

TORONTO TRANSIT COMMISSION REPORT NO. 24

MEETING DATE: DECEMBER 9, 2002

SUBJECT: STREETCAR RAPID TRANSIT ON ST. CLAIR AVENUE

RECOMMENDATIONS

It is recommended that the Commission:

1. Endorse the attached joint City-TTC report entitled, "Feasibility of Reserved Streetcar Right-of-Way on St. Clair Avenue", which recommends the undertaking of an environmental assessment regarding the establishment of an exclusive right-of-way for streetcars on St. Clair Avenue, between Yonge Street and Gunns Road, and regarding the extension of the 512 ST CLAIR streetcar route, in an exclusive right-of-way, from Gunns Road to Jane Street, to be undertaken jointly by City of Toronto Transportation Services and Planning and TTC staff;
2. Forward this report to the Works and Planning and Transportation Committees of the City of Toronto in order to convey the Commission's support for the undertaking of the subject environmental assessment; and
3. Forward this report to Councillors Betty Disero, Joe Mihevc, Frances Nunziata, and Michael Walker, the St. Clair Avenue Business Improvement Association, and the City of Toronto Transportation Services, Planning, and Economic Development Departments.

FUNDING

Funds are available in the TTC's 2003 Budget for rapid transit studies, and these funds can be used for this study.

BACKGROUND

The TTC's five-year capital program includes the reconstruction of the majority of the streetcar tracks on St. Clair Avenue, between Yonge Street and Gunns Loop (just west of Keele Street), in 2004.

Councillors Disero and Mihevc have suggested that the new streetcar tracks could be constructed in a reserved right-of-way and that this concept could form the basis of a

revitalization of St. Clair Avenue. TTC and City Transportation Services staff were requested to undertake a preliminary evaluation of the feasibility of establishing such an exclusive streetcar right-of-way on St. Clair Avenue. Also, Councillor Nunziata has expressed support for extending the 512 ST CLAIR streetcar further west, from its current terminal at the Gunns Road loop to Runnymede Road.

The attached joint City-TTC report summarizes the work which has been done to date on these matters, and recommends actions which will allow these concepts to be developed more fully and comprehensively.

DISCUSSION

The 512 ST CLAIR streetcar route operates on St. Clair Avenue, between Yonge Street and Gunns Road, just west of Keele Street. The route presently carries over 32,000 passengers per day or about 10 million passengers per year. Although the daily passenger volumes on this route are lower than those of some of the other streetcar routes in Toronto -- for example, the 504 KING route carries about 51,000 passengers per day -- the 512 ST CLAIR route is also a shorter route and, when compared to the other streetcar routes on the basis of passengers carried per route mile, the 512 ST CLAIR route ranks second only to the 510 SPADINA streetcar route. The 512 ST CLAIR route ranks fourth among all streetcar routes in terms of passengers carried per vehicle hour, an important measure of productivity. During the busiest travel times on St. Clair Avenue, streetcars carry in the range of 45% to 57% of all the people travelling on that road, depending on location.

The City of Toronto's new official plan advocates that Toronto's streetcars should operate in exclusive rights-of-way to improve their efficiency and attractiveness, and the plan designates St. Clair Avenue as one of the transit corridors in which this type of transit priority initiative should be undertaken.

St. Clair Avenue is one of very few roads in Toronto which are wide enough to allow an exclusive streetcar right-of-way to be established without causing total disruption to automobile travel patterns and on-street parking, both of which are important to merchants along the street as well as for local community activities. Interestingly, the reason why St. Clair Avenue is wide enough for an exclusive right-of-way is because St. Clair Avenue was originally built with a reserved right-of-way for streetcars along much of its length. The resulting excellent streetcar service was a significant factor in encouraging residential and commercial development along the avenue. The reserved right-of-way was removed by the City in the 1930s as a Depression-era make-work project and, ever since then, streetcars have operated in ever-increasing mixed traffic.

Any proposal for a transit right-of-way will involve taking some existing road space away from automobiles and other road users, and reallocating it to transit. This means that transit service will become faster, and more reliable, attractive, efficient, and productive, and travel by cars in the same corridor will become slower, more congested, and less attractive. Making

transit more attractive is a fundamental part of Toronto's long-term planning goal of establishing a more-sustainable transit-oriented transportation system in the future.

The attached report describes three streetcar right-of-way conceptual design options which have been jointly developed and reviewed by TTC and City Transportation Services staff. While minor variations to these concepts may be possible, they are indicative of what could be done on St. Clair Avenue in order to create a reserved right-of-way for streetcars. These designs are conceptual only, but they were developed after extensive fieldwork on St. Clair Avenue, including measurement of road and sidewalk widths, and observations of the current uses of these spaces. The concepts are, therefore, considered to be physically feasible within this corridor.

