

Ottawa's new sewage storage tunnel key to river action plan

by Angela Gismondi
November 2, 2016
Daily Commercial News

Construction is underway on the Combined Sewage Storage Tunnel project (CSST), which is expected to improve the overall health and safety of the Ottawa River.

This CSST is slated to enhance the stormwater management system in the city and reduce the frequency of sewage overflows into the Ottawa River during major rainfalls. It is also expected to reduce the risk of basement flooding for several low-lying lands in the core of the city.

The Dragados-Tomlinson Joint Venture was selected as the construction team to build the CSST.

"We all know that when we have extreme downpours, that water has got to go off the street," explained Paul McCarney, vice-president, business development, Tomlinson Group of Companies.

"It goes into the sewer system and under extreme downpours or melts, you get this mixing of stormwater with sanitary sewer flow or human waste that sometimes discharges into the Ottawa River instead of the treatment plant. When beaches close in cities, it's not about bird or animal droppings." More than \$232 million in government funding will be going to the CSST project, with all three levels of government working together. The governments of Canada and Ontario are each providing \$62.09 million for the project. In addition, the City of Ottawa has committed \$108 million. Completion of the project is anticipated for late 2019 with the CSST in full operation by mid-2020.

The project, a key component of the Ottawa River Action Plan approved by city council, will include the construction of two inter-connected tunnels — an east-west tunnel through the downtown core from LeBreton Flats to New Edinburgh Park, and a north-south tunnel along Kent Street from Catherine Street to existing infrastructure, just behind the Supreme Court of Canada. The tunnels will intersect at Kent and Slater streets. Once complete, the system is expected to significantly reduce discharge of untreated sewage into the river.

The tunnels will be 6.4 kilometres in length, three metres in diameter, 30 metres below ground level and will hold and divert up to 43,000 cubic metres of untreated sewage overflow from the Ottawa River during major rainfalls, the equivalent capacity of approximately 18 Olympic-sized pools.

"Basically, what this finished system will do is receive and hold 43.6 million litres of flow and then direct it in a controlled fashion to the treatment facility which will treat the flow and once it's clean, discharge it slowly into the river, but it will be a treated flow that is suitable for discharge into the river," said McCarney.

The project also includes the construction of 13 access shafts over the tunnel to accommodate flows and provide access for maintenance personnel. Support buildings and odour control facilities will also be built as part of the project.

Construction of the north-south tunnel has begun at the south end of Kent Street near Highway 417.

This portion is approximately 2.2 kilometres. The east-west tunnel construction, which consists of 4.2 kilometres, will begin at Stanley Park (Stanley Avenue).

Construction of the CSST requires the use of a tunnel boring machine, a common technique used in tunnelling projects, explained McCarney. For the north/south tunnel, the machine will be launched at the south end of Kent Street. It will go almost 100 feet below ground and will proceed northerly toward the Supreme Court of Canada. It is expected to be launched around April 2017.

"There is quite a lead time to get the machine set up and delivered to the site, launched and actually in production," McCarney explained.

Excavation will be necessary to create an entry point for the east/west tunnel construction at Stanley Park, McCarney reported. The same tunnel boring machine will be launched westerly and it will go underneath the Rideau River, southerly on Cumberland Street, underneath the canal and westerly along Slater Street.

According to the City of Ottawa's project website, the hole cored through the rock will be 12 feet in diameter, McCarney explained. As the machine advances it spits out the smaller rock fragments and simultaneously installs segmental liner plates. The segmental liner added is a foot thick on the top and bottom, making the finished tunnel hole 10 feet in diameter. The liner locks together like a five-piece puzzle, making it leak proof.

"The average citizen won't know it's working underground," said McCarney, adding the machine, which costs in the neighbourhood of \$10 million, will be working 22 hours a day, five days a week. "It will be literally like a mole deep in the ground. It's a very sophisticated machine."

One of the biggest challenges for the project, McCarney noted, is timing, especially because the three-year project coincides with Ottawa 2017, celebrating Canada's 150th anniversary.

"There are certain parts of the contract that are not accessible until certain points in time," said McCarney. "I would say the time constraints probably offer the greatest challenge coupled with Canada 2017, our city of Ottawa is having major celebrations. The tunnel boring machine itself

will be under ground out of sight but there are these significant shafts throughout the length of the tunnel which are construction sites to ground level and there are certain conditions on when we can be constructing these shafts, particularly in and around Ottawa 2017 celebrations."

Tomlinson will be working with Dragados Canada on the project. The companies have worked together before on major infrastructure projects in the city.

"We are very honoured that the Dragados-Tomlinson Joint Venture has been awarded this significant infrastructure project here in Ottawa," said Ricardo Franco, president of Dragados Canada. "We are aware how important the CSST project is for the city and have confidence that the work our highly qualified team will deliver will contribute to preserve the Ottawa River for generations to come."

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