

TORONTO TRANSIT COMMISSION REPORT NO.

MEETING DATE: July 6, 2011

SUBJECT: TRANSIT EXPANSION - ASHBRIDGES BAY
STREETCAR MAINTENANCE AND STORAGE FACILITY
REVIEW OF ALTERNATE STORAGE AND CONNECTING
TRACK ROUTE OPTIONS

ACTION ITEM

RECOMMENDATION

It is recommended that the Commission receive this report noting the following:

1. Leslie Street is the preferred routing option for the connecting track for streetcars from the new Ashbridges Bay Maintenance and Storage Facility (MSF) to the existing streetcar network at Queen Street.
2. The storage and servicing of new streetcars will be provided at the new Ashbridges Bay MSF, and the existing Roncesvalles and Russell Yards. However, staff have identified streetcar storage allocation that will potentially reduce the number of vehicles using the Leslie Street connecting route by 13 vehicles a day.
3. This report be forwarded to Councillor Fletcher and Councillor McMahon.

FUNDING

This report has no financial impact.

BACKGROUND

At its meeting on December 16, 2009, the Commission approved the replacement fleet light rail vehicle maintenance and storage facility to be located on the property at the southeast corner of Lake Shore Boulevard East and Leslie Street (Ashbridges Bay site), subject to the Transit Project Assessment Study (TPAS).

The TPAS, recommending the use of the Ashbridges Bay site for the maintenance and storage facility, and Leslie Street as the connecting track between the site and the revenue streetcar network, was approved by the Commission at its meeting on June 2, 2010, by City Council at its meeting on June 8 & 9, 2010 and by Ministry of the Environment (MOE) on December 7, 2010.

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At its meeting on February 2, 2011, the Commission considered the staff report titled "Ashbridges Bay Streetcar Maintenance and Storage Facility – Motions referred by Budget Committee" and approved the following recommendations:

- Support staff efforts to proceed immediately with the soil removal and capping contract for the Ashbridges Streetcar Maintenance and Storage Facility;
- Direct staff to investigate the feasibility and costs of locating some of the new streetcars at the Hillcrest yard and/or the adjacent hydro corridor and Exhibition Place loop recognizing that additional streetcar storage at alternative sites does not change the need for the Ashbridges Bay Streetcar Maintenance and Storage Facility.

The Commission also approved a motion that staff continue to look at route re-allocations, working with Councillor Fletcher on this, and report back to the Commission.

DISCUSSION

A) FEASIBILITY AND COSTS OF ALTERNATE STORAGE LOCATIONS

Staff were requested to investigate Hillcrest Yard, the adjacent hydro corridor and Exhibition Loop for their potential to store and dispatch streetcars into service. The objective of this study was to decrease the number of streetcars dispatched from Ashbridges Bay, via Leslie Street. The capital and operating costs of the options were included in the study.

As a basis for the evaluation and per previous studies of streetcar facilities, sites used for storage only are not cost effective. Vehicles require daily servicing, which would require shuttling between the storage site and a maintenance facility every day. The storage site would also require an office to perform daily route administration, fit for duty checks, and to dispatch streetcars into service. Furthermore, security personnel and an on-site maintenance person to perform pre-start vehicle inspection at start of shift would be required. An earlier evaluation of the cost to store 10 streetcars at Exhibition Loop resulted in an estimated \$0.5 Million additional annual operating cost, in addition to increased capital costs for the additional site. On this premise, consideration was only given to sites where storage and daily servicing activities are possible.

The potential for each of the suggested sites is discussed below.

Exhibition Loop – there is insufficient property to allow for a daily servicing facility.

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Hillcrest – Based on available areas within the property, it was determined that Hillcrest could store 24 vehicles and provide daily servicing by reconstructing the existing Davenport Garage as shown in Appendix A. This option would have the benefit of distributing the streetcar fleet more efficiently.

A net present value (NPV) analysis was performed to compare the life cycle costs over 40 years, with and without Hillcrest. The calculation included the capital cost savings associated with building fewer storage tracks at Ashbridges Bay. The life cycle cost of this option is \$80 Million greater than the base case of storage and daily servicing of 100 streetcars at Ashbridges Bay. The results of this analysis indicate that the deadhead savings from having the streetcar fleet distributed in a more efficient pattern were not enough to compensate for the increased capital and operating costs of the additional facility.