The report describes the advantages and disadvantages of the three concepts with respect to transit operations, traffic operations, goods movement, pedestrians, and streetscaping.

The benefits to transit of the concepts would vary, depending on the specific concepts, but include:

- faster travel speeds,
- improved service reliability,
- improved effectiveness of the established signal priority system,
- improved passenger waiting environments,
- increased transit ridership because of the improved service quality and travel speeds,
- improved productivity and efficiency of operation, and
- protection of the streetcar service from the detrimental effects of increasing traffic congestion in the future.

The effects of the concepts on automobile and truck traffic and other road users would also vary, depending on the specific concept, but include:

- left turns and "U"-turns to/from St. Clair Avenue at all times, at signalized intersections,
- 24-hour per day parking in permanent parking bays,
- capacity for traffic flow reduced to less than half of what is now provided, resulting in significant delays and congestion in all directions at intersections, an expansion of peak-period traffic conditions, and increased traffic infiltration in neighbourhoods,

- limited flexibility for on-street traffic diversion in the event of accidents, stopped vehicles, or road work,
- worse commercial loading,
- left turns to/from St. Clair Avenue prohibited at all locations except at signalized intersections,
- easier pedestrian crossing of St. Clair Avenue because the medians in the centre of the street would provide refuge, and
- 10-15 seconds longer waiting for pedestrians crossing St. Clair Avenue at signalized intersections.

The report also discusses the feasibility of extending the 512 ST CLAIR streetcar route west, from its current terminal at Gunns Road, to Runnymede Road or to Jane Street. Any possible route extension would require a complete feasibility and engineering study, and this would be incorporated within the scope of an environmental assessment pertaining to a reserved streetcar right-of-way on St. Clair Avenue.

The cost estimates provided in the report, while very preliminary in nature, illustrate that the cost of converting the 512 ST CLAIR streetcar route into a reserved right-of-way operation which would allow a streetcar rapid transit service to be provided on St. Clair Avenue, and the cost of extending this route westerly to Jane Street, which would allow for much-improved network connectivity between this high-frequency east-west route and the high-frequency 35 JANE bus route, are small compared to the costs of subway or other types of rapid transit extensions. None of the costs described in the report, with the exception of the environmental assessment itself, are currently included in the TTC's Budget.

There is agreement among Councillors Disero, Mihevc, and Nunziata and among staff of the TTC and City Transportation and Planning Departments, that this concept should be investigated and developed more thoroughly, and that the appropriate vehicle for such investigation would be an environmental assessment of the proposed streetcar right-of-way. This environmental assessment would be undertaken jointly by City Transportation and Planning and TTC staff, with the assistance of an outside consultant. The undertaking can be funded from the Rapid Transit Studies component of the TTC's 2003 Budget.

November 27, 2002
11-84-80

Attachment: City-TTC report, "Feasibility of Reserved Streetcar Right-of-Way on St. Clair Avenue"

TORONTO STAFF REPORT

November 28, 2002

To: Works Committee

From: Commissioner of Works and Emergency Services
Chief General Manager of Toronto Transit Commission

Subject: Feasibility of Reserved Streetcar Right-of-Way on St. Clair Avenue
(Ward 11 – York South-Weston), (Ward 17 – Davenport), (Ward 21 – St. Paul’s)
and (Ward 22 – St. Paul’s)

Purpose:

To provide a summary of current work on a joint assessment by TTC and City Transportation Services' staff on the feasibility and implications of providing an exclusive right-of-way for streetcars on St. Clair Avenue and outlining next steps should it be decided to develop this concept further.

Financial Implications and Impact Statement:

Funding for an environmental assessment is included in the TTC's 2003 Operating Budget.

Recommendations:

It is recommended that:

- (1) approval be given to undertake an environmental assessment regarding the establishment of an exclusive right-of-way for streetcars on St. Clair Avenue, between Yonge Street and Gunns Road, and the extension of the 512 ST. CLAIR streetcar route, in an exclusive right-of-way, from Gunns Road to Jane Street, with such work to be carried out by consultants under the direction of City of Toronto Transportation Services and TTC staff;
- (2) this report be forwarded to Councillors Betty Disero, Joe Mihevc, Frances Nunziata, and Michael Walker, and the affected Business Improvement Associations, for their information; and

- (3) the appropriate City and TTC officials be requested to take whatever action is necessary to give effect thereto, including the introduction in Council of any Bills that are required.

