would remain in situ for the foreseeable future and proposed a separation of the east and westbound lanes of the highway around the Canadian National Railway service yard at Mann Avenue. De Leuw, Cather & Company of Canada Limited noted "the ultimate construction of a new passenger train wye track within this area directly affects the functional plan for the Queensway".[23] Two locations were under discussion for the new wye track and the *Functional Plan* recommended the Queensway design in this section be reviewed once the railway plans had been finalized. With the decision to the remove the tracks and rail facilities in the area between the Rideau Canal and Rideau River land became available for the construction of the Queensway. The design of roadway was modified to bring the east and westbound lanes together as one roadway and new plans were prepared for bridge structures in the area, namely the Lees Avenue Underpass and the Nicholas Street Underpass and interchange.

The Lees Avenue Underpass was constructed as part of the Ottawa Queensway Limited Access Highway in the 1960s. De Leuw, Cather & Company of Canada Limited, the author of the functional plan for the Queensway also designed most of the structures along the route. The firm prepared drawings dated January 1965 for the Lees Avenue Underpass. The structure was identified as Bridge No. 39 on the Ottawa Queensway Limited Access Highway. Leon J. Marshall was the supervising engineer on the project for De Leuw, Cather & Company of Canada Limited. A. (Art) M. Toye, P. Eng, Director of Design for DHO approved the Lees Avenue Underpass drawings for DHO. Construction commenced under General Contract No. 65-70 and was completed in 1966. The underpass is described as a steel plate girder structure comprising three spans.

[23] De Leuw, Cather & Company of Canada Limited, 40-41.

The Province of Ontario began construction on a new highway from Ottawa to Montreal and a sod turning ceremony was held at Ramsayville in 1968. Designated Highway 417, the new alignment was completed in 1971. Highway 417 joined the Queensway just east of Cyrville Road. At that time the Queensway to the west of the split became part of Highway 417, while the road to the east was retained as Highway 17. As part of the downloading of provincial highways in 1997 the east section became Regional Road 174 and was removed from the Trans-Canada Highway network. Highway 417 is currently the TCH route. The introduction of additional traffic lanes during the 1980s and 1990s has resulted in the loss of the original grass median. Concrete barriers were installed between the opposing lanes of traffic and high mast lighting and signage typical of other 400-series highways was installed in the 1990s.

2.3 Steel Plate Girder Structures

The Lees Avenue Underpass is classified as a steel plate girder bridge. A rolled girder bridge is made of I-beams that are formed into that shape at a steel mill. They are typically used for spans of 10 to 30 m. A steel plate girder bridge is made out of flat steel sections that are fabricated on site into an I-beam shape. They can be deeper than rolled shapes and are able to span up to 100 m. Simple plate girder bridges have been used extensively across Canada for both railway and highway structures since steel came into general use for bridges in 1890. The Champlain Bridge in Ottawa over the Ottawa River (1929) comprised 26 spans of which four were over 125 feet long and 12 feet deep. This type of bridge gained popularity for grade separation structures in the 20th century. Shallow floor systems allowed engineers to minimize the distance from the underside of the structure to the roadway.

There was little bridge construction during World War II and steel shortages that persisted into the mid-1950s resulted in fewer steel structures being built during this time. Changes in steel fabrication techniques resulted in riveted steel work being replaced by shop welded and high strength bolted field connections in the 1960s. Welded girder structures could be fabricated in Canada reducing the to import rolled shapes. Re-coating of the steel and nesting and roosting pigeons remain on-going maintenance issues for steel girder bridges.

2.4 Bridge Designer

In 1958, A. M. Toye, Bridge Engineer with the DHO Bridge Division, described the need for the department to retain private consulting engineers to supplement the bridge division staff.[24] In the fiscal year 1957-1958, consultants completed 98 of 144 of the new bridge designs, or over two-thirds of the department's output. The Bridge Division staff reviewed and approved all the bridges designed by the consultants. De Leuw, Cather & Company of Canada Limited, Toronto, were retained in 1955 to prepare a functional plan

[24] *DHO Annual Report* (1958/59), 171.

for the Queensway Limited Access Highway in Ottawa. The firm later undertook the design of most of the structures along the route including the design of the Lees Avenue Underpass and interchange for the DHO Bridge Office in Toronto.

De Leuw, Cather & Company operations in Canada were initially managed from Chicago before De Leuw, Cather & Co. of Canada Limited was incorporated on December 31, 1953. Offices were established at 52 St. Clair Avenue East in Toronto. The firm was involved in important projects of the 1950s, including the construction of the Canada's first subway and the Gardiner Expressway in Toronto, Trans-Canada Highway projects in Newfoundland, and the Queensway in Ottawa. Growth in the 1960s was characterized by expansion of Canadian operations from Newfoundland to Alberta and the first international engineering projects. Throughout the 1970s and 1980s the company expanded geographically, both abroad and into the United States, and functionally by offering more services in an increasing range of disciplines. The company took on the name Delcan in 1979 and remains in business with a diverse consulting practice.

Leon J. Marshall signed the drawings for the Lees Avenue Underpass on behalf of De Leuw, Cather & Company of Canada Limited. Leon John Marshall (1921-2010) was born in England and immigrated to Canada in 1954. Trained as a civil engineer, he was the bridge engineer on the Queensway project for De Leuw Cather & Company.[25] W. J. Malone was the project manager.

3.0 CULTURAL HERITAGE LANDSCAPE DESCRIPTION

3.1 Area Context

Historically the Township of Nepean in Carleton County was bordered by the Ottawa River to the north, the Rideau River to the east, the Township of North Gower to the south and the Townships of Goulbourn and March to the west. Currently the former Nepean Township lies within the boundaries of the City of Ottawa.

The Ottawa Valley lies in a sedimentary basin surrounded by Precambrian shield rocks. The land surface of Gloucester Township comprises a level to gently undulating plain of marine and moraine deposits interrupted by local bedrock uplands. The Ottawa River and its tributaries provide drainage to the region.

The Ottawa area is located within the upper St. Lawrence section of the Great Lakes-St. Lawrence forest region. The largely deciduous original forest was originally logged in the early 1800s. Subsequent agricultural settlement completed the clearing of the land. Agriculture was the principal industry of the region from the mid-1850s to the mid-1950s

[25] "Ottawa Queensway Construction Started", *Roads and Engineering Construction*, 92.

although portions of Nepean Township closest to the City of Ottawa were subject to the pressures of urban expansion from the 1870s on.

The Village of Ottawa East came within the boundaries of the City of Ottawa in 1907. Nearby industries including railyards and brickyards as well as market gardening provided employment for the community. A topographic map (1931) and an aerial photograph (1944) show a largely urbanized landscape in proximity to several railway lines and spur lines ***(Appendix A)***. An aerial photograph (1973) depicts the area after the removal of the railway network and industrial activities and the introduction of the Queensway with an underpass at Lees Avenue and an underpass and interchange at Nicholas Street ***(Appendix A)***. Nicholas Street and Colonel By Drive to the downtown core extend along the east side of the Rideau Canal on a former rail right-of-way. Residential developments are depicted to the northeast and southwest. Mapping (1999) shows a similar pattern of land use in proximity to Lees Avenue ***(Appendix A)***. The University of Ottawa acquired the Algonquin College site in 2004 after Algonquin relocated its programs from the Rideau Campus to its Woodroffe Campus. Some high-rise residential buildings have developed in proximity to the OC Transpo Transitway and the University of Ottawa facilities. Ottawa East remains a distinct community within the City of Ottawa.

3.2 Site

The Lees Avenue Underpass is located west of the Rideau River ***(Figure 2)***. Lees Avenue predates the construction of both the Queensway and rail lines. It developed as east-west route across Lot G of Concession D between the Rideau Canal and the Rideau River. The road is named after Robert Lees, Q. C. who was a prominent 19th century resident of Ottawa East.

Lees Avenue is an arterial road that connects Ottawa East to Sandy Hill and provides access to ramps to Highway 417. The roadway was realigned as part of the construction of the Queensway to carry Lees Avenue over the new highway on an underpass structure that is oriented generally north to south. To the north of Highway 417, Lees Avenue flows into King Edward Avenue. The original right-of-way remains to the east and west of Highway 417. The small section to the east retains the name Lees Avenue, although it is not contiguous with the main section of the road to the west of the highway. Lees Avenue is a two-lane paved road with a posted speed limit of 50 km/h in the vicinity of Highway 417. The road is well travelled with vehicular traffic including buses and pedestrian traffic.

Mixed use characterizes the lands in proximity to the Lees Avenue Underpass and Highway 417. The Lees Avenue Transit Station is located to the southwest of the underpass. Five high-rise apartment towers, two to the north of Lees Avenue and three to the south, have developed in recent years in proximity to the transit stop. City-owned land located to the west of the towers was the site of a Department of National Defence

armoury at 160 Lees Avenue until the late 1980s. The area is designated for transportation uses as part of the proposed Alta Vista Transportation Corridor (AVTC) that will see an extension of Nicholas Street south over the Rideau River to connect with Riverside Drive. The University of Ottawa took over the former Algonquin College in 2004. The building at 200 Lees Avenue is situated to the southeast of the underpass on the banks of the Rideau River. Lees Avenue connects the south campus with the main facilities of the University of Ottawa to the north. The transit station and academic facilities generate a noticeable amount of pedestrian traffic in the area.