Hydro Corridor - The hydro corridor to the south of the Hillcrest facility was considered for storage in combination with a daily servicing facility on the Hillcrest property. However due to electrical interference, the high voltage overhead distribution system would have to be buried. At a cost of \$17.5 Million per kilometre, this would add approximately \$10 Million to the cost of the Hillcrest option. In addition to leasing costs, this makes this option cost prohibitive.

Note that in addition to the sites requested by the Commission, staff also investigated Danforth Garage and, as with Hillcrest, it would not be cost effective when subjected to the life cycle cost analysis.

Staff also reviewed the distribution of vehicles at Roncesvalles, Russell and Ashbridges Bay, to determine if there were opportunities to achieve the goal of reducing vehicles operating on Leslie Street. Based on this review, some efficiencies of storage were identified. This will allow for a reduction of vehicles operating daily from Ashbridges Bay along Leslie Street from 85 to 72 (15% reduction).

B) REVIEW OF CONNECTING TRACK ROUTE OPTIONS

As the Ashbridges Bay MSF site is not on the streetcar network, a non-revenue connecting track is required to get streetcars from the yard to and from service. During the TPAS, eleven potential routes for the connection track were studied for the Ashbridges Bay MSF as shown in Appendix B.

Routes were evaluated using the following criteria. All factors were considered and the evaluation was based on the overall ranking of performance and assessed impacts.

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- Local Community Impact
 - Effects on access, parking and property
 - Noise
 - Cycling
- Land Use / Planning
- Transit Operations
- Traffic Operations
- Economic / Financial
 - Capital cost
 - Ongoing operating cost

As directed by the Commission, staff have further reviewed connecting routes. In addition, further engineering work on the Leslie Street connecting track revealed significant conflicts between the trackbed construction and subsurface utilities, principally Toronto Water infrastructure. Based on the greater degree of information about the Leslie Street route, the estimated cost of the connecting track has increased above the value used in the TPAS. As a result, staff revisited the connection track routes to assess whether this new knowledge would change the recommendation.

Staff reviewed all of the routes considered during the TPAS and the evaluation data. Utility layout information was also obtained and all routes have utility infrastructure under the trackbed that would require relocation. There is no significant change to the characteristics of any of the routes that would alter the overall ranking established in the TPAS. In addition, no new routings emerged.

Knox Route

Being the only route comparable in length to Leslie Street, the Knox Avenue routing was subjected to more in-depth analysis. This proposed routing would connect to Queen Street via tracks on Knox Avenue, Eastern Avenue and the west side of Russell Yard (Appendix C).

The issues associated with this routing were reviewed with Councillors Fletcher and McMahon. Subsequently with further analysis, there was mitigation of some of these issues as follows:

Transit Operation

Knox Avenue is a two lane street. Streetcar operation is not recommended on 2 lane streets because there is no room to move a disabled vehicle that might block the tracks. This limitation would have even greater importance on a connection track that is responsible for putting approximately 45% of the fleet into service. To mitigate this situation, a plan to convert Knox Avenue to a four lane road was developed (see Appendix D), which would

allow disabled vehicles to be moved clear of the streetcar tracks. Property would be required on the west side of Knox Avenue, near Eastern Avenue for road widening and turn clearances. Meetings were held with key stakeholders including Toronto Transportation Services (District Traffic Operations and Cycling Infrastructure groups), Toronto EMS, Toronto Fire Department and Canada Post.

Storage Capacity

The TPAS indicated this Knox routing would reduce storage at Russell Yard by 14 spaces. With further design, this has been reduced to a loss of 10 spaces. It is noted that modifications to avoid the loss of 20 spaces at Ashbridges Bay result in the fence line being relocated further north by approximately 5 metres, thereby reducing the area available for landscaping.