Background:

The Humber York Community Council at its meeting of May 7, 2002, in considering a City staff report (January 14, 2002) entitled "Review of Pedestrian Crossing Time at St. Clair Avenue West and Eglinton Avenue West (Davenport, Ward 17 and York South-Weston, Ward 12), among other things, requested the Commissioner of Works and Emergency Services, in consultation with the Toronto Transit Commission, appropriate Departments and groups to report as soon as possible on establishing a dedicated right-of-way on St. Clair Avenue, the design of which should be streetcar accessible.

The TTC five-year capital program includes the reconstruction of the majority of the streetcar tracks on St. Clair Avenue, between Yonge Street and Gunns Loop (just west of Keele Street), in 2004. In addition, St. Clair Avenue, between Keele Street and Runnymede Road, is scheduled to be reconstructed by City Transportation Services in 2004, as part of their state-of-good-repair program for arterial roads.

Over the last year, the St. Clair Avenue Business Improvement Association, with the assistance and support of Councillors Betty Disero and Joe Mihevc, has been looking at ways of revitalizing the commercial section of St. Clair Avenue, west of Bathurst Street.

As well, over the past few years, various Ward Councillors have requested the TTC to undertake improvements to the streetcar platforms along St. Clair Avenue in order to improve their physical condition, visibility for drivers, and aesthetics. Included in these various requests were suggestions for an additional new passenger platform on St. Clair Avenue at Via Italia, the removal, shortening, or improvement to the "redundant" streetcar platforms at Deer Park Crescent, Russell Hill Road, Wychwood Avenue, and Avenue Road, and the improvement to the physical environment for customers using streetcar platforms on St. Clair Avenue.

In order to address and co-ordinate these various issues and initiatives, local councillors convened two meetings at which TTC staff, City Transportation Services staff, and representatives from the St. Clair Avenue Business Improvement Association were in attendance. TTC and City Transportation Services staff were requested to undertake a preliminary evaluation of the feasibility of establishing an exclusive streetcar right-of-way on St. Clair Avenue. Also, the Executive Assistant to Councillor Frances Nunziata agreed that it would be an opportune time to explore the feasibility of extending the 512 ST. CLAIR streetcar further west, from its current terminal at the Gunns Road loop to Runnymede Road.

This report summarizes the work which has been done to date on these matters, and recommends actions which will allow these concepts and the various impacts to be developed more fully and comprehensively.

Comments:

St. Clair Avenue is a major arterial roadway extending between Scarlett Road and Mount Pleasant Road. The 512 ST. CLAIR streetcar service operates on St. Clair Avenue from Gunns Road, just west of Keele Street, to just east of Yonge Street as shown on Exhibit (1) attached. This streetcar service connects to the Yonge-University-Spadina subway line at a surface loop east of Yonge Street and via an underground portal just west of Spadina Road, and carries about 32,000 passengers a day. Although, in terms of daily passenger volume, St. Clair ranks lower than some other routes (for example, the 504 KING route carries 51,000 passengers per day) it is a shorter route and is second only to the 510 SPADINA route in terms of passengers per route kilometre and fourth among streetcar routes in terms of passengers per vehicle hour, an important productivity factor. Daily traffic volumes are currently in the order of 30,000 vehicles per day. St. Clair Avenue is a key midtown east-west route, and in addition to its traffic carrying role, it is important in terms of goods movement, loading for local businesses, parking and pedestrian activity. In terms of overall person-travel, trips are nearly equally divided between the streetcar and other vehicles (45 percent to 57 percent range, depending on location).

Streetcar platforms are provided, generally on the near side of the signalized intersections although “far side” platforms have been established at three locations to allow streetcars to take better advantage of signal priority which is installed at nineteen traffic control signals along St. Clair Avenue. The TTC and City Transportation Services staff are currently working on a joint initiative to introduce a streetcar-priority exit from St. Clair Station onto St. Clair Avenue. Private developers, currently constructing large residential subdivisions at the west end of the line, have committed private funding for the purpose of separating the streetcar tracks from left-turning traffic in the vicinity of their developments near Gunns Road. A number of initiatives have, or are being taken in order to turn the 512 ST. CLAIR streetcar route into a faster, more-reliable transit service. The introduction of an exclusive streetcar right-of-way would be the last major step in transforming the 512 ST. CLAIR streetcar into a streetcar-based rapid transit service.

Between Spadina Road and Yonge Street, St. Clair Avenue generally operates as three lanes in each direction, with dedicated left-turn lanes provided on the streetcar tracks at certain intersections. Between Caledonia Road and Vaughan Road, St. Clair Avenue operates as three lanes in each direction, with parking provided at all times on the north side of the street and during off-peak periods only on the south side of the street. West of Caledonia Road, St. Clair Avenue is narrow, and operates as two lanes of traffic in each direction, with parking provided during off-peak periods only.