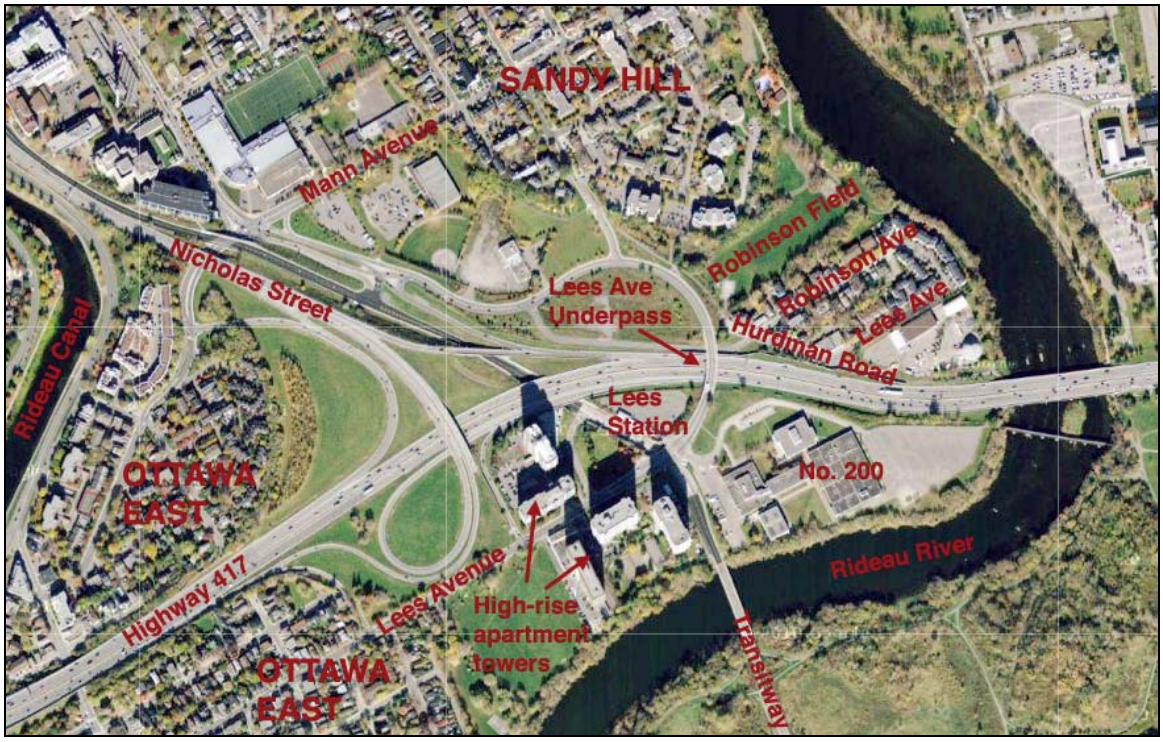

Figure 2. Site plan of the Lees Avenue Underpass in the City of Ottawa [GoogleMaps 2011, as adapted].

A small residential neighbourhood extends to the northeast of the underpass to the Rideau River. It is currently included within the Sandy Hill community for planning purposes, although historically it relates to Ottawa East. Robinson Avenue provides access to the small enclave from Lees Avenue. The primarily residential area comprises Hurdman Road and Lees Avenue as well as Robinson Avenue. Robinson Field bounds the north edge of the area. A City of Ottawa works yard is situated at 29 Hurdman Road on the former property of the Harry Harvey & Sons Ltd. that produced artificial stone and concrete block on the site. Open space to the northwest of the underpass marks the location where the cross-town and the downtown tracks split and the site of the former works yard of the Canadian National Railway. Ramps associated with Nicholas Street interchange and local roads realigned as part of the Queensway construction dominant the area. The Sandy Hill arena and baseball diamond are located at 60 Mann Avenue.

4.0 BUILT HERITAGE RESOURCE DESCRIPTION

The following description of the Lees Avenue Underpass, MTO Site No. 3-225 is based on the design drawings (1965), rehabilitation drawings (1986), an inspection report (2009) and a site visit undertaken in March 2011. For the purposes of this report, the Lees Avenue Underpass runs in a north to south direction and Highway 417 extends west to east. A selection of the engineering drawings is included in Appendix A and a Bridge Survey Form is found in Appendix B.

4.1 Lees Avenue Underpass, MTO Site No. 3-225

Figure 3. A view of the east elevation of the three-span Lees Avenue Underpass shows the vertical rise of the bridge from the south to the north, July 1968 [AO RG14-151-4, A1302, B410835].

The Lees Avenue Underpass is classified as a welded steel plate girder structure. Load bearing beams run longitudinally between the abutments and piers. It is similar in appearance and age to the Nicholas Street Underpass that is located a short distance to the west. The three-span structure has an exposed concrete deck over the steel plate girders. Reinforced cast-in-place concrete is used for the major components of the substructure including abutments, wingwalls and piers. The sculptural form of the bridge structure created by its vertical and horizontal alignment provides visual interest. The horizontal curvature of the bridge is reflected in the shape of the girders, deck and handrails as well as the approaches. The bridge deck slopes downwards 6% to the west to accommodate

the curved roadway. Furthermore, the bridge rises vertically roughly 14-ft. (4.27 m) from south to north ***(Figure 3)***.
The centre span of the bridge extends 124-ft. 9-in. (38.02 m) while the two end spans are 81-ft. 9-in. (24.92 m) each. The General Arrangement drawing (1965) indicates the east and westbound lanes of the Queensway were located within the centre span. In the vicinity of the underpass, the eastbound roadway was initially 36-ft. 6-in. (11.13 m) wide and was comprised of two travelling lanes. The westbound roadway was 50-ft. 0-in. (15.24 m) wide and incorporated two travelling lanes and a speed change lane for the Nicholas Street exit ramp. Paved shoulders were located to the outside of the traffic lanes and a concrete median with guardrail separated the east and westbound lanes. The two end spans were designed to accommodate traffic lanes. A ramp to the Queensway eastbound was located within the south end span while north end span was used for Robinson Avenue.

The Lees Avenue Underpass uses an open concept design with perched abutments and constant depth structure. The open end spans feature sloped embankments with grouted flagstone paving on the slope. The two concrete piers are made up of four columns, each 3-ft. 6-in. (1.07 m) in diameter and set at 14-ft. 11 ½ -in. (39.24 m) on centre for Pier 1 to the north and 14-ft. 11 ¼ -in. (39.18 m) on centre for Pier 2 to the south. A cap beam, 4-ft. (1.22 m) in height connects the top of the columns. The width of the structure is made up of seven steel plate girders, 4-ft. (1.22 m) high and set at 7-ft. 4-in. (2.24 m) on centre.

Figure 4. A view south over the bridge deck depicts the two-lane paved roadway with sidewalks, handrail system and lighting, September 1969 [AO RG14-151-4, A1302, B410835].

The overall width of the deck is 51-ft. 0-in. (15.55 m) and comprises a 36-ft. (10.97 m) wide roadway comprising one northbound lane and one southbound lane and two sidewalks, each 7-ft. 6-in. (2.29 m) wide with handrail system. The deck is cantilevered approximately 3-ft. 3-in. (1.0 m) from the outside girders and slopes downwards 6% to the west. At the time of construction the deck was made up of a 7-in. (178 mm) slab of reinforced concrete with a wearing surface of 3-in. (76 mm) asphalt. A handrail system is set on top of the concrete sidewalks. As a result of the curved alignment of the bridge the handrail extended originally approximately 344-ft. 0-in. (104.85 m) along the west side and 345-ft. 8-in. (105.36 m) along the east side. The handrail system initially comprised rounded reinforced concrete end posts and intermediate metal posts that curved inwards at the top connected by four horizontal pipe rails ***(Figure 4)***. Two concrete light standards set in line with the bridge piers were incorporated into the handrail design on the east side of the deck. Anchorages were provided or future light standards on the west side of the bridge deck. The design drawings (1965) noted the handrail design was the "standard Queensway railing". The original handrail system was replaced as part of the bridge rehabilitation work in 1986.

4.1.1 Modifications

The Lees Avenue Underpass has undergone some alterations since it was opened in 1966. Fenco Engineering Inc. prepared drawings dated June 1986 for a rehabilitation of the bridge. The scope of work included installation of a concrete barrier wall and railing, repairs of the concrete deck, piers, abutments and wingwalls, coating of the structural steel, installation of new expansion joint assemblies and repaving of the deck. The two original light standards were remounted on pedestals on the new east barrier wall. The concrete barrier wall incorporated metal posts and one rail of metal tubing into the design. A site number was added at the time of the rehabilitation. The replacement of the original open railing designed for the Queensway bridges is considered to be unsympathetic to the original design and character.

As part of the widening of Highway 417 in the vicinity of the bridge, the centre median and shoulders were reduced in size to accommodate an extra lane in each direction. The additional lanes were set within the existing centre span and resulted in few modifications to the bridge structure.

4.1.2 Comparative Analysis

MTO East Region provided a chart giving the age and length of the longest span of steel - I girder bridges on provincial highways in this region. The chart included five structure types, namely, plate I girder, rolled steel girder, steel beam, steel girder and steel plate girder. The MTO information does not indicate whether or not the steel beam and steel girder structure were rolled or plate steel. As a result, only the information on plate I

girder and steel plate girder bridges within the MTO East Region was used to assess the importance of the functional design of the Lees Avenue Underpass ***(Appendix C)***. The information identifies twenty-one (21) plate I girder and steel plate girder structures constructed within the region. Four (4) of the oldest structures of the type relate to the first stages of the construction of the Queensway within the City of Ottawa, namely:

- MTO Site No. 3-042: Maitland Avenue Overpass (1959);
- MTO Site No. 3-039: Richmond Road Underpass (1960);
- MTO Site No. 3-040: Pinecrest Avenue Underpass (1960); and
- MTO Site No. 3-041: Woodroffe Avenue Underpass (1960).

As well, MTO Site No. 26-061.1: Otonabee River Bridge EBL on Highway 7 dates to 1960.

With a centre span of 124-ft. 9-in. (38.02 m) the Lees Avenue Underpass has the second longest span of steel plate girder bridges greater than 40 years old on provincial highways in the East Region. Only the Otonabee River Bridge EBL with a longest span of 64 m exceeds the Lees Avenue Underpass for those bridges greater than 40 years old.

5.0 EVALUATION OF THE LEES AVENUE UNDERPASS

5.1 Introduction

The *Ontario Heritage Bridge Guidelines* (OHBG) was revised in 2007 to address the conservation of provincially owned road bridges. The current OHBG, adopted by MTO (January 2008), supersedes previous versions of the guidelines in respect to provincially owned bridges.

As part of the revised OHBG a new scoring system was developed to evaluate bridges for potential inclusion on the Heritage Bridge List. Derived from Ontario Regulation 9/06, which sets out criteria for determining cultural heritage value or interest, the scoring system is divided into three main areas: Design/Physical Value, Contextual Value and Historical/Associative Value. Within each category, criteria are individually scored. A bridge that achieves a score of 60 or greater is considered provincially important and worthy of inclusion on the Heritage Bridge List.

The Lees Avenue Underpass, MTO Site No. 3-225 has not been assessed previously as part of the earlier *Ontario Heritage Bridge Guidelines* (1983, rev. 1991) and is not listed in the Ontario Heritage Bridge List. The bridge has not been designated under the *Ontario Heritage Act*, nor is it listed in the City of Ottawa's Inventory of Heritage Resources. It is not included in the *Heritage Bridges Identification and Assessment Guide 1945-1965, Ontario (1945-1965 Guide)* Candidate Bridge List as a Class A, B or C structure.

5.2 Evaluation

The evaluation of the Lees Avenue Underpass comprises a summary of the heritage attributes of the bridge and the evaluation score presented in Table 1. Italicized statements/phrases in the evaluation descriptions in Section 5.3 are quoted from the evaluation criteria of the *Ontario Heritage Bridge Guidelines* (January 2008).

