



STM's Underground Garage near the Côte-Vertu Metro station in Montréal earns Envision Platinum for Sustainable Infrastructure



The underground garage project for metro cars (Côte-Vertu garage), owned by STM (Société de transport de Montréal)—Montreal's transit authority—was designed to respond to several needs, including having an accessible place to maintain trains, adding parking at each end of the line served, and alleviating mounting pressure on a busy and growing metro network by reducing downtime and enabling more frequent trips. Located near the Côte-Vertu metro station, the project consists of three buildings, including a ten-story building that goes underground to the tunnels to house a maintenance workshop. The project also includes a connecting track to enable trains to access the garage from the Côte-Vertu terminal station and track devices to guide trains to one of three tunnels.

The goals of the project are to:

- Provide a larger parking area for trains.
- Increase the capacity of the metro network, enabling the addition of trains on the Orange line, which will increase the service frequency by up to 25% during peak hours.

- Support the anticipated growth of the metro network over the coming years.
- Ensure enough capacity for the eventual expansion of the Blue line.

The project took a holistic approach to sustainability and sought to improve the metro-user experience and increase the quality of life of local communities. Both the local jurisdiction and community actively participated in the project's design, ensuring their needs were met and their concerns addressed — resulting in multiple sustainability measures, as described below.

KEY SUSTAINABILITY ACHIEVEMENTS

Stimulate Sustainable Growth and Development. By increasing the service frequency by up to 25% during peak hours, the Côte-Vertu garage project will, over the next ten years, accommodate more than 500,000 additional passengers per year on the Orange line. In addition, the project team integrated landscaping solutions to create safer routes for cyclists and pedestrians, in the area above the underground garage. The construction of this new garage will generate **economic benefits worth \$400M and create 1,633 jobs.**

Enhance Public Space. The project is transforming a fallow, contaminated, and fenced site to an open layout accessible to the public and workers at all hours of the day. Planting trees, installing adequate lighting, benches, picnic tables, and adding rest areas will provide safe recreational amenities for the public. Furthermore, a pedestrian route cutting through different urban zones and roadways will facilitate safer movement in and around the project site.

Foster Collaboration and Teamwork. Starting during the design phase of the project, a multidisciplinary team was assembled, with a shared focus on sustainability. Improving the sustainability of the project was a common theme throughout project team discussions and guided decision making.

Pursue By-product Synergy Opportunities. Many efforts to incorporate by-products into the project were analyzed. For example, the project team was able to integrate silica fumes and slag, byproducts from silicon metal manufacture, into parking slabs and garage vaults. Glass powder from a local micronization factory was also used to make concrete for the parking lot, sidewalks, and curbs.

Sustainable Procurement. The project team imposed strict sustainability requirements on its suppliers, who were required to demonstrate their commitment to sustainable practices, and supply materials with recognized sustainability characteristics, such as sustainability certifications and lower embedded carbon. Suppliers were required to submit documentation to validate their sustainability claims. As a result, **87 percent of materials used on the project were procured from sustainable sources.** Furthermore, **41 percent of products on the project (based on cost) are recycled,** and **65 percent are regionally sourced.**

Energy Conservation. This project will **reduce energy consumption by 48.9 percent** compared to industry norms. An energy recovery system (heat wheel) will recover 463,173 kWh. Furthermore,