Current Opportunity

There are a number of current circumstances which combine to provide an opportunity to examine in detail the feasibility and implications of establishing an exclusive streetcar right-of-way on St. Clair Avenue.

The streetcar tracks on St. Clair Avenue are at the end of their useable service life and must be replaced in 2004. This work entails the complete excavation and rebuilding of the tracks and trackbed and, as such, provides the opportunity to modify or enhance the streetcar right-of-way and the passenger platforms. At the same time, the City of Toronto has provided a limited amount of money specifically for adding or rehabilitating streetcar platforms on St. Clair Avenue.

The St. Clair Avenue Business Improvement area is planning to initiate a revitalization project for St. Clair Avenue, west of Bathurst Street, and this introduces the possibility of a public-private partnership in transforming St. Clair Avenue into a transit-oriented pedestrian-friendly corridor.

The major road rehabilitation project planned between Keele Street and Runnymede Road in 2004 will entail the excavation and rebuilding of the roadbed. If the opportunity were taken to also construct new streetcar tracks at the same time as the City is doing its road reconstruction, then the additional cost of installing new streetcar tracks in this location would be less than the cost of the same work done in isolation.

The Fundamental Trade-Off Between Transit and Other Street Users

The establishment of an exclusive right-of-way on St. Clair Avenue for streetcars would entail definite benefits to transit operations and be supportive of the Official Plan policies, which advocate that streetcars operate in exclusive rights-of-way to improve their efficiency and attractiveness. The Plan designates St. Clair Avenue as one of the transit corridors in which this type of transit priority should be undertaken.

In considering this option, however, our joint assessment to date has clearly highlighted that there will be serious and significant impacts on the current operations of St. Clair Avenue and indeed areas surrounding this key route. It is important to recognize this in balancing these truly competing demands for overall right-of-way space.

The main conclusion of our work to date is that an exclusive transit right-of-way is achievable on St. Clair Avenue, but this could come about only by reducing the capacity of the remaining space for general traffic to less than half of what is currently provided. It is also noted that if there is to be a significant element of enhanced streetscaping within the transit right-of-way, space would have to be taken from the sidewalks (over and above the reduced roadway capacity).

Three conceptual design options have been jointly developed and reviewed by TTC and City Transportation Services' staff. While minor variations to these concepts may be possible, they are indicative of what could be done on St. Clair Avenue in order to create a reserved right-of-way for streetcars. While these designs are conceptual only, they were developed after extensive fieldwork on St. Clair Avenue, including measurement of road and sidewalk widths, and observations of the current uses of these spaces. We have completed preliminary analysis of these for the purpose of determining impacts on transit operations, traffic flow, pedestrians, commercial loading, and parking. These analyses are based on existing travel demands, with no allowance made for growth or redistribution of traffic. The concepts are, therefore, considered to be physically feasible within this corridor.

In considering these options, there are key elements of transit operations, general vehicular operations, and impacts on other road space users that are common throughout.

Transit:

- (a) improved service reliability, faster service;
- (b) protects streetcar service from effects of worsening congestion in the future;
- (c) attracts more riders; and
- (d) operating and capital cost savings, improved productivity

Traffic and Goods Movement:

- (e) significant reduction in capacity (essentially only one through lane in each direction), routing flexibility and accessibility (left-turning opportunities greatly reduced);
- (f) lengthy delays and congestion in all directions at intersections;
- (g) common queuing as right-turning vehicles will block the single available lane;
- (h) no viable alternate east-west routes to accommodate displaced traffic, resulting in neighbourhood infiltration; and
- (i) adverse impact on goods movement, deliveries to area business. Currently double parking for loading is prevalent on St. Clair Avenue. With one lane, this would completely block the street.

Pedestrians:

- (j) wait times to cross St. Clair Avenue would increase.

Road, Sidewalk widths and Streetscaping:

- (k) Under any scenario, road widening (with accompanied sidewalk narrowing) is required west of Laughton Avenue in order to accommodate the streetcar right-of-way. Any right-of-way requires at least a two-metre widening on both sides of St. Clair Avenue, from Laughton Avenue to Old Weston Road. Also, widenings are required in the Keele Street area; and
- (l) Streetscape improvements (for example, medians with trees or bushes) are not possible as part of the dedicated right-of-way without eliminating existing streetscape improvements and reducing sidewalk width on the boulevard.

The following section provides commentary on the three conceptual options that have been considered to date.