Design/Physical Value

Functional Design:

The Lees Avenue Underpass uses a steel plate girder structure. The bridge was designed in 1965 and completed in 1966. Information provided by MTO East Region indicates the structure is not one of the oldest steel plate girder structures in the region.

The centre span of the three span bridge extends 124-ft. 9-in. (38.02 m) over Highway 417. MTO East Region reports this is second longest span for the structure type for bridges greater than 40 years old in the region. Furthermore, it is longest example of the type on the Highway 417 corridor.

The Lees Avenue Underpass would be considered to display *"a high degree of technical merit or scientific perspective"***.**

Visual Appeal:

The Lees Avenue Underpass was designed in accordance with the design principles for Highway 17 and the Queensway developed by De Leuw, Cather & Company of Canada Limited of Toronto on behalf of DHO. It exhibits clean lines, openness and simplicity in detailing typical of highway bridges of the period. The sculptural form of the bridge structure created by the curve of the horizontal alignment and slope of the vertical alignment creates visual interest.

The underpass has undergone some modifications, but it retains significant aspects of its original form as identified by the following design elements:

- three-span structure, with the centre span extending 124-ft. 9-in. (38.02 m) and the two end spans extending 81-ft. 9-in. (24.92 m);
- reinforced concrete abutments with wingwalls;
- perched abutments with grouted stone paving on the slope;
- two piers, each made up of four circular columns, 3-ft. 6-in. (1.07 m) in diameter and a pier cap, 4-ft. 0-in. (1.22 m) high;
- constant depth superstructure made up seven (7) steel plate girders, 4-ft. (1.22 m) high and set at 7-ft. 4-in. (2.24 m) on centre;
- horizontal curvature of the bridge reflected in the shape of the girders and deck;

- 6% slope of the deck downwards to the west; and
- vertical rise of the bridge deck approximately 14-ft. (4.27 m) from south to north.

While the replacement of the original open railing designed for the Queensway bridges is considered to be an unsympathetic modification to the original design, the Lees Avenue Underpass retains its dominant character and several noteworthy elements.

It is concluded the Lees Avenue Underpass is a "*well-proportioned bridge that has a general massing that is appropriate to the landscape in which it is situated*".

Materials:

The structure is steel plate girder and reinforced, cast-in-place concrete, common 20th century materials. It is concluded that the materials are *"common materials or combinations"*.

Contextual Value

Landmark:

The Highway 417 underpasses through Ottawa establish a family of bridges along the corridor. The Lees Avenue Underpass is one of the original underpasses, and was the completed in the final stage of the highway construction. The underpass is a physically prominent structure over Highway 417.

MTO differentiates individual structures within a family of bridges between those that are important, e.g., the first one entering the corridor or an important interchange and those that are contributory, e.g., a typical underpass. The Lees Avenue Underpass would be considered to be a typical underpass and therefore is *"a contributory element in understanding a family of bridges within a corridor"*.

Character:

Highway 417 with its wide right-of-way, grade separation structures and controlled access defines the character of the area in proximity to the Lees Avenue Underpass. As one of the original underpasses it is concluded the structure *"contributes to the overall character of the area"*.

Historical/Associative Value

Designer/Construction Firm:

DHO retained De Leuw, Cather & Company of Canada Limited of Toronto to prepare the functional design and preliminary cost estimates for the 10-mile route of the Trans-

Canada Highway through Ottawa. The firm submitted its findings in July 1955 and went on to design most of the structures along the corridor including the Lees Avenue Underpass in 1957.

De Leuw, Cather & Company of Canada Limited, which was established in 1953 and known as Delcan Limited since 1979, is a well-known consulting engineering firm responsible for a wide range of projects nationally and internationally. The evaluation criteria define "designer-builder" as companies, engineers and/or builders and as such De Leuw, Cather & Company of Canada Limited would be considered a *"known, prolific designer-builder"*.

Association with a Historical theme, person or event:

The Lees Avenue Underpass is associated with two major themes in Ontario's and Canada's history: the development of the Trans-Canada Highway during the mid 20th century and the development of Canada's Capital in the same period.

The construction of the Trans-Canada Highway linking dispersed communities in Ontario with neighbouring provinces is recognized as a significant historical theme in the development of the province.[26] As a joint Federal Government, the Province of Ontario, the Federal District Commission and the City of Ottawa initiative the construction of the Trans-Canada Highway through the nation's capital had particular relevance. The removal of the CNR cross-town tracks through the city that freed up land for scenic driveways, government buildings as well as for the construction of the Queensway was a critical aspect of the proposed development of Canada's National Capital Region as presented in the Gréber Plan.

MTO defines 'direct' association as those bridges that represent a necessary or critical part to the development of the highway; 'close' association as those bridges that represent the overcoming of an obstacle to the development of a highway and 'limited or no' association as those bridges that represent a regular road crossing. Lees Avenue Underpass is a regular road crossing and therefore, would be considered have *"limited or no association"* with the theme of the development of the Trans-Canada Highway.

The location of the Lees Avenue Underpass relates to the implementation of the Gréber Plan for the national capital. Its construction is a direct result of the removal of the railway lines and yards in East Ottawa. It is concluded to have a *"close association"* with the development of Canada's National Capital Region as represented by the rail relocation programme and reuse of the lands to meet the goals of the NCC.

[26] The Ontario Heritage Trust has erected a plaque commemorating the importance to the province of the construction of the Trans-Canada Highway. The plaque is located on Highway 17 near Chippewa Falls, 13 km east of Batchawana Bay, at the approximate midway point of the route.

TABLE 1: EVALUATION SCORE: LEES AVENUE UNDERPASS, MTO SITE No. 3-225				
Criteria	**Details**	**Maximum Score**	**Evaluation Score**	**Comments**
Design/Physical Value	Functional Design	20	12	The length of the centre span is of note within the MTO East Region and the underpass displays a fair degree of technical merit.
	Visual Appeal	20	12	Visually it is considered to be *"a well proportioned bridge that has a general massing that is appropriate to the landscape in which it is situated*".
	Materials	10	0	The materials are *"common materials or combinations"*.
Contextual Value	Landmark	15	3	The Lees Avenue Underpass is considered to be *"a contributory element in understanding a family of bridges within a corridor"*, namely, the Highway 417 in Ottawa.
	Character Contribution	10	6	The Lees Avenue Underpass *"maintains or contributes to the overall character of the area"*.
Historical/ Associative Value	Designer/ Construction Firm	15	9	De Leuw Cather & Company of Canada Limited would be considered a *"known, prolific designer-builder"*.
	Association with theme, person or event	10	6	The Lees Avenue Underpass is considered to have a close association with a historical theme, i.e., the development of Canada's National Capital Region.
Total Score		**100**	**48**	

5.3 Cultural Heritage Value

The Lees Avenue Underpass, MTO Site No. 3-225 located on Highway 417 in the City of Ottawa, scores **48 points**, and therefore does not meet the threshold of 60 points to be considered provincially important and worthy of inclusion on the Ontario Heritage Bridge List.

6.0 MITIGATION RECOMMENDATIONS

MTO East Region is proposing to replace the existing Lees Avenue Underpass, MTO Site No. 3-225 as part of the proposed widening of Highway 417 in proximity to the bridge. An undertaking should not adversely affect cultural heritage resources and intervention should be managed in such a way that its impact is sympathetic with the value of the resources. When the nature of the undertaking is such that adverse impacts are unavoidable it may be necessary to implement management or mitigation strategies that alleviate the deleterious effects to cultural heritage resources. Mitigation measures lessen or negate anticipated adverse impacts to cultural heritage resources. These measures may include such actions as avoidance, monitoring, protection, relocation documentation, salvage, remedial landscaping, etc., and may be a temporary or permanent action.

The Lees Avenue Underpass, MTO Site No. 3-225 does not met the threshold of 60 points to be considered of provincial importance and eligible for inclusion on the Ontario Heritage Bridge List, therefore this CHER will serve as the documentation record for structure.

