

An aerial photograph of a city street intersection. A large, modern building with a curved glass facade is prominent on the left. To its right is a large parking lot filled with cars. A multi-lane road curves through the scene, with a green median and a white curb. The sky is clear and blue.

The Hochelaga Blvd infrastructure renewal

2022 Canadian Consulting Engineering Awards

Category : Transportation

Consortium WSP | SNC-Lavalin

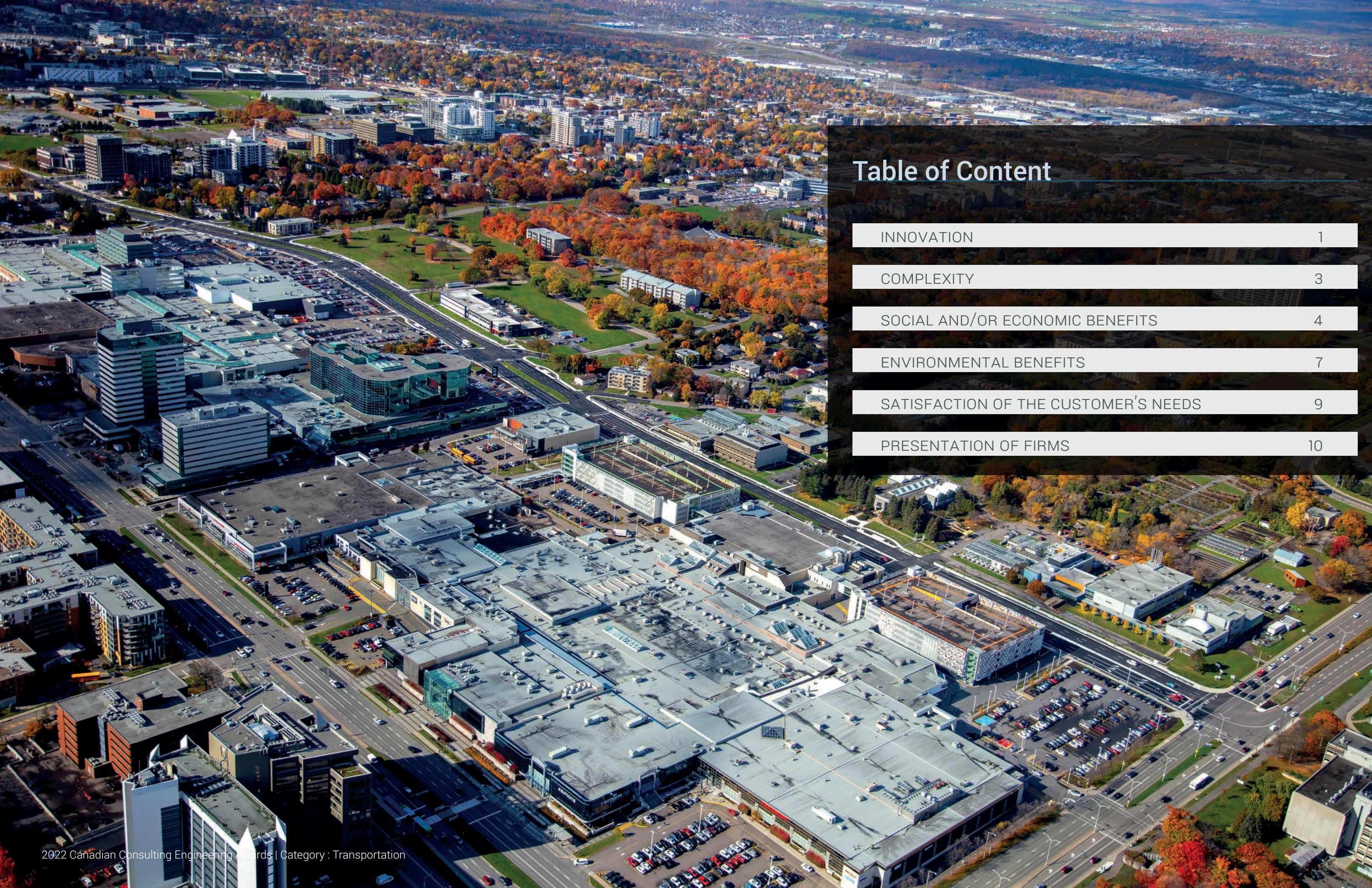


Table of Content

INNOVATION

1

COMPLEXITY

3

SOCIAL AND/OR ECONOMIC BENEFITS

4

ENVIRONMENTAL BENEFITS

7

SATISFACTION OF THE CUSTOMER'S NEEDS

9

PRESENTATION OF FIRMS

10



INNOVATION

The infrastructure renewal of Hochelaga Boulevard is one of the City of Québec's first projects in preparation for the tramway. This major east-west axis, parallel to and is located 300 m from the future tramway route on Laurier Boulevard. The streetscaping, which includes new lanes, bicycle paths and widened sidewalks, transforms Hochelaga to become part of the City's major mobility plan, improving traffic flow and ensuring harmonious cohabitation for all users.

The first innovative concept was to transform a simple roadway used for vehicular traffic into a multimodal urban living artery. In collabora-

tion with the City of Quebec and its sustainable development division, the design team was able to harmoniously integrate all users (pedestrians, cyclists, buses, vehicles) into an environment where all can benefit from a main axis offering futuristic mobility. We have designed an urban area where vegetation, green spaces, trees and plantings abound, enhancing the aesthetic and environmental aspect of the sector. With a new bus route, bus stops have been redesigned with the objective of transitioning to user-friendly modes of travel.

The traffic lanes have been widened to allow for

better road comfort during automobile travel by improving the visibility of users and the safety of pedestrians and cyclists.

In terms of underground infrastructure and to ensure user safety, the widening of the roadway, the addition of sidewalks and a bicycle path increased the amount of impervious surfaces and runoff into the storm sewer system. Therefore, the storm sewer pipes were designed with an added retention function. This innovative design significantly reduces the amount of water entering the City's existing storm sewer system thus avoiding impacts to the network and the road. In order to improve the execution of the

work in an existing living environment, in addition to a traffic management strategy and exemplary coordination, information kiosks and communication plans were deployed by the City. These kiosks, a first for a renewal project, facilitated interaction with citizens and thus promoted social acceptability. Following this conclusive experience for the City, this type of communication plan will certainly be repeated, in the future, in the context of major projects.