Notwithstanding these improvements, the Knox Avenue routing continues to have the following issues:

- Cycling / Martin Goodman Trail
 - New signalized crossings of the Martin Goodman Trail and Bikeway No. 4 are required impacting cyclists, pedestrians, and other users of the trail. The entrance/exit from the MSF would also involve streetcars crossing the Martin Goodman Trail at an oblique angle, which, from a streetcar operations perspective, poses concerns with the safety of the trail users. (Appendix E).
- Transit Operations
 - The Knox Avenue routing involves three turns of sub-standard radius (to fit within existing street allowances) that increase the potential for noise and will reduce operating speeds. Although equivalent in length to the Leslie Street routing, the Knox Avenue routing would require one minute extra travel time.
 - Based on the current yard configuration, streetcars must travel around the yard before exiting, adding 3 minutes extra to get into service.
- Traffic Operations
 - Canada Post continue to express their strong opposition about any routing that involves Knox Avenue, as this street is the main entrance for mail trucks and employees. During the TPAS Canada Post sent a letter to the Ministry of the Environment clearly stating their objection to any routing that has the potential to impede entrance or exit from their facility. These concerns were re-emphasized by Canada Post in recent meetings and discussions to brief them on converting Knox Avenue to 4-lanes.
 - The Ashbridges Bay MSF entrance/exit must be relocated to the northeast corner,

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opposite Knox Avenue. The entrance/exit would have to be signalized to permit the safe and efficient crossing of streetcars, which would introduce a new traffic signal on Lake Shore Boulevard approximately 350 metres east of Leslie Street.

In addition to these issues, changing the connection track to the Knox-Eastern-Russell Yard route requires an amendment to the TPAS. It is estimated that this will delay the project by 12 to 15 months. Additional costs will also be incurred for the TPAS, redesign of the MSF, implementing the mitigating measures and escalation associated with the delay.

In summary, while some issues have been mitigated several remain which, when compared, result in Leslie Street continuing to be preferred for the connecting track.

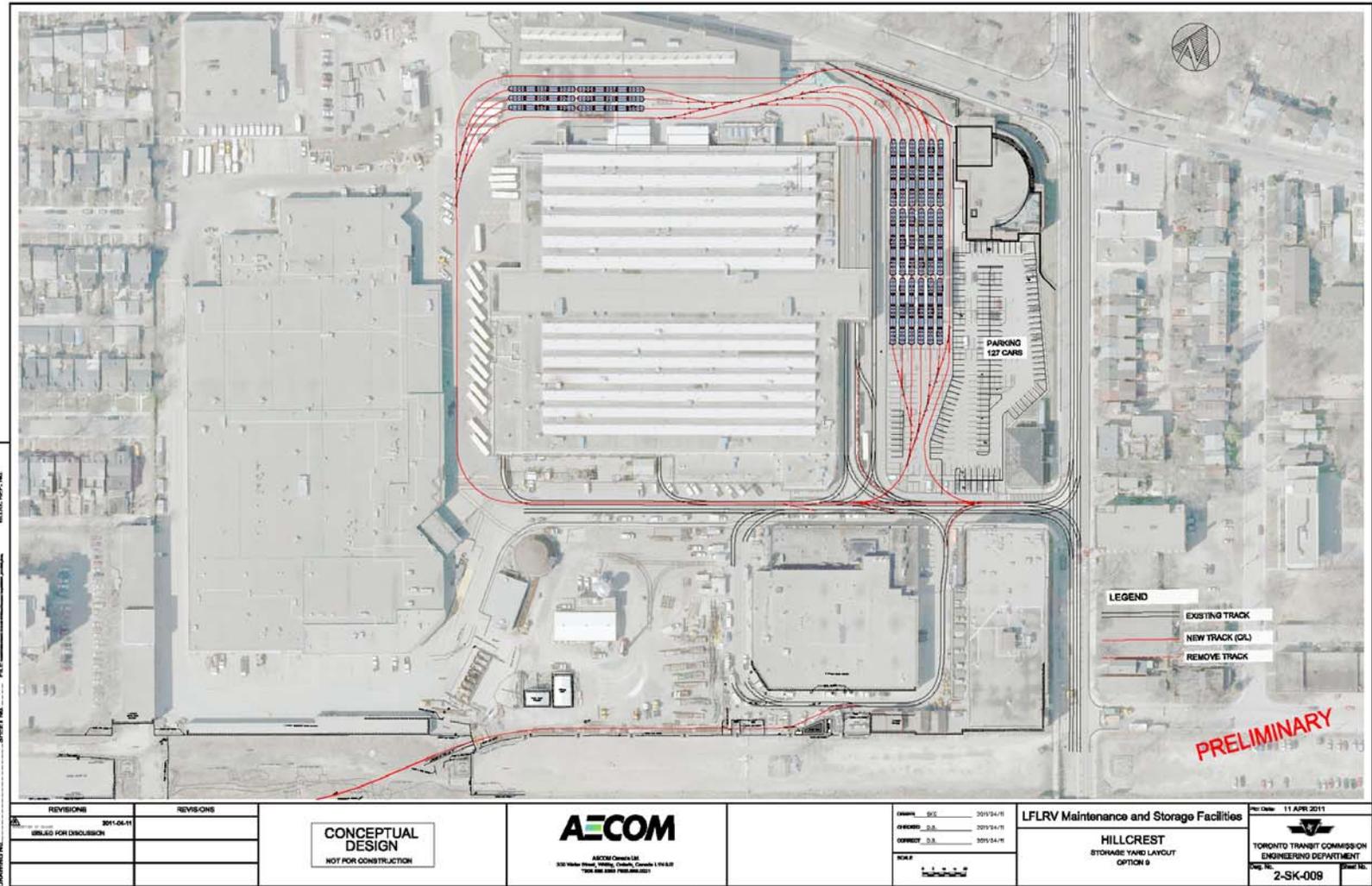
This report responds to the Commission Directive.