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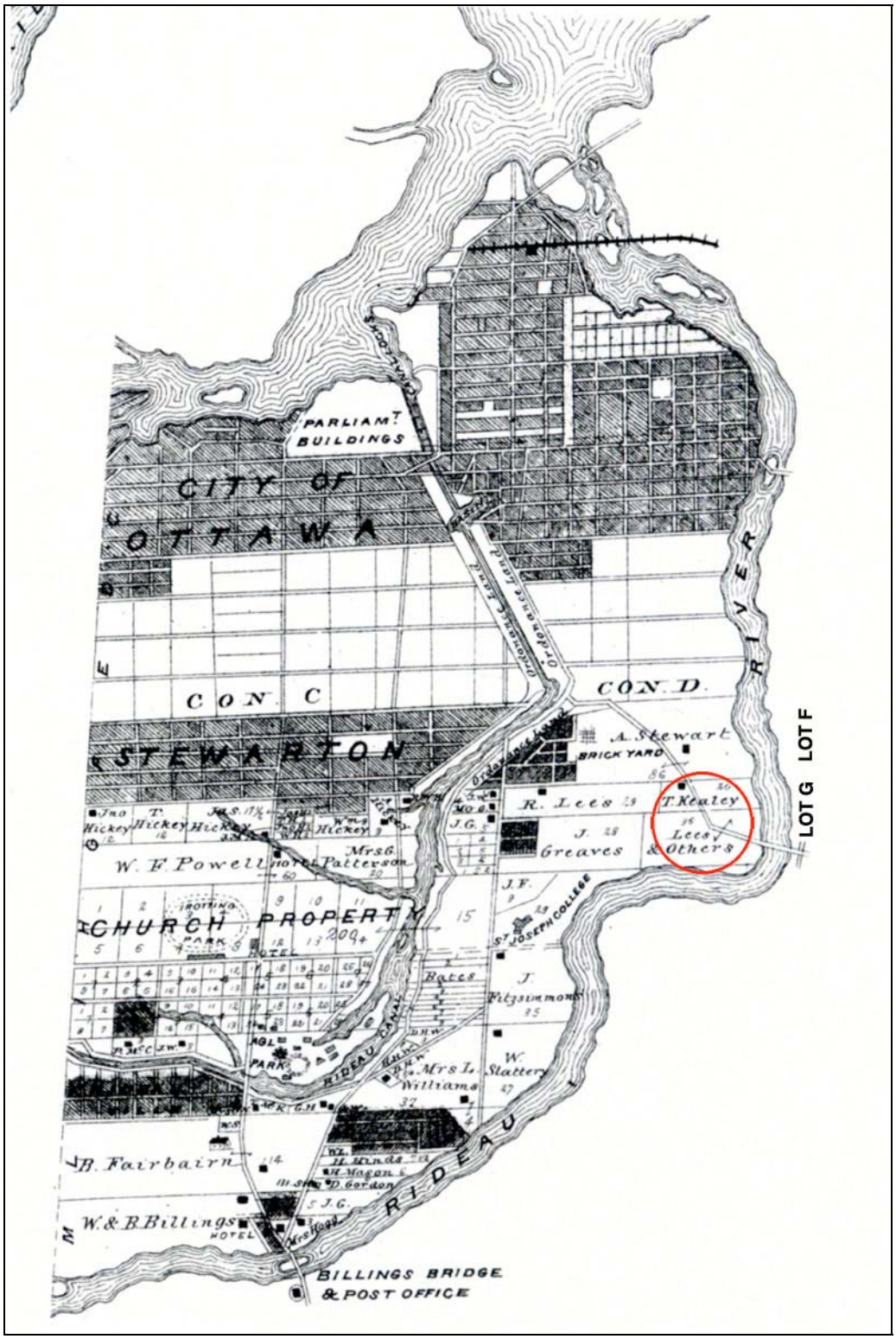
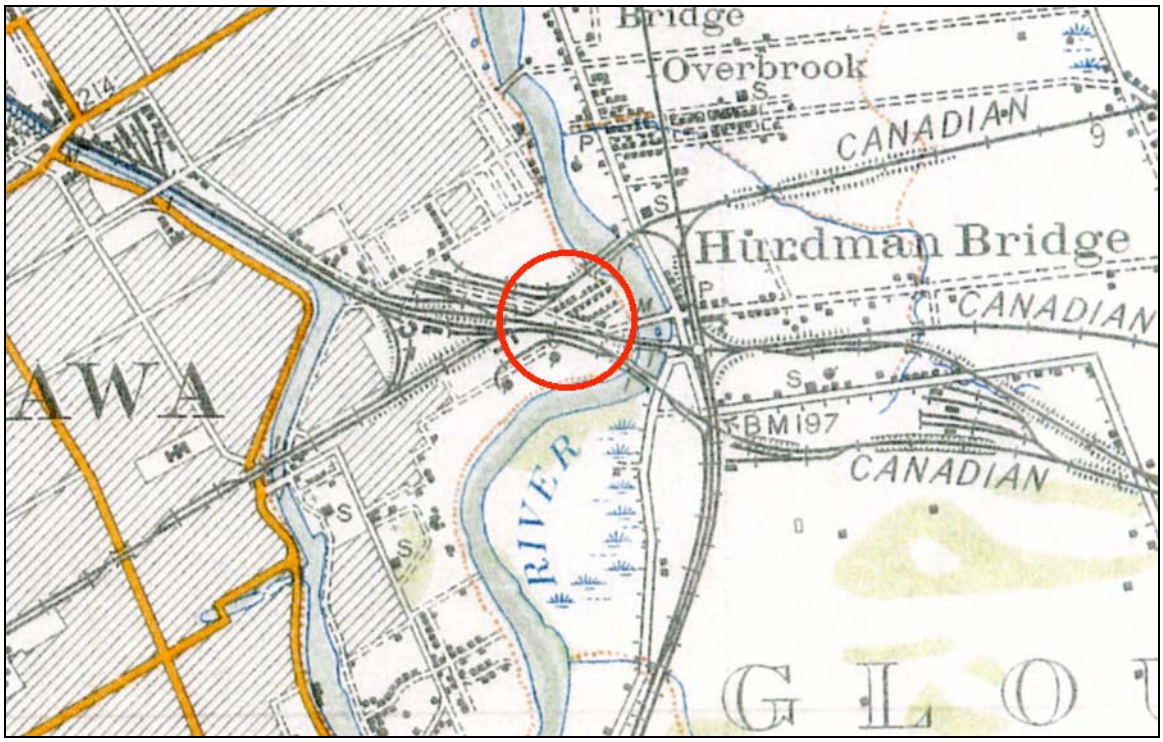
APPENDIX A:
HISTORICAL MAPS, PHOTOGRAPHS AND DRAWINGS

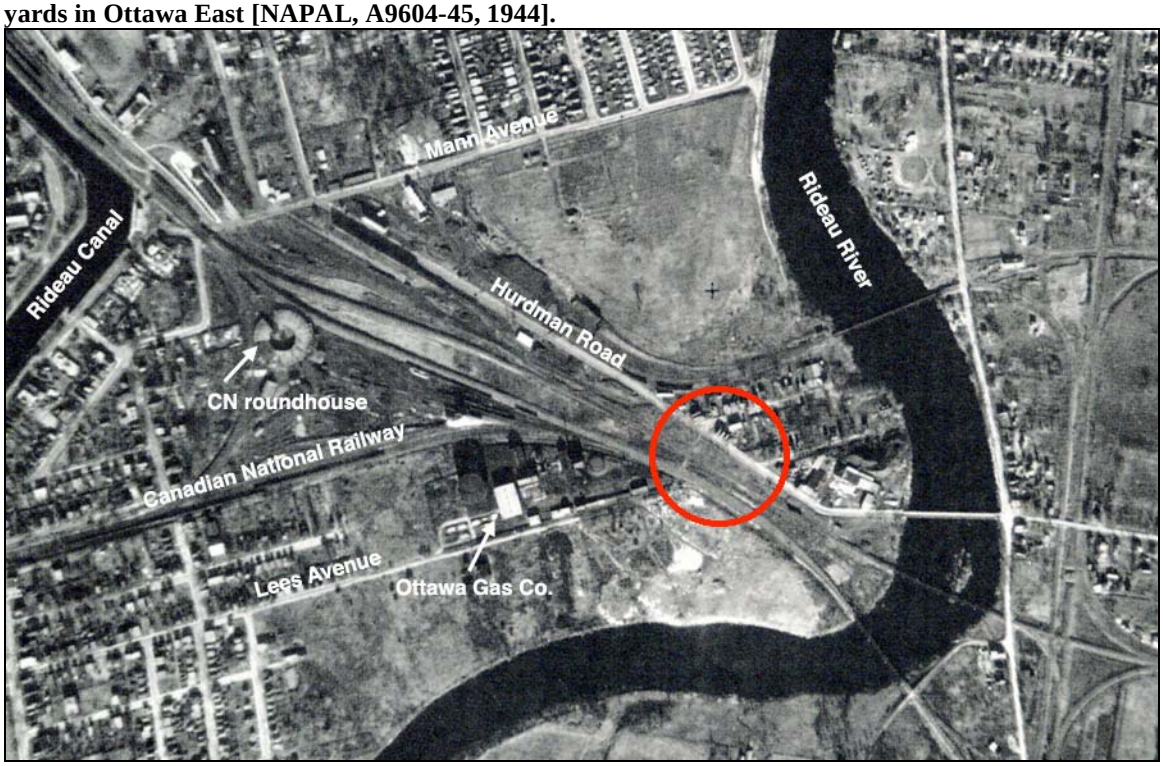


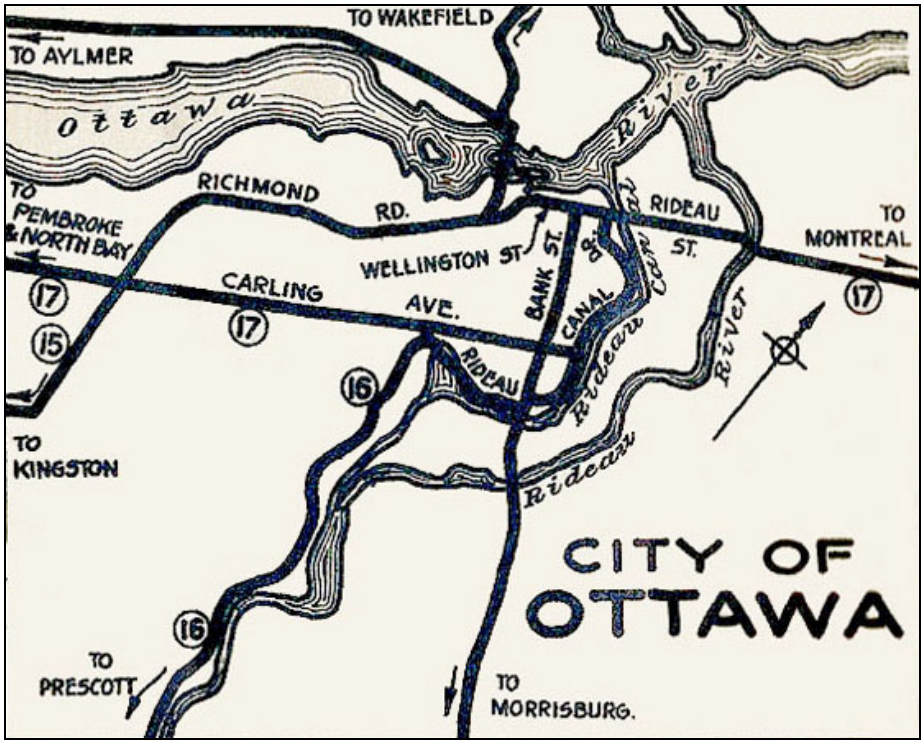
A map of the northeast part of Nepean Township shows the approximate location of the Lees Avenue Underpass in the Archville area, *Illustrated Historical Atlas of the County of Carleton* (1879) (highlighted).



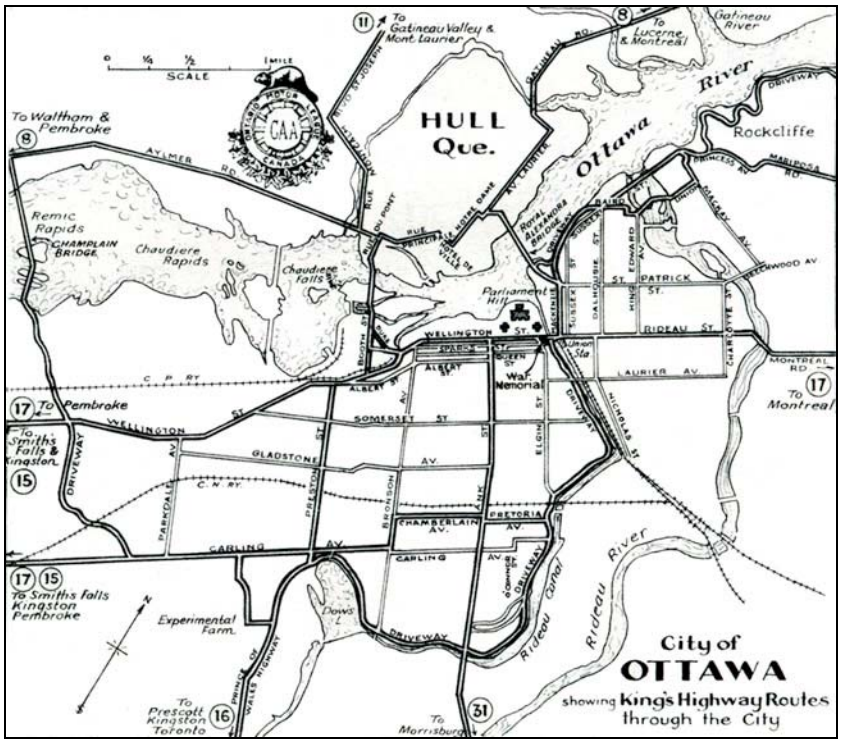
The National Topographic Series map Ottawa 31 G/5 (1931) depicts the railway lines in Ottawa East at the Rideau River.