Conceptual Design Options for a Reserved Streetcar Right-of-Way on St. Clair Avenue:

Concept 1:

Concept 1 entails the creation of a reserved streetcar right-of-way, in the centre of St. Clair Avenue, by physically delineating the streetcar right-of-way from the other regular lanes of traffic. One example of how this can be done is by raising-up the right-of-way, by approximately six inches, as was done on Queens Quay West, between York Street and Spadina Avenue, for the 509 HARBOURFRONT streetcar route (see Exhibits 2 and 3, attached). Similar to the Queens Quay design, the edges of the raised-up streetcar right-of-way would be rounded so that cars and trucks could enter onto the streetcar right-of-way if required during an emergency or an obstruction of the regular traffic lane to the right of the streetcar lane. Wider, more-attractive passenger platforms would be provided on the far side of each signalized intersection.

For each direction of travel, there would be only one lane for regular traffic to the right of the streetcar right-of-way. Designated left-turn lanes, with protected left-turning signal phases, would be provided at all signalized intersections. Parking would be permitted twenty-four hours per day, in parking bays located at the curb side of the roadway, except at or near intersections (see Exhibit 2).

Streetcars would proceed, together with all other east-west traffic, on the permissive green signal.

The benefits of this exclusive streetcar right-of-way for transit include:

- (i) faster travel speeds, with an approximate 10 percent reduction in round trip times (six minutes);
- (ii) improved surface reliability, which translates into less short-turning of streetcars, and less vehicle bunching and crowding, because delays and variability in streetcar travel times would both be reduced;
- (iii) improved effectiveness of the established signal priority system, thus further reducing travel time variability and improving regularity of service;
- (iv) improved passenger waiting environment because of the wider, more-spacious passenger platforms;
- (v) increased transit ridership because of the improved service quality and travel speeds achieved through a reserved right-of-way, as has been observed on Spadina Avenue and Queens Quay;
- (vi) improved productivity and efficiency of operation, resulting in both operating and capital cost savings (estimated reduced vehicle requirements by 1 in a.m. peak, 1 p.m. peak, 1 mid-day);

- (vii) protection of the streetcar service from the detrimental effects of increasing traffic congestion in the future.

The effects on other road users include:

- (viii) left turns and "U"-turns to/from St. Clair Avenue would be allowed at all times, at signalized intersections, from left-turn lanes located beside the streetcar right-of-way, as is found on Spadina Avenue;
- (ix) 24-hour per day parking would be provided in the permanent parking bays located on both sides of the street, away from intersections although the number of parking spaces available in proximity to the signalized intersections will be reduced to accommodate sufficient length of left-turn lanes;
- (x) capacity for traffic flow would be reduced to less than half of what is now provided, and this would result in significant delays and congestion in all directions at intersections, an expansion of peak-period traffic conditions, and a likely increase in traffic infiltration in neighbourhoods. Travel times for vehicles travelling the full length of St. Clair Avenue would increase significantly. An analysis of volume to capacity ratios for major signalized intersections is included in Table 1. It is generally considered that a volume to capacity ratio of greater than 0.9 will result in congestion, delays, and displacement of traffic. All of the major signalized intersections are projected to operate at significantly constrained levels of service;
- (xi) the single traffic lane in each direction would provide no flexibility in the event of accidents, stopped vehicles, road work, or a long queue of left-turning vehicles; vehicles would have to enter onto the streetcar right-of-way to go around any such obstruction;
- (xii) right-turning motorists waiting for appropriate gaps in pedestrian traffic would effectively stop the single lane approach to a signal;
- (xiii) loading opportunity would be reduced because stopping would no longer be feasible at the curb within the vicinity of a signalized intersection;
- (xiv) the permanent parking bays would make street cleaning and snow removal more difficult;
- (xv) accessibility would be reduced as left turns to/from St. Clair Avenue would be prohibited at all locations except at signalized intersections, similar to what is found on Spadina Avenue; non-signalized roadways and driveways would be restricted to right turns. This section of St. Clair Avenue contains approximately 130 non-signalized intersections and driveways. Some examples of turning traffic volumes that would be displaced are: 93 southbound vehicles from Westmount Avenue in the a.m. peak hour; 55 eastbound left-turns at Alberta Avenue during the p.m. peak hour; and 217 eastbound left-turns to Forest Hill Road during the a.m. peak hour;

- (xvi) pedestrians would have to wait 10-15 seconds longer to cross St. Clair Avenue because more green time would have to be provided in the east/west direction; and
- (xvii) St. Clair Avenue would no longer be available as a practical route for commercial goods movement through the area.