June 21, 2011
55-8-7

Attachments: Appendices A to E

APPENDIX A

Potential Hillcrest Streetcar Storage/Serviceing Facility Layout (24 Streetcar capacity)



DRAWING NO. SHEET No. FILE No. PHOTO REF. No.

REVISIONS	REVISIONS
1	2011-04-11

CONCEPTUAL DESIGN
NOT FOR CONSTRUCTION



ISSUED DATE	2011-04-11
DESIGNED BY	2011-04-11
CHECKED BY	2011-04-11
SCALE	1:1

LFLRV Maintenance and Storage Facilities

HILLCREST
STORAGE YARD LAYOUT
OPTION 9

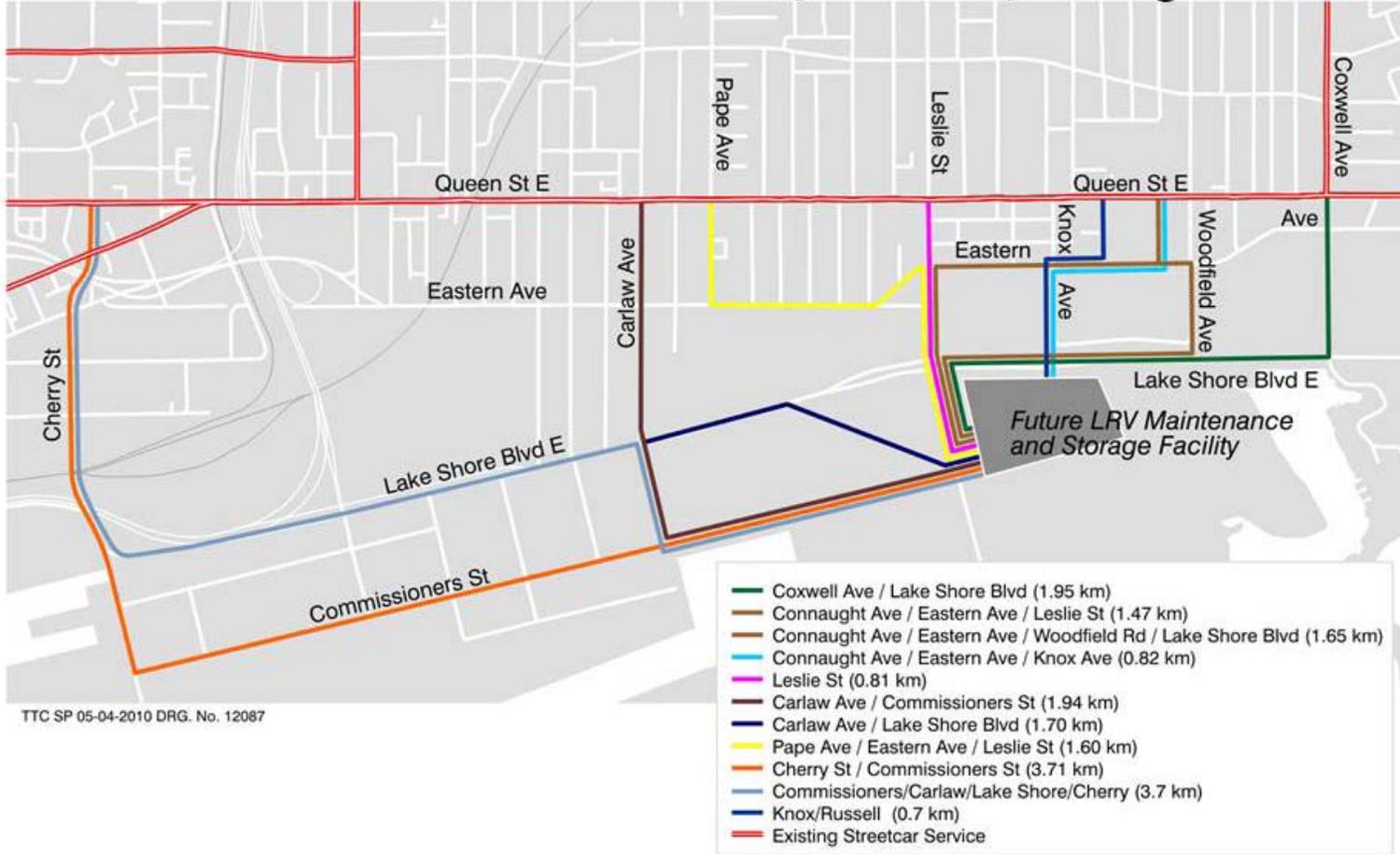
Plot Date: 11 APR 2011

TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

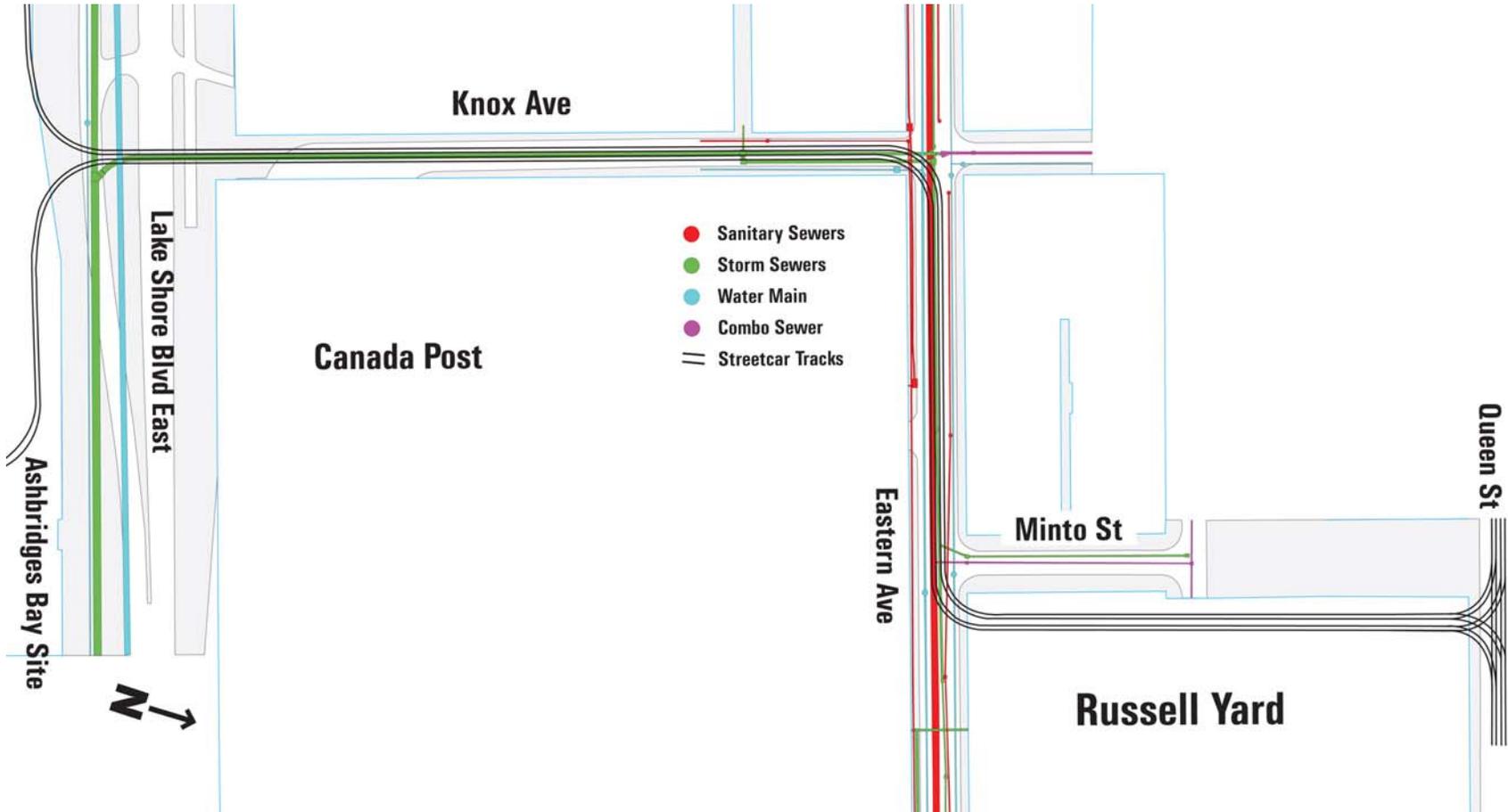
Fig. No. **2-SK-008**

APPENDIX B

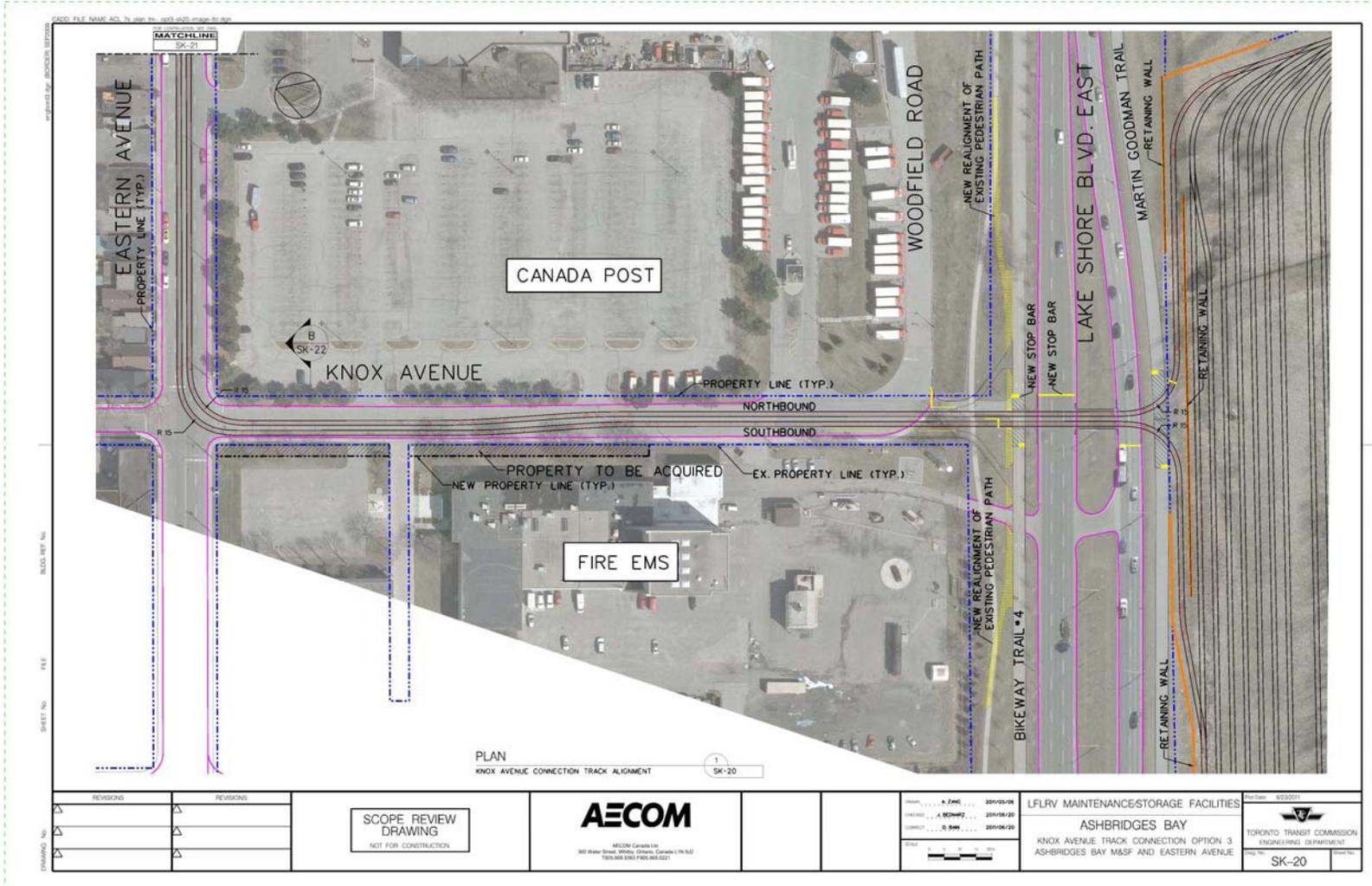
Alternative Routes to Future Ashbridges Facility During TPAS



