



2019 Canadian Consulting Engineering Awards

Alta Vista Hospital Link

OTTAWA, ONTARIO, CANADA



Entering Organization

Category

PARSONS

Transportation

Project Information

Alta Vista Hospital Link

PROJECT INFORMATION

PROJECT NAME

Alta Vista Hospital Link

PROJECT LOCATION

Ottawa, Ontario, Canada

YEAR COMPLETED

Opened to traffic August 2019.

ENTERING FIRM & THEIR ROLE

Parsons - - As Engineer of Record, Parsons' contractual responsibilities involved all necessary activities leading to and including the preparation of tender-ready contract drawings and documents as well as contract administration and engineering services during construction.

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Parsons

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Project Outline

Alta Vista Hospital Link

PROJECT OUTLINE

75-WORD SUMMARY

The City of Ottawa retained Parsons to design a new two-lane vehicle and transit link connecting Riverside Drive and the Southeast Transitway to the Hospital Complex Ring Road. Complexities arose from the requirement to construct this new road including three bridges, large diameter watermain and sewers without interruptions to vehicular, transit and VIA Rail traffic. This link improved transit service to the Hospital Complex, provided new multi-use pathway connections to existing pathway networks, accommodated projected traffic increases, supported ongoing Hospital and local development, and is a major piece of the eventual Alta Vista Transportation Corridor (AVTC) connecting Conroy Road in the south to Nicholas Street in the north, across the Rideau River.

PROJECT HIGHLIGHTS

QUESTION 1 – INNOVATION

The global objective of this complex project was the construction of a new 1.7 km two-lane roadway from Riverside Drive to the Hospital Ring Road. Innovative design solutions were required to accommodate the multi-disciplinary components which included: realignment of Riverside Drive (a major arterial road in the City of Ottawa's transportation network); three new structures (realigned Riverside Drive Overpass, Southeast Transitway Overpass and VIA Rail Subway); raising of the existing VIA Rail track; construction and removal of a temporary railway diversion for the VIA Rail track; Riverside Drive detour and traffic management to maintain four lanes of traffic during construction; new storm sewers for roadway drainage; storm water quality control using Vortech stormwater treatment devices that remove trash, debris, sediment, and hydrocarbons from stormwater runoff; a new storm sewer outfall to the Rideau River; sanitary sewer relocation within a former landfill; relocation of a water feedermain on realigned Riverside Drive; a new intersection at Alta Vista Drive and Alta Vista Hospital Link; new traffic signals at Hincks Lane, Frobisher Lane and Alta Vista Drive; ground improvement using dynamic compaction; major utility relocations (Hydro Ottawa, Bell, Rogers, Allstream and Hydro One); new street lighting; new sidewalks and multi-use pathways, including retaining wall structures; and landscaping. Innovative solutions used include:

- The creative design of a roadway meeting the design guidelines while overcoming numerous challenges associated with existing site constraints. Creative solutions were developed to overcome the challenging alignment requirements of the new roadway and the site constraints. These challenges included the need to construct within a former landfill, the need to design new sewer outlet facilities, stormwater management requirements for possible future facility expansion, the need to excavate the subway and storm pipes through the Carlsbad Formation shale bedrock (pyritic shale), the requirement for both a temporary diversion track and vertical geometric modification of an active VIA Rail line, and the need to

accommodate four operating traffic lanes on Riverside Drive during construction and access to Old Riverside Drive, and maintain pedestrian and cycling access across the segmented Old Riverside Drive.

- Innovative geometric design to accommodate the tight existing conditions and constraints to provide a roadway alignment and profile for two roadway overpasses and one railway subway in close proximity to each other and taking into account future twinning of this facility.
- Construction of a roadway and a bridge within a former landfill by employing dynamic compaction techniques to improve the ground and to limit contaminated material excavation and disposal costs.
- Innovative staging of the work to minimize interruption to vehicular, pedestrian, cyclist and rail traffic. The Riverside Drive Overpass and realigned roadway was constructed on an offset alignment while maintaining four lanes of traffic on the existing Riverside Drive. The Southeast Transitway Overpass was constructed without impeding bus traffic and the VIA Rail Subway was constructed, and the track profile was raised, using railway imposed restrictive daily work-blocks and with no impact to rail traffic.
- Innovative bridge design in a high seismic zone using seismic isolation techniques which optimizes the substructure design and protects the structure during a seismic event.

QUESTION 2 - COMPLEXITY

The complexity of designing the Alta Vista Hospital Link arose from the multi-disciplinary components that had to be integrated together to provide a safe, reliable roadway while minimizing the environmental impacts. It is one of the most challenging new road construction projects the City has undertaken, due to the following unique conditions of the alignment and the corridor:

- Construction within a solid waste landfill with evidence of decomposition activity necessitating leachate and gas monitoring;
- Construction of three different types of bridges: one over an active bus rapid transit corridor, one carrying a vertically realigned railway track, and another one partly over a landfill;
- Construction in close proximity to the Rideau River, requiring specific groundwater monitoring and environmental strategies;
- Excavation within pyritic shale bedrock, requiring specific time sensitive cut slope and exposed surface treatment methods;
- Initial relocation of a major diameter trunk watermain segment as a scheduling prerequisite towards overall construction staging;
- Use of dynamic compaction techniques within a former landfill to limit contaminated material excavation and disposal costs;
- Construction of a railway diversion track with shoring to allow excavation and construction of the railway underpass and structure;
- Complex traffic management and staging requirements and constraints imposed by the adjacent roadways and active railway, which required extensive coordination and planning; and
- Significant coordination and consultations with the various stakeholders involved including the Ottawa Hospital, the Children's Hospital of Eastern Ontario, University of Ottawa and other institutions that comprise the Ottawa Health Sciences Complex, the National Defense Medical Centre, neighboring residents, various utility companies and approval agencies including the (then) Ministry of the Environment and Climate Change, the Rideau Valley Conservation Authority and the National Capital Commission.