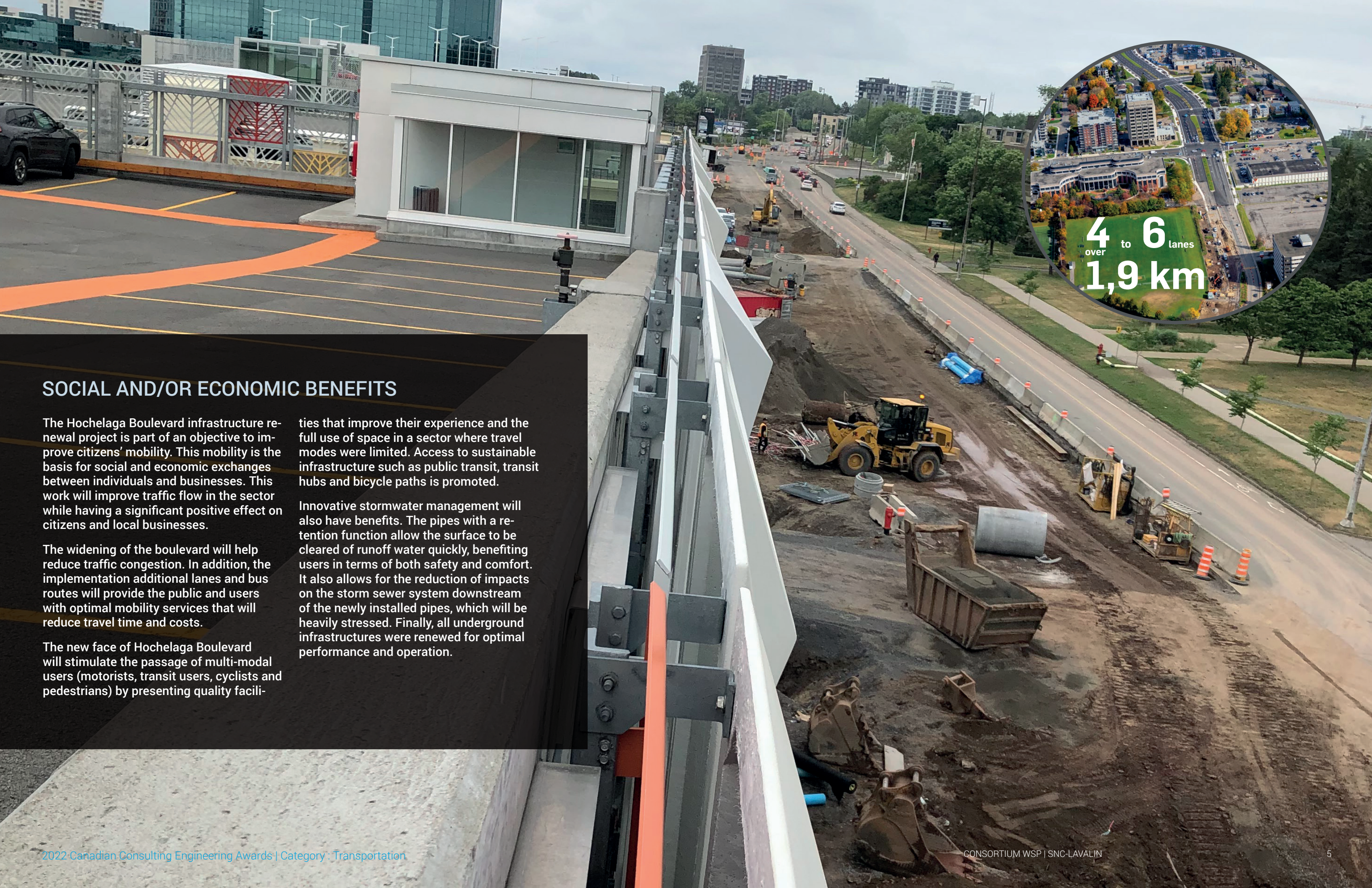
COMPLEXITY

This complex main artery provides access to three high-traffic shopping centers in the greater region, including Laurier Québec, Place Ste-Foy and Place de la Cité, as well as to other major landowners including the Rochebelle Campus, Defence Canada and Laval University. The team prioritized a collaborative management approach with the adjacent property owners throughout the project including workshops, detailed design proposals and mitigation measures.

The following constraints and requirements added to the complexity of the project:

- ❗ Lane widening including land acquisition and landscaping improvements, including the construction of a major retaining wall
- ❗ Maintaining the longitudinal profile despite the numerous intersections in order to limit interventions in the cross streets while optimizing the profile to improve surface drainage

- ❗ The precise identification and location of all existing underground infrastructures installed, added, modified and decommissioned over the past 60 years
- ❗ Maintaining traffic, operations and services during the work by tight phasing without limiting traffic to businesses, pedestrians and cyclists, garbage management, deliveries at all times and transportation services in the heart of the Sainte-Foy-Sillery-Cap-Rouge borough
- ❗ The reduction of the duration of the work in an objective of social acceptability including sometimes a 24/6 schedule to comply with the adjacent landowner's requests.;
- ❗ Temporary power supply works in order to meet the needs of residents and merchants.



SOCIAL AND/OR ECONOMIC BENEFITS

The Hochelaga Boulevard infrastructure renewal project is part of an objective to improve citizens' mobility. This mobility is the basis for social and economic exchanges between individuals and businesses. This work will improve traffic flow in the sector while having a significant positive effect on citizens and local businesses.

The widening of the boulevard will help reduce traffic congestion. In addition, the implementation additional lanes and bus routes will provide the public and users with optimal mobility services that will reduce travel time and costs.

The new face of Hochelaga Boulevard will stimulate the passage of multi-modal users (motorists, transit users, cyclists and pedestrians) by presenting quality facili-

ties that improve their experience and the full use of space in a sector where travel modes were limited. Access to sustainable infrastructure such as public transit, transit hubs and bicycle paths is promoted.