APPENDIX C
Knox Avenue Routing



APPENDIX D Knox Avenue as a 4-lane Road



CADD FILE NAME: ACT_73_000_73_000_000_000.dwg
MATCHLINE SK-21

SHEET NO. FILE BLDG REF NO. DRAWING NO. TORONTO TRANSIT COMMISSION

REVISIONS	REVISIONS

SCOPE REVIEW
DRAWING
NOT FOR CONSTRUCTION

AECOM
AECOM Canada Ltd.
300 Water Street, Toronto, Ontario, Canada M5N 1S2
TEL: 416 593 7000 FAX: 416 593 7221

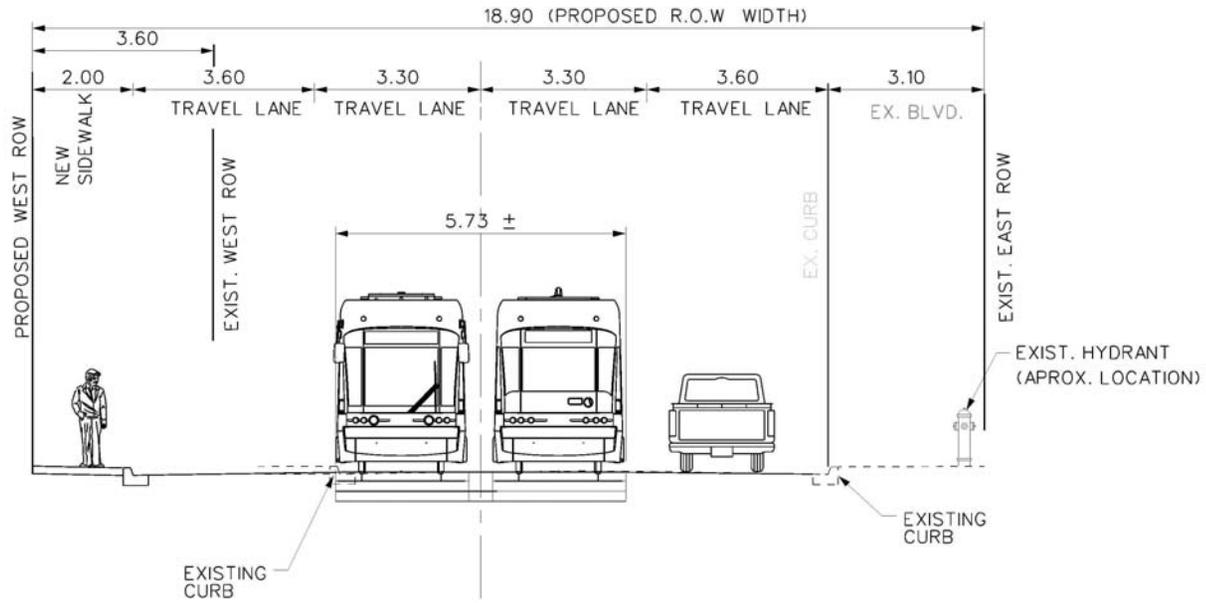
DESIGNED BY: A. JANE
CHECKED BY: A. BROWN
CONTRACT NO.: 3000/0002
DATE: 07/20/08

LFLRV MAINTENANCE/STORAGE FACILITIES
ASHBRIDGES BAY
KNOX AVENUE TRACK CONNECTION OPTION 3
ASHBRIDGES BAY M&S AND EASTERN AVENUE

Plot Date: 02/20/09

TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT
Drawing No: SK-20

APPENDIX D (Continued)
Knox Avenue as a 4-lane Road



TYPICAL SECTION
KNOX AVENUE (FOUR TRAVEL LANES)

B
SK-23

APPENDIX E
Conceptual Design of MSF Entrance for Knox Avenue Routing

