



## STAFF REPORT ACTION REQUIRED

### Streetcar Way Modernization Plan

<b>Date:</b>	July 11, 2016 – Resubmitted September 28, 2016
<b>To:</b>	TTC Board
<b>From:</b>	Chief Executive Officer

### Summary

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The purpose of this report is to obtain approval for the modernization plan of the Streetcar Way Section of the Streetcar Department. The plan will take approximately three years to complete, culminating in a new Way building constructed at the Hillcrest Complex. The Way facility will encompass 3,400 square metres, and provides space for personnel facilities and the rail bending operation, in addition to 4,000 square metres outside area for the pre-assembly of special trackwork (STW) and material storage.

The contract for the construction of the new Way building will be the subject of a Board Report that will be presented at the October 2016 meeting.

### Recommendations

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**It is recommended that the Board:**

1. Approve the Streetcar Way modernization plan.

### Implementation Points

TTC staff are proceeding with the site preparation to facilitate the transfer of operations from the Hillcrest Complex to the 21 Don Roadway location for a temporary 3 year period.

### Financial Summary

The Streetcar Way Modernization Plan requires the construction of a new permanent facility to consolidate the Streetcar Way operations at Hillcrest Yard. It is estimated that this facility will cost approximately \$38.8 million as set out in the 2016-2025 Capital Budget approved by Council on February 17, 2016.

In order to facilitate the construction of the new facility, existing operations must be relocated to a temporary facility. This facility will be located at 21 Don Roadway for a

duration of approximately 3 years. It is estimated to cost \$1.1 million which is included as part of the Surface Track program included in the 2016-2025 Capital Budget.

The Chief Financial & Administration Officer has reviewed this report and agrees with the financial impact information.

## **Accessibility/Equity Matters**

The new Streetcar Way Building will accommodate accessibility needs and requirements, in accordance with its Accommodation in the Workplace Policy and the AODA.

## **Issue Background**

Toronto's streetcar track network is maintained by the TTC Streetcar Way section. The department maintains over 170 km of track and over 80 special track work locations including street intersections, turning loops, entrances into maintenance facilities and streetcar storage yards. Each year, Streetcar Way rehabilitates five to six special track work locations around the city, as part of its Capital Budget state of good repair program. The streetcar track network has recently experienced expansion with the addition of new track on Leslie Street, Cherry Street and the new Leslie Barns facility.

### Pre-Assembly

Streetcar track rehabilitation projects can be very disruptive to the local community, business, transit, and road users. In order to reduce construction timelines and to mitigate these disruptions, the special track work construction process has been modernized to allow pre-assembly and proof of the track layout at the Hillcrest Complex and then broken down into panel sections for transportation and installation on site. In an ongoing effort to increase installation productivity, Streetcar Way employees have developed a new process over the last few years of "panelizing" special track work layouts in increasingly larger sections. The objective of this new process is to reduce the number of panels required by increasing their size, thereby decreasing the amount of time required for assembly on city streets. The predominant constraint in achieving the large panel sizes is transportation. Therefore, the proximity of the layout facility to the streetcar network is a key factor in ensuring the continued success of the program.

An outside storage area is utilized as the rail laydown area and is required to pre-assemble track, including switches, intersections, and curves. Once track and accessories are assembled, the new assembly is broken down into track panel sections that are transported to the construction site for assembly. Lead time on the supply of the various parts and materials is two years. Once received, it is assembled and stored for the next project.



### **Hillcrest Rail Laydown Area for the Spadina and College intersection track work**

#### Reducing Noise and Vibration

Further efforts to reduce the impact of streetcar track replacement on our neighbours and the city include the encapsulation of the rails in resilient rubber enclosures and the special track work components in neoprene sheathing.