QUESTION 3 - SOCIAL AND/OR ECONOMIC BENEFITS

The Alta Vista Hospital Link is making a significant contribution to the economic and social quality of life by providing an unimpeded direct link to the Ottawa Hospital Complex from Riverside Drive and the Southeast Transitway. It is providing new transit connectivity to the area and improved existing transit access to the hospital. Furthermore, it is providing the required capacity to accommodate projected vehicular traffic growth due to ongoing development of the Hospital lands.

The multi-use pathway built along the entire length of this project has improved the cycling and pedestrian connectivity in the area and allowed effective multi-use pathway connections from the Ottawa Hospital Complex to the National Capital Commission's Rideau River Eastern Pathway. It also has provided pedestrian and cyclist connectivity between the Hospital Ring Road and the neighboring communities.

The landscaping design provided enhancement to the natural corridors with additional reforestation, shrub, riparian buffers and specimen plantings. Tree planting enhanced the views and screened the roadway corridor from the adjacent communities. The design team engaged the local community to enhance the local outdoor living area, such as the new multi-use pathway meandering along the existing wood lots and the provision of a new toboggan hill.

The major diameter trunk watermain built as part of this project provides redundancy to the City of Ottawa's potable water system.

QUESTION 4 - ENVIRONMENTAL BENEFITS

The Alta Vista Hospital Link project incorporated several sustainable design features that minimized the impact to the environment. These features included:

- Repurposing an existing solid waste landfill site by constructing a roadway and bridge on the landfill and by using innovative ground improvement techniques that minimized the disposal of waste material off site.
- Storm water components were designed to treat surface run-off from a quality and quantity perspective by using oil-grit separators (Vortech), which removed suspended-solids from run-off prior to being discharged into the storm sewer system, that in-turn discharged to the Ottawa River.
- LED light fixtures were used throughout the project to reduce energy consumption and maintenance costs.
- The construction of roadways was completed without the need for any off-site detours; this resulted in significantly minimizing the carbon footprint and greenhouse gas emissions associated with potential lengthy detours during construction of similar projects.
- The three structures were designed with sustainability in mind to achieve the required 75-year service life. This was achieved by a combination of selecting durable materials, resilient detailing, ease of maintenance and thorough quality control during construction. Other sustainable design features included specifying materials with reduced corrosion potential and that resist degradation processes, such as galvanized rebar in the deck, providing atmospheric corrosion protection steel and a high-quality waterproofing system.
- The design provided for the protection of endangered species, such as Blanding turtles by constructing turtle nesting pads for breeding along the banks of the Rideau River with special fencing to prevent access to the construction site.

QUESTION 5 - MEETING CLIENT'S NEEDS

The ultimate client for the engineering design team on this project was the City of Ottawa and its citizens. It was completed to the satisfaction of the City of Ottawa and all users. It significantly improved the access to the Hospital Complex for both the public and emergency service vehicles with a traffic entrance on the north side and provided a missing link to a multi-use pathway network in the area. It also forms part of a future overall link which will improve the north-south transportation network in the City of Ottawa.

The design team exceeded the client's expectations by providing a necessary and sustainable design that addressed the multi-disciplinary requirements with challenging constraints and competing interests resulting in a net positive effect from the natural, social, economic and environmental perspective.

The engineering services for this project has been completed to the client's satisfaction and the overall objectives of the project have been met within the approved timeframe and budget.

Images

CCE – 2019 - Captions to be added to Photos

[ParsonsAltaVistaHospitallink_Photo1](#)

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New VIA Rail Structure over the Alta Vista Hospital Link

Photography courtesy of Parsons, Ottawa, Ontario.

[ParsonsAltaVistaHospitallink_Photo2](#)

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Structure over Southeast Transitway

Photography courtesy of Parsons, Ottawa, Ontario.

[ParsonsAltaVistaHospitallink_Photo 3](#)

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Riverside Drive Hospital Link Road Intersection.jpg

Photography courtesy of Parsons, Ottawa, Ontario.

[ParsonsAltaVistaHospitallink_Photo 4](#)

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Re-aligned Riverside Drive

Photography courtesy of Parsons, Ottawa, Ontario.

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Hospital Link Road

Photography courtesy of Parsons, Ottawa, Ontario.

[ParsonsAltaVistaHospitallink_Photo 6](#)

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New VIARAIL Structure

Photography courtesy of Parsons, Ottawa, Ontario.

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New Hospital Link Road going over the transitway and under the VIA RAIL Structure

Photography courtesy of Parsons, Ottawa, Ontario.

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Dedicated Transit Lanes on Hospital Link Road

Photography courtesy of Parsons, Ottawa, Ontario.

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New Riverside Drive Structure over re-aligned Riverside Drive

Photography courtesy of Parsons, Ottawa, Ontario.

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Rail Installation on the VIARAIL Structure

Photography courtesy of Parsons, Ottawa, Ontario.

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Transitway Structure Construction without interruption to Bus traffic

Photography courtesy of Parsons, Ottawa, Ontario.

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VIARAIL Structure Erection

Photography courtesy of Parsons, Ottawa, Ontario.



















Riverside Drive
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