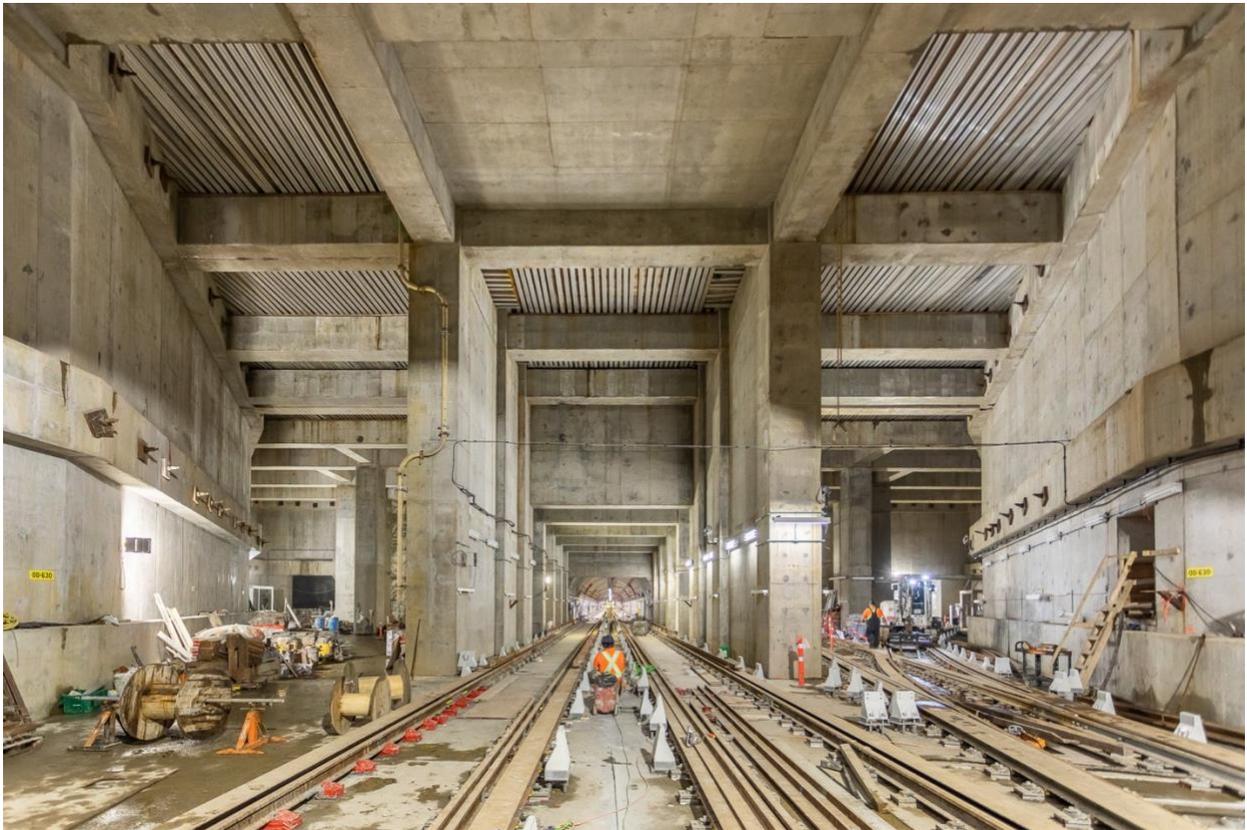
replacing fluorescent lights with LEDs in the tunnels will save 496,823 kWh per year, a 59.4 percent decrease for lighting compared to conventional practice. In fact, this is the first time STM has installed LED lighting for an underground project. In addition, **almost 100 percent of energy needs are provided by renewable energy**, predominantly hydroelectric power.

Protecting the natural environment. The Côte-Vertu garage is located on a contaminated site that was previously abandoned after an industrial history. The project team developed a land rehabilitation plan consistent with the end use of the site. In addition, the project team implemented measures to prevent future impacts on soil, surface water, and groundwater. The project protects the natural environment in many other ways, including:

- Managing stormwater by **storing over 40 percent of the water on-site**, by installing five bioretention basins and a green roof, and reducing impervious surfaces.
- Selecting native plant species that require little maintenance, promote biodiversity, and create habitats.
- Prohibiting the use of pesticides on the site.
- Removing nonnative, invasive species in the project area, including ragweed.

Planning for climate change. STM played an essential role in developing the City of Montreal's inaugural climate adaptation plan, which includes a detailed analysis of the area's infrastructure vulnerabilities, the associated risks, and adaptations strategies. This analysis was used to inform the development of the Côte-Vertu garage. The identified risks included stormwater runoff/flooding and heatwaves. Climate adaptation measures for managing water include minimizing impervious surfaces, capturing rainwater, increasing and maintaining vegetation, and strengthening infrastructure to withstand storm events. Adaptation measures for heat include having a ventilation system with a large capacity and a ventilation backup system.