Concept 2:

Concept 2 is similar to Concept 1 in that the reserved streetcar right-of-way would be created by physically delineating the right-of-way from the other lanes of traffic by a measure such as raising-up the right-of-way, similar to Queens Quay West. However, in Concept 2, there would be no permanent parking bays established at the sides of the roadway and, therefore, two lanes of traffic could be provided beside the streetcar right-of-way, likely during peak-periods only (see Exhibit 4, attached). Left turns would be permitted from the regular traffic lane to the right of the streetcar right-of-way during the east-west traffic signal. Therefore, streetcars could not travel through intersections during the regular east-west traffic signal, because of the possible conflict between streetcars and left-turning vehicles; streetcars would be permitted to proceed only during a separate short transit-only signal phase;

Parking would be permitted in the curb lane during off-peak hours, thus leaving one regular lane of traffic during off-peak periods;

This concept would offer these benefits to transit:

- (1) the reserved right-of-way would improve service reliability and quality, resulting in fewer short turns and less vehicle bunching and crowding;
- (2) streetcar operations would be protected from future increases in traffic congestion; and
- (3) there would be no significant reduction in travel time for streetcars because, although streetcars would travel faster on the reserved right-of-way, they would lose most of these travel time savings back when waiting for the special transit-only signal phase at all signalized intersections.

The effects of this concept on automobile and truck traffic and other road users would be:

- (4) by allowing left turns to be made from one of the regular traffic lanes at signalized intersections, there would effectively be only one lane of through traffic, thus reducing traffic capacity to less than half of what is now available;
- (5) by allowing parking in the curb lanes during off-peak periods, there would effectively be only one lane available for through traffic, thus again reducing the road capacity and increasing travel time from what is currently available as illustrated in Table 2;

- (6) these capacity reductions would cause significant delays and congestion at intersections and result in an expansion of peak-period traffic conditions;
- (7) there would be less parking available on the street during peak periods because, at present, parking is permitted on the north side of St. Clair Avenue at all times;
- (8) pedestrians would have to wait 10-15 seconds longer to cross St. Clair Avenue because more green time would be provided to east-west traffic.

Concept 3:

Concept 3 would create a reserved streetcar right-of-way by physically delineating the right-of-way from the other lanes of traffic through the installation of landscaped medians on both sides of the streetcar right-of-way, similar in concept to the treed medians found on Spadina Avenue and Spadina Road (see Exhibits 5 and 6, attached). Wider, more-attractive passenger platforms would be provided at the far side of signalized intersections. As with Concept 1, there would be one wide traffic lane to the right of the landscaped medians, designated left-turn lanes, with protected turning phases, at signalized intersections, and 24-hour per day parking provided within permanent parking bays at the sides of the roads, away from the signalized intersections.

Streetcars would be able to travel through signalized intersections at the same time as other east-west traffic, because left-turning traffic could proceed only during the protected turning phases.

All roadways and driveways, except for those which are signalized, would be limited to right turns only.

In order to provide enough road width for the installation of landscaped medians, the road would have to be widened by removing 1.4 metres of sidewalk on each side of St. Clair Avenue. This is possible because the sidewalks on St. Clair Avenue are quite wide over the entire length of this road. In effect, part of the sidewalk would be moved into the centre of the road to create new landscaping space within the street.

This option provides the greatest benefits to transit. In addition to the features identified under Concept 1, this plan would result in:

- (1) complete isolation of the streetcar operations from all other traffic because the medians would prevent other traffic, except for emergency vehicles, from coming onto the streetcar right-of-way.

Similarly, the effects of this concept on automobile and truck traffic and other road users are much the same as delineated under Concept 1 above, with the following in addition:

- (2) pedestrians may find it easier to cross St. Clair Avenue because the medians in the centre of the street would provide refuge for pedestrians who choose to cross the street away from a signalized intersection.

Possible Extensions of the 512 ST. CLAIR Streetcar Route to the West:

Councillor Nunziata has asked the TTC to evaluate the feasibility of extending the 512 ST. CLAIR route west, from its current terminal at Gunns Road, to Runnymede Road. This would bring this high-frequency streetcar service within more-convenient access of the rapidly-developing residential and commercial areas along St. Clair Avenue, west of Keele Street. As noted earlier in this report, the City of Toronto plans to reconstruct St. Clair Avenue, between Keele Street and Runnymede Road, in 2004, as part of their state-of-good-repair program for arterial roads. This reconstruction would allow modest savings to be enjoyed if a decision were made to construct streetcar tracks over this section of roadway at the same time.

The 512 ST. CLAIR streetcar route has experienced increased ridership from the new residential developments adjacent to St. Clair Avenue, west of Keele Street. However, additional new customers would be attracted to the route if it were extended further west from its current terminal.