An aerial photograph illustrates the industrial and residential development in proximity to the rail yards in Ottawa East [NAPAL, A9604-45, 1944].

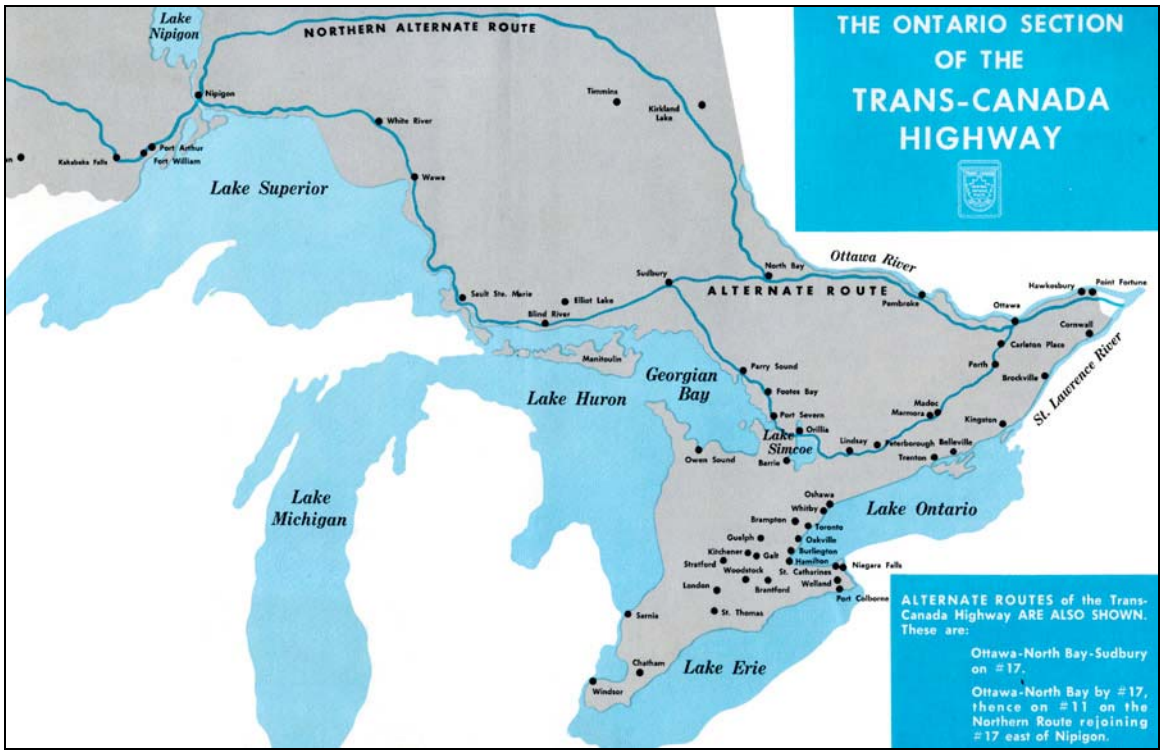




A map of the City of Ottawa depicts the route of Highway 17 on local roads through the municipality [*Official Road Map of Ontario*, 1926].

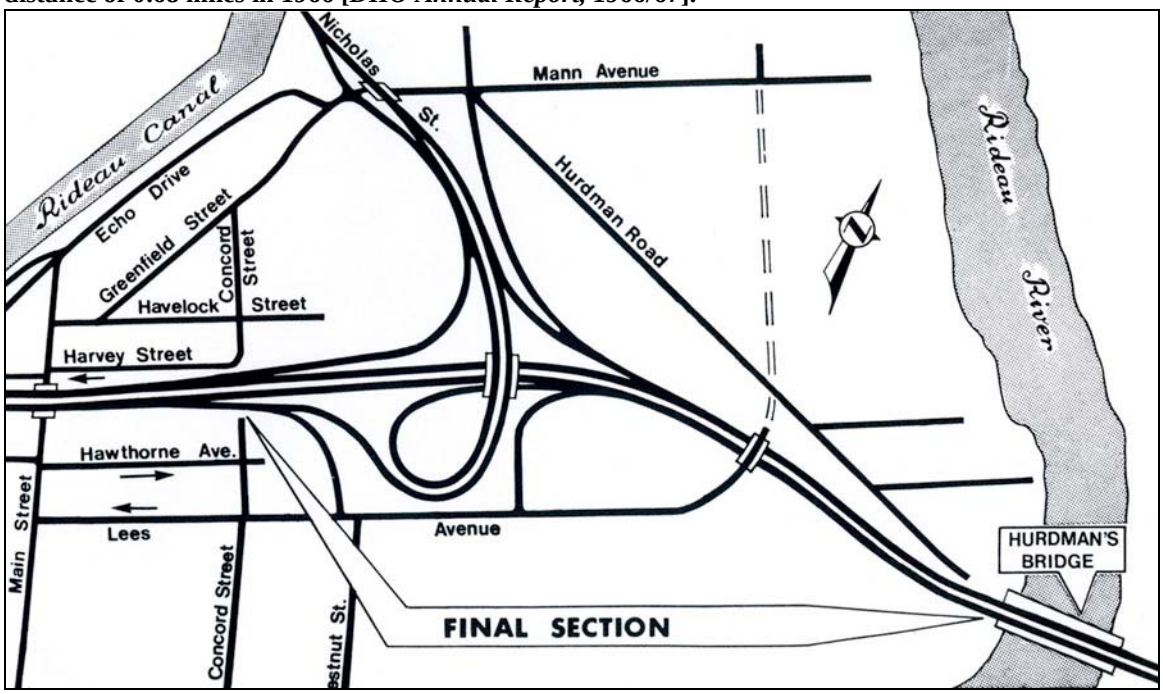


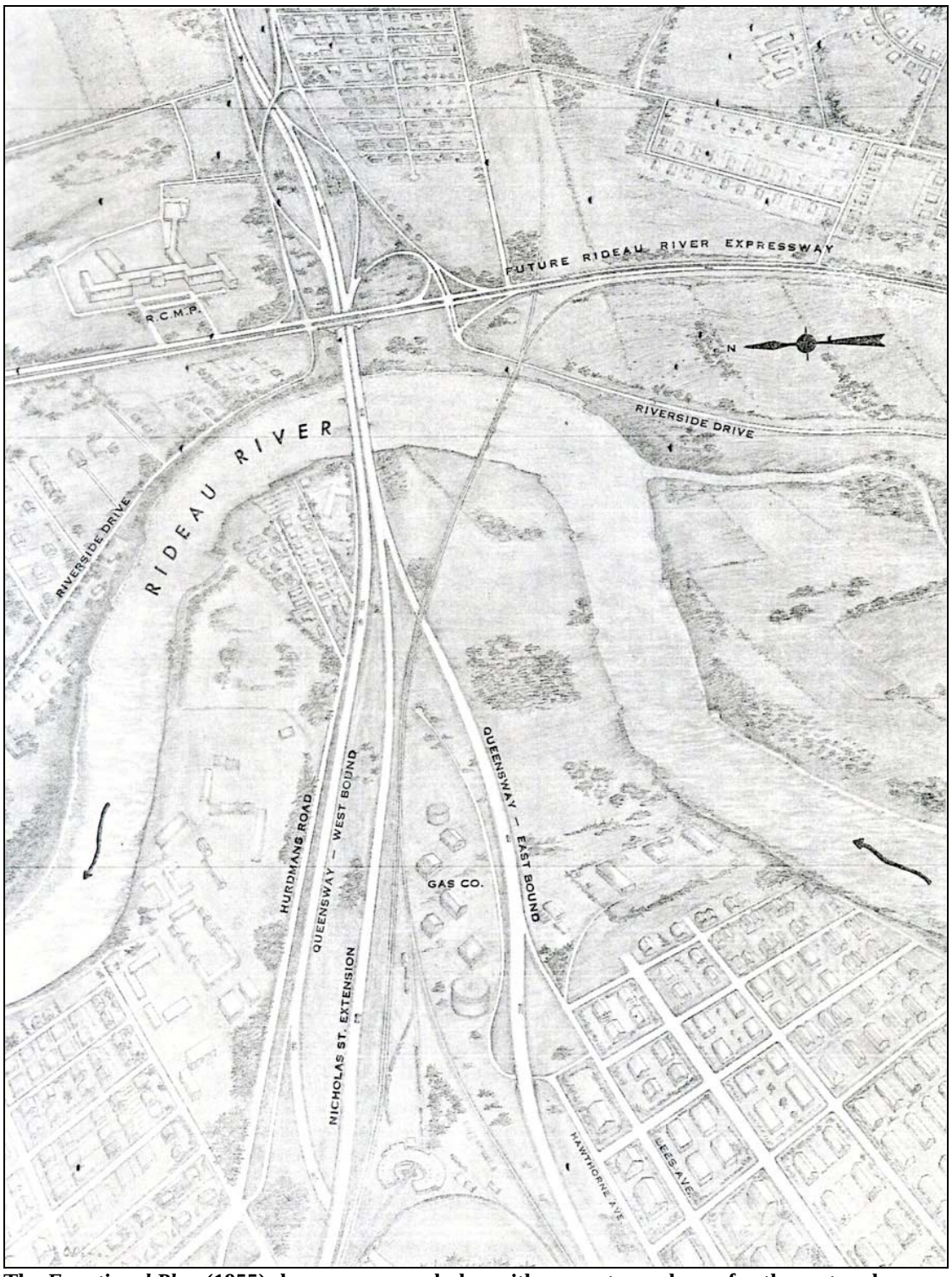
A map of the City of Ottawa indicates the King's Highway routes through the city prior to the construction of the Queensway [*CAA Road Map of Ontario*, 1956-57].