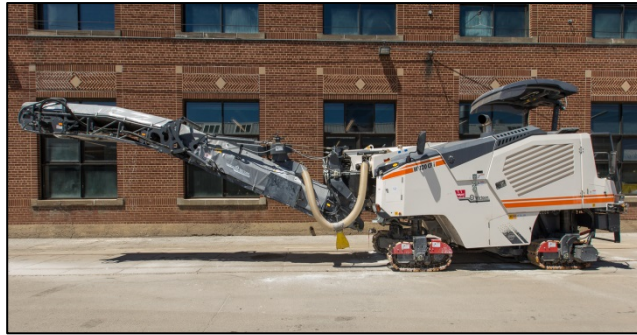
In 1989, the City Services Committee released a report that identified the TTC as the main reason for the premature replacement of city streets. Through TTC track engineering and Way work, the track construction process was revamped to incorporate a track bed construction to improve on efficiency and reduce life cycle cost. As part of the track construction system, the rail base and web are encapsulated with a resilient neoprene boot. The enclosures are designed to dampen the transmission of noise and vibration through the roadway and to surrounding structures. The reduction in vibration also reduces the frequency and severity of roadway pavement failures. Additionally, the neoprene enclosures electrically isolate the rails, thus mitigating the potential for the traction current “straying” to earth, and the damaging effect of galvanic (electricity induced) corrosion to the underground utilities. All of the positive attributes of the enclosures culminate in a significant decrease in the frequency of track network repairs and rehabilitation cycles for the TTC and utility underground assets. As a result, the resilient rail boot and construction process are able to extend the life of the streetcar track to match the City’s long term roadway replacement plan.



### Concrete Milling Machine

On the TTC streetcar network, the rails at or near the service tops require more frequent replacements due to the wear on the track by streetcars constantly braking and accelerating at the service stops.

Until the recent procurement of a concrete milling machine, replacement of worn rails required several days of jack-hammering to break up and excavate the concrete to expose the rail base.



A production concrete milling unit was specially designed to expedite the replacement of worn rails at the carstop locations. The machine cuts the concrete adjacent to the rail into small, liftable chunks. A typical carstop location that would previously take several days to excavate, can now be done in a single shift. This results in approximately 50% reduction in the duration of the track repair, closures and diversions and disruption to the neighbourhood and traffic. As well, the milling machine produces significantly less noise, vibration, and dust when compared to traditional methods of excavation.

### Scattered Work Bases

There is insufficient space to accommodate all Streetcar Way operations at one TTC-owned location. As a result, construction and maintenance activities presently operate out of Hillcrest Complex, Russell Yard and Roncesvalles Yard.

The Hillcrest Complex is the central hub for special track work activities, housing 75 employees in the Subway Operations Building. Hillcrest Yard also acts as a rail bending facility. Straight rails are bent using the heavy rail benders to form the correct curvature and to match with the Special Track Work castings that are specially ordered and manufactured through the procurement process.

Maintenance activities are conducted out of three aging shed-type structures and two modified cargo containers are used to store tools and materials.

Russell Yard is the east location housing 30 employees in two temporary site trailers. Tools and materials are also stored in a modified cargo container at this location. There are five maintenance vehicles, three loaders, two mobile tool trailers, two trailer-mounted welding machines and one equipment float trailer located at this yard.

At Roncesvalles Yard in the western part of the city, there are 15 Streetcar Way employees working out of two temporary site trailers, and a modified cargo container for the storage of tools and materials. This location houses four maintenance vehicles, three loaders, one mobile tool trailer, two trailer-mounted welding machines and one equipment float trailer.

## **Discussion**

### Centralized Work Base

To improve the efficiency of operations, it is recommended to consolidate all Streetcar Way employees, equipment and material into one central location, improve the quality and integrity of the special track work assemblies, and modernize the TTC Streetcar Way maintenance facilities. A new Streetcar Way building is planned for construction at Hillcrest Complex.

The new building will contain a rail bending shop that is being designed for the bending of 24 metre long rails, which is double the length of the rails that can be accommodated in the current shop. The use of longer rails will increase bending output by 40%, eliminate the need for welded or mechanically joined rail lengths within turn-outs, and reduce the time required to assemble the special track work layouts. This will significantly reduce future rail failures over the life cycle of the turn-outs as well.

The new Streetcar Way building will also include a supervisory/work and safety briefing area and vehicle bays for the setup and dispatching of mobile crews.

The project budget is \$38.7 million and the construction contract will be the subject of a Board Report in October, 2016. The duration of the construction is expected to be approximately two years.

TTC staff have consulted with City of Toronto Real Estate Services Portfolio Management staff. It has been confirmed that the City and its Agencies, Boards, Commissions and Divisions (ABCDs) do not have any surplus space complete with suitable rail laydown area that meets the requirements for size, location and use.

During the construction of the building at the Hillcrest Complex, a facility is required for approximately 2 to 3 years (including a transition period), to temporarily house the Streetcar Way operations for the duration of the construction period.

A temporary location at 21 Don Roadway was identified by Streetcar Way staff as well-situated to ensure the special track work assemblies required for rehabilitation projects can be provided in a timely and efficient manner to the worksites on the streetcar network, with minimal impact to ongoing operations. The 8,000 square metre compound is suitable for the STW track laydown, material and equipment storage, and the accommodation of temporary employee facilities. The estimated cost for the three year temporary facility is \$1.1 million, including the lease and leasehold improvements.