No detailed engineering work has been undertaken on any possible westerly extension of the 512 ST. CLAIR streetcar route. Conceptually, there are three options for a possible westerly extension of the route:

- (1) extend westerly along St. Clair Avenue to Runnymede Road, and then south to a new loop which would be constructed on the east side of Runnymede Road, just south of St. Clair Avenue;
- (2) extend westerly along St. Clair Avenue and then south on Runnymede Road to the existing bus loop at Runnymede Road and Dundas Street (see Exhibit 1, attached); and
- (3) extend westerly along St. Clair Avenue to Jane Street to a loop yet to be identified in this area (see Exhibit 1, attached). Such an extension would bring this high-frequency service within convenient reach of additional new developments being proposed adjacent to St. Clair Avenue, west of Runnymede Road, and would connect this streetcar route with the 35 JANE bus route, a high-frequency heavily-patronized north-south transit service operating between Bloor Street and Steeles Avenue, and identified as a transit priority corridor in the City's new Official Plan.

Any of these possible route extensions would require a complete feasibility and engineering study, and this could be incorporated within the scope of an environmental assessment pertaining to a reserved streetcar right-of-way on St. Clair Avenue.

Costs:

Only very preliminary cost estimates have been prepared to this point in the study; any decision to proceed with further study would be accompanied by a more rigorous and thorough development of cost estimates.

The preliminary estimate of the cost of constructing a raised streetcar right-of-way, between Yonge Street and Caledonia Road, over and above the already-budgeted cost of reconstructing the streetcar tracks on this route, is \$7 million.

The extension of the 512 ST. CLAIR streetcar route westerly from its current terminal to either Runnymede Road/Dundas Street or to Jane Street would be roughly equivalent to the new streetcar track which was constructed on Queens Quay West, between Spadina Avenue and Bathurst Street, in a reserved right-of-way. That track project cost \$13 million.

The TTC's preliminary 2004 Capital Program includes the rehabilitation of the streetcar track allowance on St. Clair Avenue West from Yonge Street to Gunns Road. None of the incremental costs associated with raising the track bed or extending the line as described in this report are currently included in the TTC's 5-Year or 10-Year Capital Programs.

The City of Toronto is preparing cost estimates for the civil works which would be required under the conceptual scenarios for St. Clair Avenue. Although these cost estimates are still being developed, assessment to date indicates an order of magnitude of \$20 million for these works ancillary to the track allowance. It is anticipated that the pavement, sidewalk and median work required in connection with the raised streetcar right-of-way will be extensive. It should be noted that the existing surface facilities on St. Clair Avenue West are in good condition with the exception of some areas of pavement and sidewalk between Keele Street and Runnymede Road which are scheduled for rehabilitation in the Transportation Services preliminary 2004 Capital Works Programme. Apart from this area, the bulk of the sidewalks have been reconstructed over the last ten years and there is no major work programmed over the entire segment. Under the circumstances, funds to cover the cost of the replacement of surface facilities required in connection with raising the track bed would have to be provided over and above the Transportation Division's annual state of good repair authorisation. Finally, there is major hydro infrastructure in the sidewalk areas along St. Clair Avenue. Cost to relocate or modify this plant will depend on the nature of work to be considered, but again, could be significant.

The cost estimates provided here, while very preliminary in nature, illustrate that the cost of converting the 512 ST. CLAIR streetcar route into a reserved right-of-way operation which would allow a streetcar rapid transit service to be provided on St. Clair Avenue, and the cost of extending this route westerly to Jane Street, which would allow for much-improved network connectivity between this high-frequency east-west route and the high-frequency 35 JANE bus route, is small compared to the costs of subway or other types of rapid transit extensions.

If a reserved streetcar right-of-way, as envisioned under Concepts 1 or 3, were to be implemented, then the added efficiency achieved through higher travel speeds would allow the same level of service to be provided on the route using two fewer streetcars in the morning and afternoon peak periods and one less streetcar in the mid-day operating period. This would reduce annual operating costs of the line by approximately \$600,000, based on fully-allocated costs, and the two streetcars saved would equate to a capital cost saving of \$6 million. Alternatively, these savings could be used to provide the resources to operate an extension of the service to Jane Street at no net additional cost.

Next Step in the Process:

There is agreement among Councillors Disero, Mihevc, and Nunziata and among staff of the TTC, City Transportation Services, and City Planning, that this concept should be investigated and developed more thoroughly, and that the appropriate vehicle for such investigation would be an Environmental Assessment of the proposed streetcar right-of-way. This environmental assessment would be undertaken jointly by City Transportation and Planning, and TTC staff, with the assistance of an outside consultant. Funding for such an undertaking is included in the TTC's 2003 Operating Budget.