A map, c1962 shows the federally sponsored route of the Trans-Canada Highway through Ontario along with the two alternate routes [Department of Travel and Publicity, c1962].

The final link of the Queensway was completed from Concord Street to Hurdman's Bridge, a distance of 0.68 miles in 1966 [*DHO Annual Report,* 1966/67].

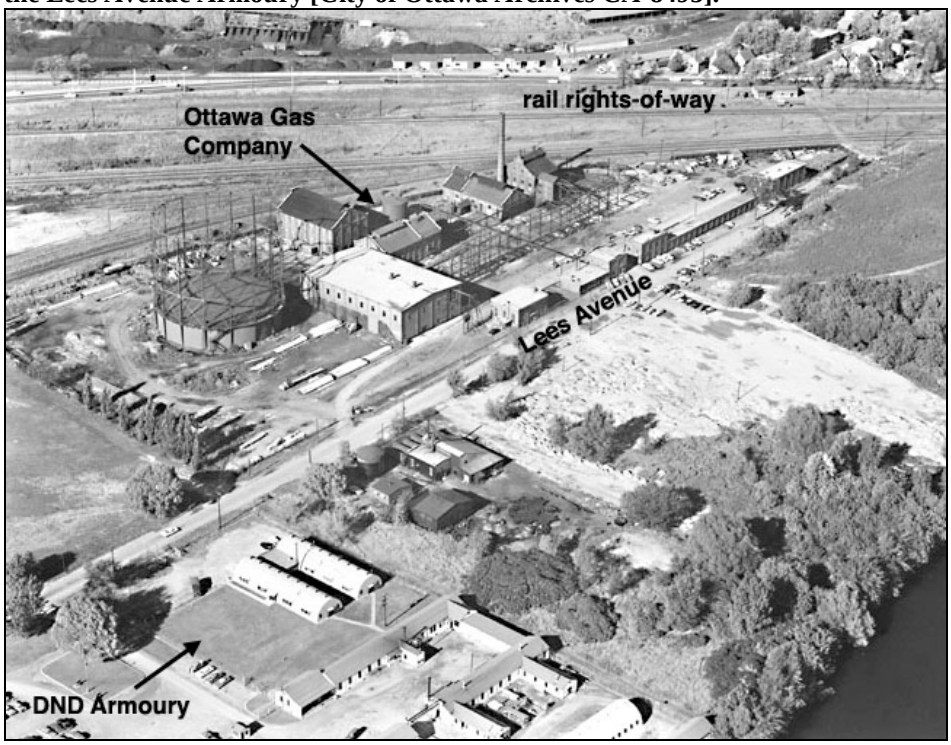


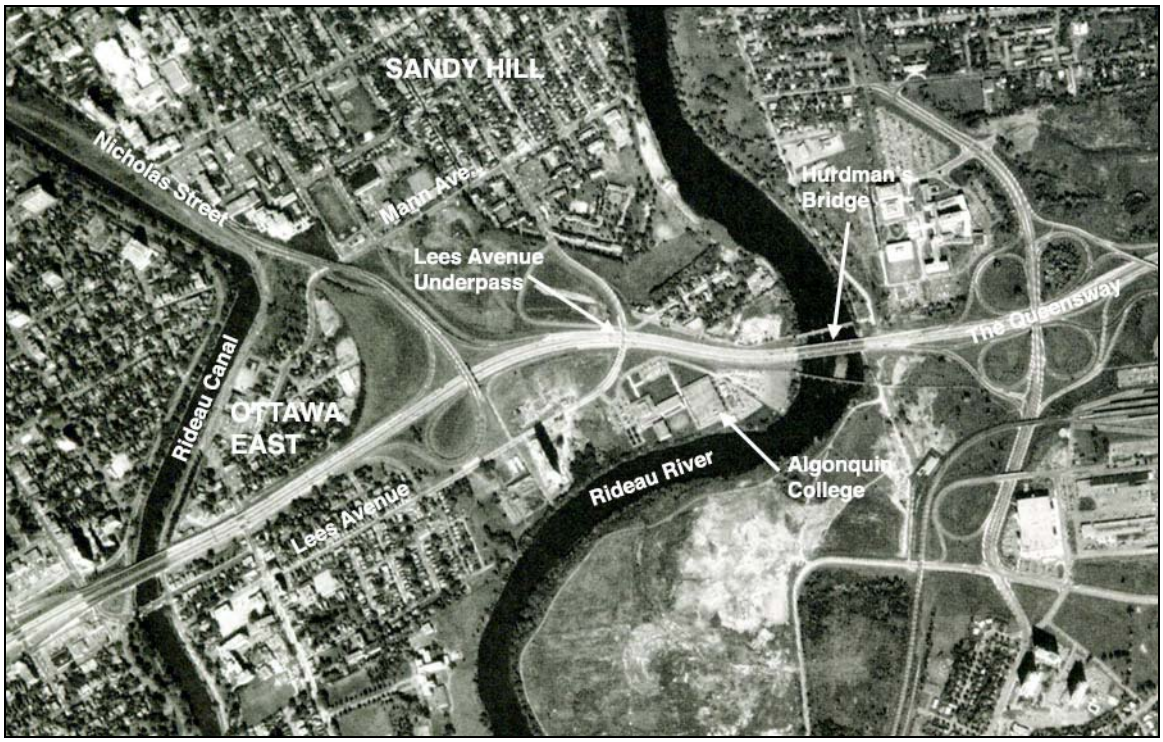


The *Functional Plan* (1955) shows a proposed plan with separate roadways for the east and westbound lanes to carry the Queensway around the railway tracks and yards [De Leuw, Cather & Company of Canada Limited. *The Queensway – Limited Controlled Access Highway, Ottawa, Ontario, Functional Plan and Estimates*, July 1955].

An aerial view (1958) to the northwest shows the Queensway prior to the removal of the rail lines [AO RG14-151-5-23. B1105, B410870].

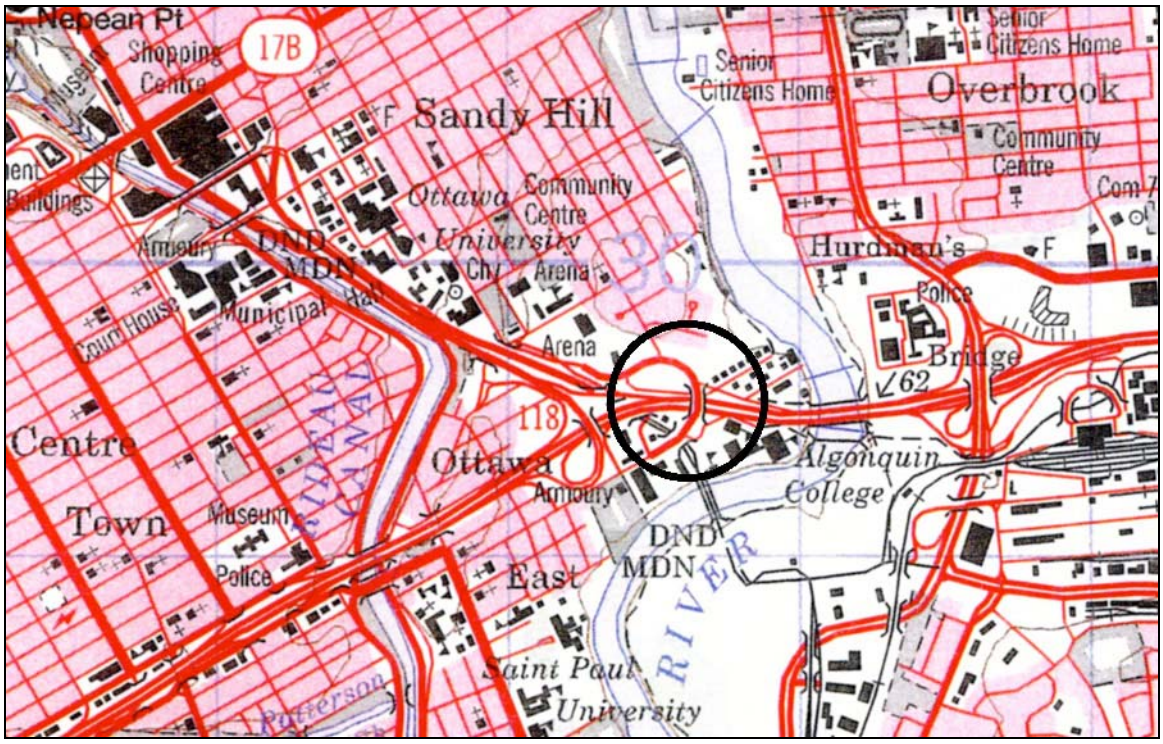
An aerial view (1961) to the northeast shows the Ottawa Gas Company works and the Lees Avenue Armoury [City of Ottawa Archives CA-8495].