## **Contact**

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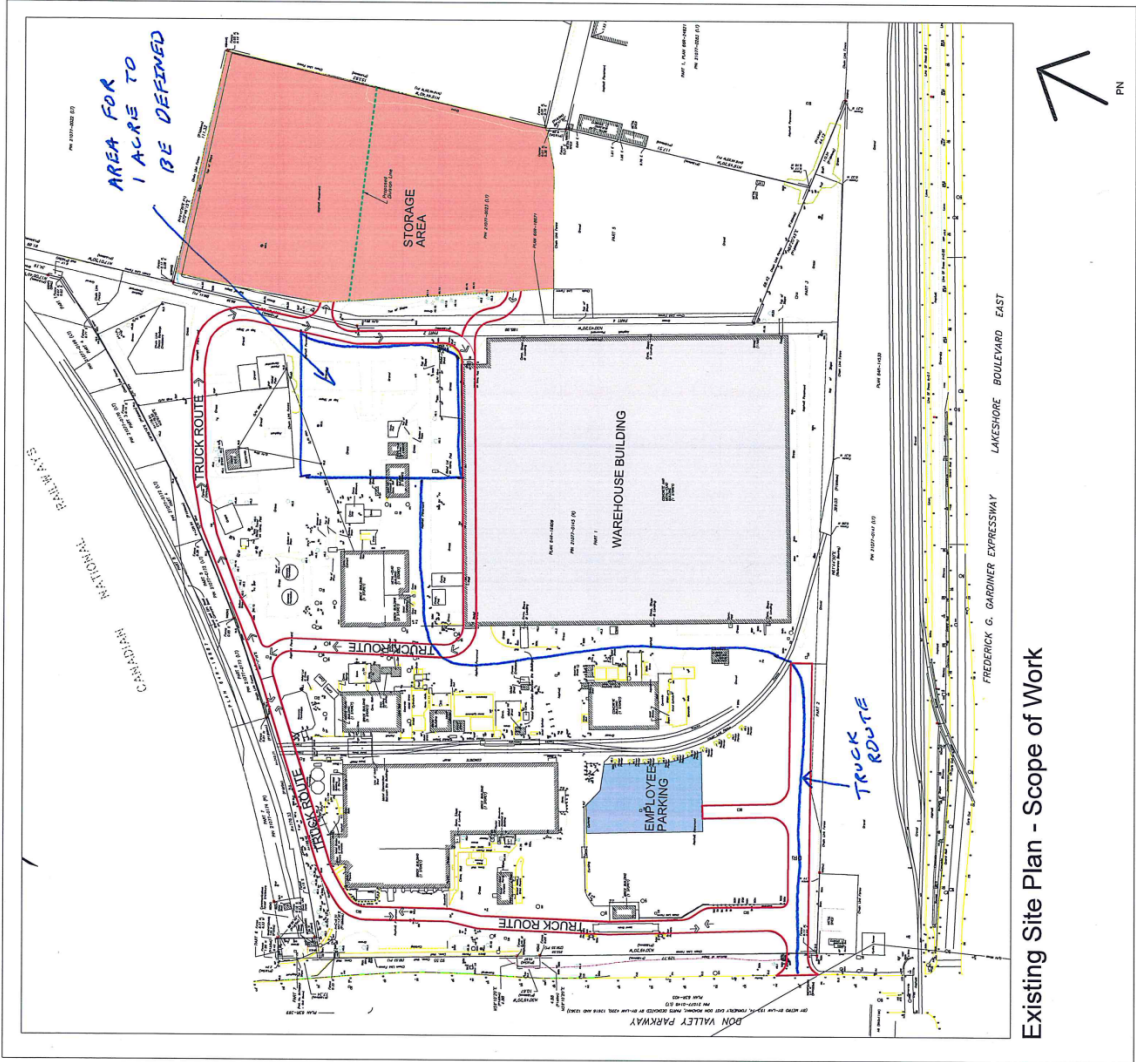
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**Attachment**

Appendix A – 21 Don Roadway Location Reference Map



Appendix A – 21 Don Roadway Location Reference Map



Existing Site Plan - Scope of Work

**21 Don Roadway Warehouse**  
for **FIRST GULF**

drawn	JG
checked	DM
scale	1:2500
date	2015.12.07
file	15025
drawing no.	SK-3



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