Innovative stormwater management will also have benefits. The pipes with a retention function allow the surface to be cleared of runoff water quickly, benefiting users in terms of both safety and comfort. It also allows for the reduction of impacts on the storm sewer system downstream of the newly installed pipes, which will be heavily stressed. Finally, all underground infrastructures were renewed for optimal performance and operation.



Addition of new plantation
of **500 trees**

ENVIRONMENTAL BENEFITS

The widening of the boulevard represented an opportunity to green the area. Of the 496 trees, nearly 210 were retained or transplanted. The integration of 500 new trees represents a direct benefit in reducing heat islands, a phenomenon of global warming linked to urbanization. Typically, existing urban developments are rarely designed with the health and growth of trees in mind. However, with the streetscaping, the design team ensured that best practices were used to mitigate the challenges of the area, including de-icing salts, snow removal and public waste. The designers limited the impact on urban plantings by incorporating structural soil into the design to promote the growth and life expectancy of urban trees. This renewal and streetscaping project targets an engineering sustainability objective, considering the major impact of stormwater retention on the area's receptor environment.

This transit forward project aims to reduce greenhouse gas emissions. Transportation systems and development influence the choice of transportation modes, which in turn influences the health of the population. Providing users with «green» modes of travel (bike lanes, sidewalks and transit) in a user-friendly environment encourages active travel such as transit, which reduces the amount of space devoted to transporting people (auto solo). This efficient use of roadways reduces congestion and optimizes the use of urban space, which is good for the environment.



SATISFACTION OF THE CUSTOMER'S NEEDS

The Hochelaga project was a pilot project for the City's communications and allowed for follow-up with citizens and merchants in the area. This process was a success. Several workshops, both for the design of the retention pipes, for the infrastructure renewal and streetscaping, were required and sought a great deal of collaboration from all the stakeholders. This resulted in a project of exceptional scope and all within budget. The City is very pleased with the progress of the project and its completion. The City has also received compliments from local residents on the aesthetics of the project.

Recently, Martin Lefebvre, Director of Citizen Interaction Services, City of Quebec, wrote these words to our consortium:

«The entire team of the City of Quebec associated with the Hochelaga Boulevard site, phases 1 and 2, would like to thank and congratulate the WSP / SNC Lavalin consortium for their work as the project's prime contractor. Their expertise ensured the efficient and professional completion of the work. The presence of the WSP / SNC Lavalin consortium team contributed greatly to the smooth running of all the activities related to the construction site as well as to the final result that everyone would describe as a success.

We are pleased to acknowledge the quality of the work done by the WSP / SNC Lavalin consortium on this project.»

Martin Lefebvre

The consortium is very proud to have collaborated and contributed to the success of this project for the City of Quebec and to hopefully be inspiring leaders in a world in transition.



WSP

As one of the world's leading professional services firms, WSP provides strategic advisory, engineering and design services to clients in the Transportation & Infrastructure, Earth & Environment, Property & Buildings, Power & Energy, Resources, and Industry sectors. WSP's global experts include advisors, engineers, environmental specialists, scientists, technicians, architects, and planners, in addition to other design and program management professionals.

We are a combination of our passion, our vision and our expertise, while being highly focused on sustainable projects of a notable quality, anywhere our clients are located. We strongly believe in innovative solutions to answer to the challenges of tomorrow. This inspires us to be curious and to act locally, while thinking globally. We are WSP.

SNC-Lavalin

Designing for tomorrow's world requires the know-how and expertise to move from a projection to a project that meets evolving needs. That's what we do every day, for our clients, for our clients' clients, and for the sustainability of our company and the world we live in.

We are SNC-Lavalin. Our expertise is mastering complexity. We do this by thinking and working differently. From our offices around the world, we bring together people, technology and data to shape the future of our industry and the world around us.

That's how we generate the knowledge and ingenuity to address many of today's most pressing challenges, from population growth to climate change to growing transportation needs. And because we cover all aspects of a project, from design to delivery, throughout its life cycle, you can count on us to deliver a smarter and more efficient experience for our clients. At SNC-Lavalin, we don't just embrace change - we drive it.

Consortium WSP | SNC-Lavalin
1135, blvd. Lebourneuf,
Quebec (Quebec) G2K 0M5