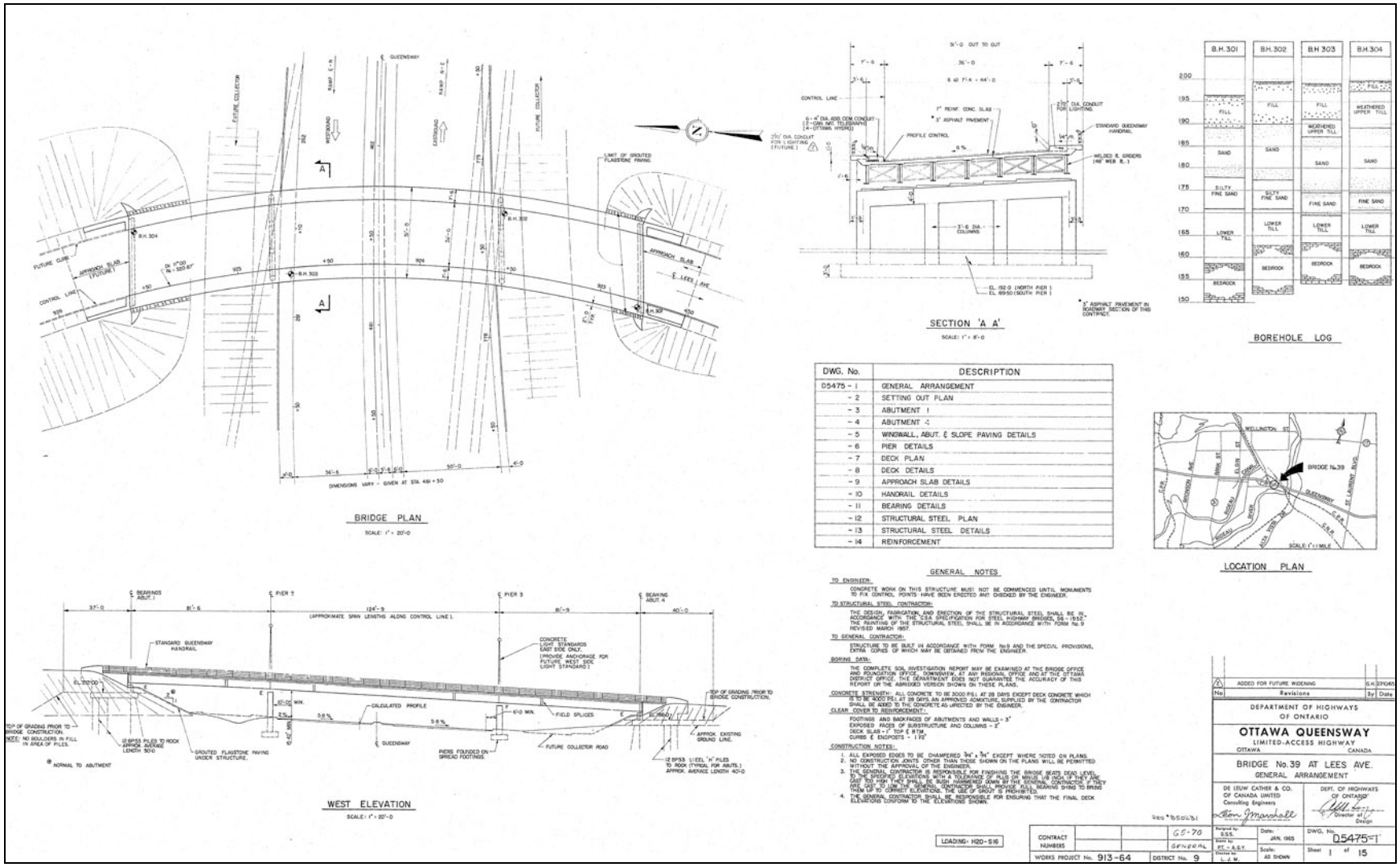




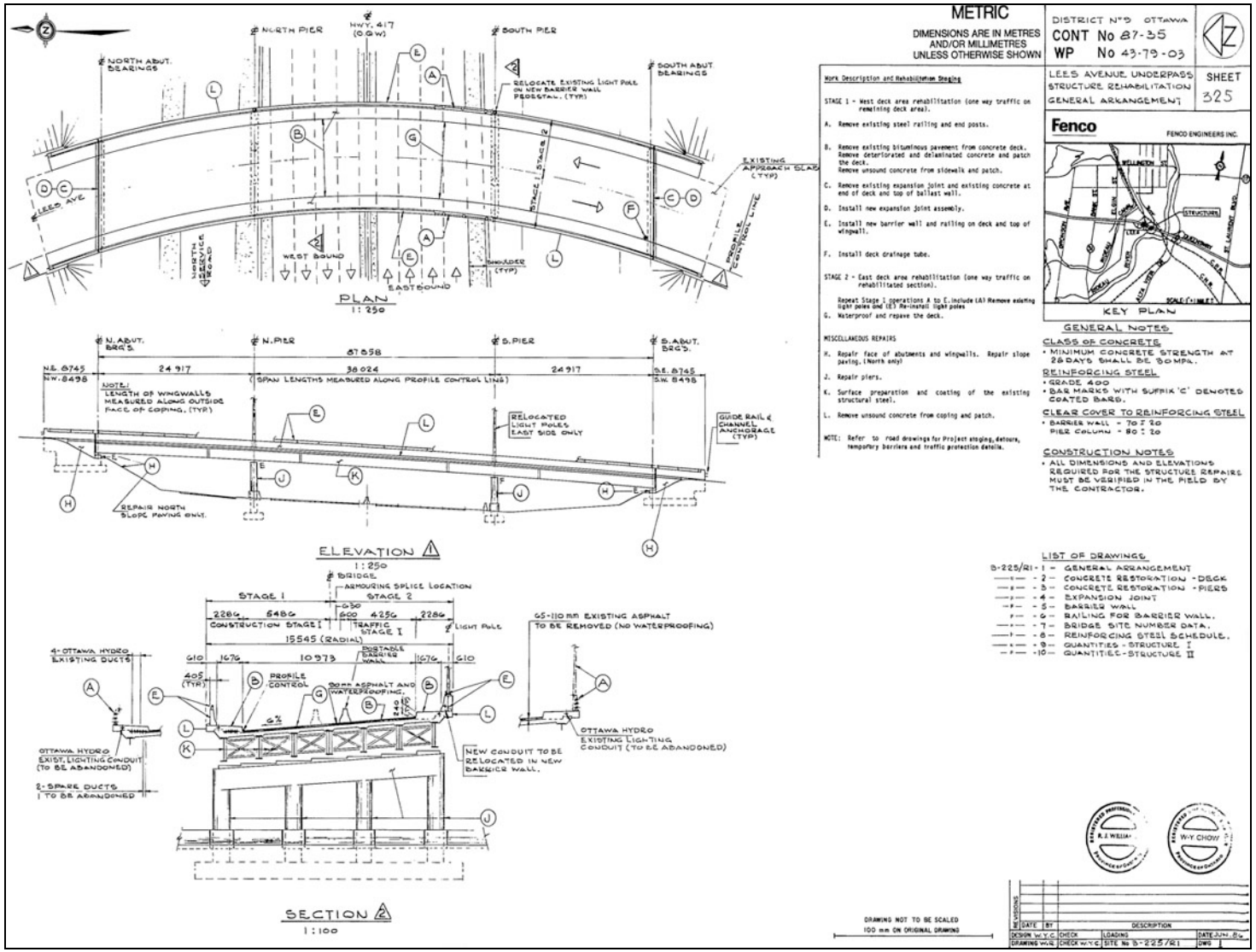
Aerial photograph shows the Queensway constructed on the former railway lands to the west of the Rideau River [NAPL, A23612-39, 1973].

Ottawa 31 G/5 (1990) map indicates Ottawa East remained a distinct community within the City of Ottawa.





General Arrangement drawing prepared by De Leuw Cather & Company of Canada Limited and dated January 1965 for Bridge No. 39 at Lees Avenue on the Ottawa Queensway Limited Access Highway.



General Arrangement drawing for the rehabilitation of the Lees Avenue Underpass prepared by Fenco and dated June 1986.

APPENDIX B:
LEES AVENUE UNDERPASS
BRIDGE SURVEY FORM

BRIDGE NAME: **Lees Avenue Underpass (Bridge No. 39)**	Recorder: Unterman McPhail Associates & Jean Simonton Heritage Consultant	Ref. No. **3-225**
HIGHWAY: **Highway 417 (Queensway)**	Map: Ottawa-Hull & Environs, Rand McNally Canada Inc., 2003	Date: March 15, 2011

Lot: G Con: D, Rideau Front

Municipality: City of Ottawa (Geographic Township of Nepean)

County / R.M.:

1:50:000 Map Ref.: Ottawa 31 G/5

Military Grid Ref.:

Air Photo Ref.: A9604-42, (1945), A23612-39 (1975)

Description: The Lees Avenue Underpass is located in the City of Ottawa between the Rideau River to the east and Nicholas Street Underpass and interchange to the west.

BRIDGE ENVIRONMENT & USES

Water/**Road**/Rail/Other Crossing:
The bridge carries Lees Avenue over Highway 417.

Surrounding Land-Uses & Landscape: Mixed use characterizes the lands in proximity to the Lees Avenue Underpass. The Lees Avenue transit station and high-rise apartment towers are located to the southwest. The University of Ottawa has taken over the former Algonquin College site to the southeast and will retain the facilities at 200 Lees Avenue in academic use. Robinson Avenue provides access to a small residential and industrial area located to the northeast. The Nicholas Street interchange and local roads to the northwest occupy former railway lands. Lees Avenue is an arterial road that connects Ottawa East to Sandy Hill. It is a two-lane paved road with a posted speed limit of 50 km/h in the vicinity of the bridge. As a result of the transit stop, university facilities and apartment buildings Lees Avenue is well travelled with vehicular, bus and pedestrian traffic.

Bridge Uses:
Vehicular traffic including buses and pedestrian traffic.

DESIGN

Materials: Steel plate girders and reinforced concrete substructure and deck.

Construction Techniques: Simply supported welded steel plate girder, 4-ft. (1.22 m) high and set at 7-ft. 4-in. (2.24 m) on centre. Concrete abutments and two concrete piers, each consisting of four circular columns, 3-ft. 6-in. (1.07 m) in diameter and cap beam.

Decorative Features: Light standards (east side only).

Landscape Quality: The underpass is visually prominent to traffic on Highway 417 and Robinson Avenue.

State of Preservation: The structure was rehabilitated in 1986. The original Queensway design railing was replaced with a concrete barrier with one metal tube railing.

Other Comments: The curvature of the bridge is reflected in the shape of the deck and girders. Bridge deck has a 6% slope downwards from east to west. The deck rises approximately 14-ft. (4.27 m) from south to north. The bridge is similar in design to the Nicholas Street Underpass of the same age and located immediately to the west.

DIMENSIONS (based on 1965 and 1986 drawings)	
Carriageway Width: 18-ft. (5.49 m) each	Longest Span: 124-ft. 9-in. (38.02 m)
No. of Lanes: Two (one NBL and one SBL)	Shortest Span: Two @ 81-ft. 9-in. (24.92 m)
Sidewalks: Two	Overall Length: Approximately west: 344-ft 0-in. (104.85 m) and east: 345-ft. 8-in. (105.36 m)
Capacity: Unknown	Overall Width: Approximately 51-ft. 0-in. (15.55 m)
No. of Spans: Three	Clearance: 15.42-ft. (4.70 m) minimum

HISTORY

Date Built: Drawings dated January 1965, work proceeded under General Contract No. 65-70 and completed in 1966.

Engineer/Designer: De Leuw, Cather & Company of Canada Limited, Toronto (also undertook the functional design for the Ottawa Queensway and connecting links for DHO). Leon J. Marshall signed drawings for De Leuw, Cather & Company.

Construction Firm: Unknown.

Drawings/Specifications: MTO East Region (DHO District No. 9 at time of construction).

Photos: Archives of Ontario: RG14-151 A1302 B410835 (July 1968 and September 1969).