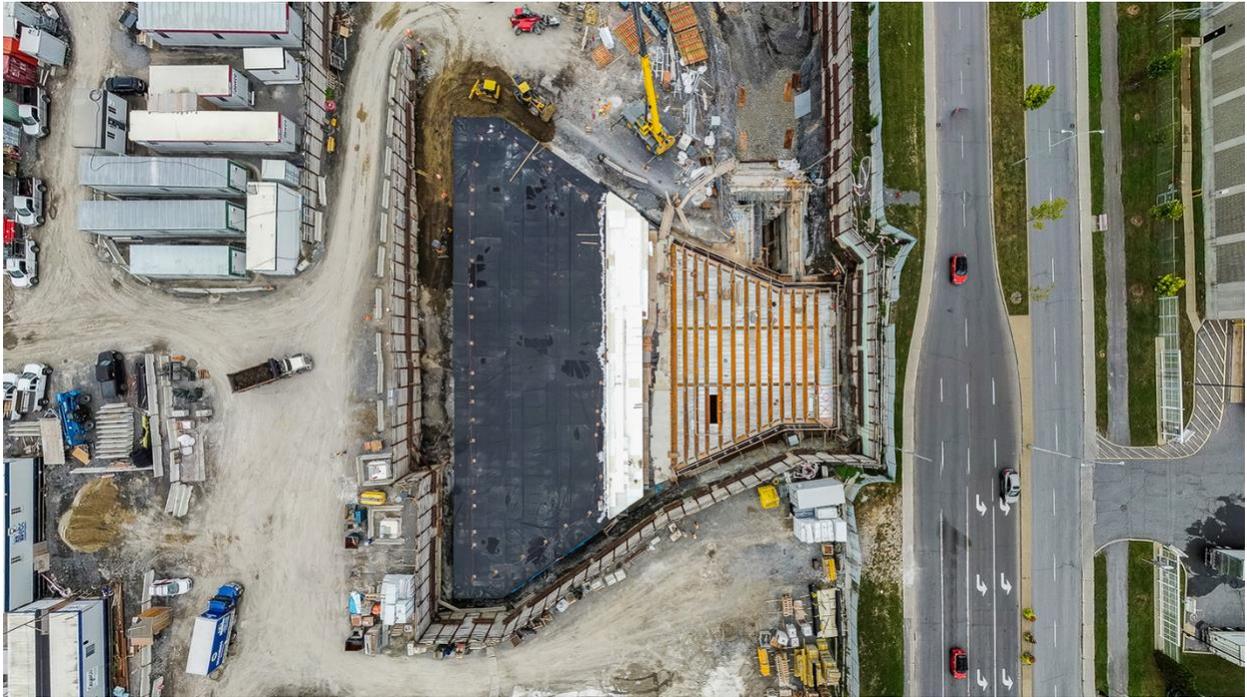
SOUNDBITES

Luc Tremblay, CEO, STM: "Today, communities demand that infrastructure be built to protect the environment, improve community well-being, and stimulate the economy. This Platinum recognition, the first in Canada for a public transit project, shows that STM has the know-how to deliver large-scale projects with maximum benefits for the community."

Sylvain Paquet, senior project manager: "Obtaining this Envision recognition is an impressive achievement for the project team since all sustainability aspects of the project have been analyzed to incorporate best practices and to follow them meticulously during design and construction. It takes a lot of effort and rigor throughout the project and I tip my hat to my team for their work."

Melissa Peneycad, ISI managing director: "Achieving Envision Platinum is no easy task, and everyone involved in this project should be proud of their achievement. By focusing on a multidisciplinary-team approach, STM and their project partners were able to analyze every Envision credit and come up with a shared vision. The team was then able to set their sights on turning that vision into reality. The project is a testament to outstanding teamwork and commitment to sustainability."





Project Details At-a-Glance

Envision-verified project: Garage souterrain Côte-Vertu
Location: Montréal, Québec, Canada
Lead Envision Firm: Société de transport de Montréal (owner-led) (directed by Luc Tremblay, CPA, CA)
Envision Rating: Platinum
Award Date: September 29, 2021
Project Owner: Société de transport de Montréal (STM)
Project Phase: Under construction – delivery scheduled for spring 2022
For more information: Visit the project website: <https://www.stm.info/fr/a-propos/grands-projets/grands-projets-metro/garage-cote-vertu>

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