Historical Association: The Lees Avenue Underpass is associated with the construction of Highway 17 as a four lane, controlled access freeway through Ottawa, 1957-1966. Previously the route used local city streets. The freeway was part of the official Trans-Canada Highway route across Ontario and related to urban planning for the national capital district in the 1950s. The section within the city limits was named the Queensway in honour of Queen Elizabeth II.

Previous Bridges: None.

Other Comments: Approved in 1949, the *Trans Canada Highway Act* was based upon the idea of establishing better communications between provinces and promoting economic development across Canada. The federal and provincial governments agreed on a set of minimum standards and construction time schedule. The Trans-Canada Highway (TCH) agreement was signed between the Federal and Ontario governments on April 24, 1950. The reconstruction of Highway 17 as part of the TCH proceeded through Ottawa under an agreement signed March 19, 1957 between the Federal Government, the Province of Ontario, the NCC and the City of Ottawa. Developing from the *Plan for the National Capital* (1950) prepared by Jacques Gréber to transform Ottawa and Hull into an attractive modern capital, an expressway was envisioned extending across the city and connecting with a system of scenic parkways. The Queensway's portion of Highway 17 through Ottawa used a former rail bed for much of its length.

PROPERTY RIGHTS & RESPONSIBILITIES

Owner: MTO	Maintenance: MTO

PLANNED UNDERTAKING

MTO is undertaking a detailed design for improvements for Highway 417 in the City of Ottawa. The project consists of widening Highway 417 by one lane in each direction from Nicholas Street to the Vanier Parkway (GWP 4091-07-00) and from Vanier Parkway to Ottawa Road 174 (GWP 4320-06-00). Operational improvements, structure replacements and rehabilitations and noise barrier retrofits have been identified throughout the Highway 417 corridor. MTO is proposing to replace the Lees Avenue Underpass to accommodate the highway widening.

GENERAL COMMENTS

PHOTOGRAPHS

View west along Highway 417 showing three eastbound and three westbound lanes plus speed change lanes, paved median and paved shoulders.

View east along Highway 417 towards the Rideau River. A freestanding structure for road signs is located over the eastbound lanes.

The Lees Station on the OC Transpo transitway located to the southwest generates bus and pedestrian traffic on the bridge.

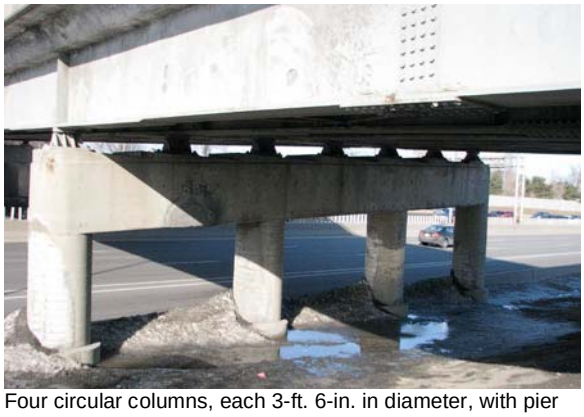
The University of Ottawa will retain the former Algonquin College building to the southeast of the bridge for academic use.

A small residential enclave to the northeast of the bridge dates to the early 20th century.

Robinson Avenue located under the north span of the underpass provides access to the residential area.

PHOTOGRAPHS

The west elevation shows the three-span, constant depth, steel plan girder underpass with perched abutments, which dates to 1965.



Four circular columns, each 3-ft. 6-in. in diameter, with pier cap make up the two piers.

A view along the east side of the bridge illustrates the curved form of the girders and bridge deck.

A view north through the underside of the north span shows the seven steel plate girders with cross bracing.

A view north across the bridge depicts one northbound and one southbound lane. Sidewalks are located on both sides of the bridge deck. The handrail system dates to 1986.

A bridge site number stamp was added to the outside of the barrier wall in the northwest and southeast corners as part of the 1986 rehabilitation work.

APPENDIX C:
MTO LIST OF COMPARABLE STEEL PLATE GIRDER STRUCTURES EAST REGION

MTO List of Comparable Steel Plate Girder Structures, East Region

Site	Structure Name	Structure Type	Hwy	Year Built	# of Spans	Longest Span (m)
03-042	Maitland Av U/P	Plate I Girder	417	1959	2	35
03-039.2	Richmond Rd U/P SBL	Plate I Girder	417	1960	2	35
03-040	Pinecrest Av U/P	Plate I Girder	417	1960	2	32
03-041	Woodroffe Av U/P	Plate I Girder	417	1960	2	32
03-224	Nicholas St U/P	Plate I Girder	417	1966	3	31
03-039.1	Richmond Rd U/P NBL	Plate I Girder	417	1968	2	35
03-225	Lees Av U/P	Plate I Girder	417	1968	3	38
03-550.1	Jock River Bridge NBL	Plate I Girder	416	1992	3	32
03-550.2	Jock River Bridge SBL	Plate I Girder	416	1992	3	32
03-595.1	Mississippi River Bridge EBL	Plate I Girder	417	2002	6	85
03-595.2	Mississippi River Bridge WBL	Plate I Girder	417	2004	6	65
26-061.1	Otonabee River Bridge EBL	Steel Plate Girder	7	1960	11	64
31-288.1	Scotch Ri Br West Br EBL	Steel Plate Girder	417	1972	1	31
31-288.2	Scotch Ri Br West Br WBL	Steel Plate Girder	417	1972	1	31
29-192.2	Const. Philip Shrive Bridge	Steel Plate Girder	17	1973	6	52
31-289.1	Scotch Ri Br East Br EBL	Steel Plate Girder	417	1973	1	29
31-289.2	Scotch Ri Br East Br WBL	Steel Plate Girder	417	1976	1	29
29-196	Petawawa Ri Bridge	Steel Plate Girder	17	1977	3	47
29-191.1	Madawaska River Bridge	Steel Plate Girder	17	1979	3	122
29-167	Indian River Bridge	Steel Plate Girder	17	1981	1	40
27-360	Chenail Island Bridge	Steel Plate Girder	34	1999	2	40.5

APPENDIX D:
EVALUATION CRITERIA
ONTARIO HERITAGE BRIDGE GUIDELINES FOR PROVINCIALLY OWNED BRIDGES
(Interim, January 2008)

ONTARIO HERITAGE BRIDGE GUIDELINES FOR PROVINCIALLY OWNED BRIDGES (INTERIM January 2008)

Evaluation Criteria

The following scoring system was developed to provide a clear and easily understood system for evaluating provincially owned bridges for potential inclusion on the MTO Heritage Bridge List. The scoring derived from Ontario Regulation 9/06 is divided into three main areas: Design/Physical Value, Contextual Value and Historical/Associative Value. Within these three divisions are further criteria that are individually scored. For the purposes of the Guidelines, a bridge of 60 or greater is considered provincially important.

Summary

GENERAL CATEGORY	CRITERION	MAXIMUM SCORE
Design/Physical Value	Functional Design	20
	Visual Appeal	20
	Materials	10
Contextual Value	Landmark	15
	Character contribution	10
Historical/Associative Value	Designer/ Construction Firm	15
	Association with a historical theme, person or event	10
Total Score		**100**

CRITERIA	SCORE	COMMENTS
DESIGN/PHYSICAL VALUE (Total Marks 50)		The score for Design/Physical Value is comprised of three elements: Functional Design, Visual Appeal and Materials.
Functional Design (Maximum score 20)		
Excellent	20	Displays a high degree of technical merit or scientific achievement and: • Is one of a kind or prototype (first or earliest example of its kind), or • Is exemplary for its kind (i.e., the longest, highest, etc. of its kind). Examples: Rainy Lake Causeway, reinforce concrete bridge at Massey.
Very Good	16	Displays a high degree of technical merit or scientific achievement and • Includes types in which fewer than five survive within a Region
Fair	12	This category includes types of which fewer than five survive within a Region, regardless of degree of technical merit or scientific achievement, even if many were originally constructed.
Common	0	Of little value from a technical or scientific perspective. Many were built, many remain.
Visual Appeal (Maximum score 20)		
Excellent	20	High degree of craftsmanship or stylistic merit for most of the elements of the bridge; the design elements are well balanced and overall the structure is well proportioned; modifications are sympathetic.
Good	12	Well-proportioned bridge that has a general massing that is appropriated to the landscape in which it is situated.
Fair	4	Structure has only one or two noteworthy elements or is severely altered from its original design.
None	0	No noteworthy features.

CRITERIA	SCORE	COMMENTS
Materials (Maximum score 10)		
Excellent	10	Provincially rare or unusual materials. Stone, wrought iron are examples of provincially rare materials.
Good	8	Regionally rare or unusual materials. Wood and riveted steel are examples of regionally rare materials,
Fair	5	Unusual Combinations: this is reserved for materials that are used in combination(s) that are considered unusual or remarkable.
None	0	Common materials or combinations
CONTEXTUAL VALUE (Total marks 25)		
Landmark (Total marks 15)		
Excellent	15	Physically prominent: The bridge is highly significant physically and a primary symbol in the area. This includes 'gateway' structures. • It is a critical element in understanding a family of bridges within a corridor.
Good	9	Locally significant: The bridge is perceived in the community as having symbolic value rather than purely visual or aesthetic value. • It is an important element in understanding a family of bridges within a corridor.
Fair	3	A familiar structure in the context of an area. • It is a contributory element in understanding a family of bridges within a corridor.
Common	0	No prominence in area.
Character Contribution (Maximum score 10)		
Excellent	10	The bridge is critical element in defining the character of the area and is of great importance in establishing or protecting this character.
Good	6	Maintains or contributes to the overall character of the area and is of municipal importance in establishing or protecting this character.
Common	0	Character contribution is minimal.

CRITERIA	SCORE	COMMENTS
HISTORICAL/ASSOCIATIVE VALUE (Total marks 25)		
Designer/Construction Firm (Maximum score 15)		
Excellent	15	Known influential designer/builder: structure demonstrates or reflects the innovative work or ideas of companies, engineers and/or builders having major impacts on the development of a community. For this item, community is broadly defined to include professional groups who have been demonstrably affected by the work in question.
Good	9	Known prolific builder-designer: companies, engineers, and/or builders directly responsible for a large number of structures whose activities led to design or construction refinements and the establishment of standard forms.
Fair	3	Known undetermined contribution: companies, engineers and/or builders who have made a limited/minor contribution to a community.
Unknown	0	Those responsible for the design/construction are not known.
Association with a Historical Theme, Person or Event (Maximum score 10)		
Excellent	10	Direct association with a theme or event that is highly significant in understanding the cultural history of the nation, province or municipality.
Good	6	Close association with a theme or event within an area.
Common	0	Limited or no association with historic theme or events.