Conclusions:

Generally speaking in the City of Toronto, new roads are not being constructed and existing roads are not being widened, so there is a fixed amount of road space available for a multitude of uses. Any proposal for an exclusive transit right-of-way on St. Clair Avenue will involve taking a significant portion of this existing road space away from other road users, and reallocating it to transit. This means that, while transit service will become faster, and more reliable, attractive, efficient, and productive, travel by other private and commercial vehicles in the same corridor will become slower, more congested, and less attractive.

In fact, while there are a number of examples where projects have resulted in a considerable capacity reduction for vehicles like Davenport Road, Gerrard Street, etc., none of these have carried the same levels of demand, nor were the impacts in terms of reduced capacity, accessibility and flexibility forecast to be so severe. There is also a strong likelihood that due to the magnitude of traffic displacement projected, alternate routing using local streets would be an issue. These various parameters must be carefully weighed.

The Environmental Assessment for a reserved streetcar right-of-way on St. Clair Avenue should proceed because the concept has merit in terms of a transit improvement that is consistent with the policy direction of the Official Plan. The concept warrants more thorough and complete investigation. An Environmental Assessment is the most systematic means of doing the required work and requires an extensive public consultation component in developing a detailed design for a dedicated streetcar right-of-way on St. Clair Avenue.

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Attachments:

- (1) Table 1 - v/c ratios for Concept 1
- (2) Table 2 - v/c ratios for Concept 2
- (3) Exhibit 1 - St. Clair Streetcar Services; possible extensions
- (4) Exhibit 2 - Concept 1
- (5) Exhibit 3 – Concept 1
- (6) Exhibit 4 – Concept 2
- (7) Exhibit 5 – Concept 3
- (8) Exhibit 6 – Concept 3

Table 1
Traffic Impacts at Major Intersections with Concept 1

Intersection	Traffic* Volume (vehicles/hour)	Existing Capacity	Existing Volume/Capacity	Projected Capacity (vehicles/hour)	Projected Volume/Capacity
AM Peak Hour Eastbound					
Keele	700	1150	0.66	750	0.97
Old Weston	900	1150	0.84	850	1.03
Lansdowne	1150	2100	0.54	1150	0.97
Dufferin	750	1850	0.42	850	0.86
Christie	1300	2000	0.65	1050	1.19
Vaughan	850	1000	0.84	750	1.14
Bathurst	900	1400	0.65	750	1.18
Spadina	1150	1100	1.03	800	1.43
Avenue	1120	1050	1.08	600	1.88
Yonge	750	1450	0.52	500	1.42
PM Peak Hour Westbound					
Yonge	1100	1500	0.73	800	1.39
Avenue	1000	1100	0.87	650	1.53
Spadina	900	1250	0.73	700	1.36
Bathurst	950	1100	0.84	750	1.28
Vaughan	1150	1350	0.86	800	1.45
Christie	1000	1350	0.83	1250	0.79
Dufferin	850	1250	0.68	850	0.99
Lansdowne	1250	1900	0.72	1350	0.94
Old Weston	900	700	1.26	700	1.23
Keele	950	1250	0.76	700	1.34

* note : does not account for growth in traffic volumes, displaced traffic, or redistribution of turns.

Table 2
Traffic Impacts at Major Intersections with Concept 2

Intersection	Traffic* Volume (vehicles/hour)	Existing Capacity	Existing Volume/Capacity	Projected Capacity (vehicles/hour)	Projected Volume/Capacity
AM Peak Hour Eastbound					
Keele	700	1150	0.66	1000	0.75
Old Weston	900	1150	0.84	1100	0.87
Lansdowne	1150	2100	0.54	1950	0.58
Dufferin	750	1850	0.42	1050	0.74
Christie	1300	2000	0.65	1450	0.89
Vaughan	850	1000	0.84	1050	0.83
Bathurst	900	1400	0.65	900	1.13
Spadina	1150	1100	1.03	1200	1.48
Avenue	1120	1050	1.08	900	1.24
Yonge	750	1450	0.52	500	1.08
PM Peak Hour Westbound					
Yonge	1100	1500	0.73	1200	0.94
Avenue	1000	1100	0.87	1000	0.96
Spadina	900	1250	0.73	700	1.53
Bathurst	950	1100	0.84	1150	0.82
Vaughan	1150	1350	0.86	1050	1.13
Christie	1000	1350	0.83	1200	0.94
Dufferin	850	1250	0.68	1200	0.73
Lansdowne	1250	1900	0.72	1750	0.79
Old Weston	900	700	1.26	650	1.42
Keele	950	1250	0.76	1250	0.76

* note: does not account for growth in traffic volumes, displaced traffic, or redistribution of turns.

Exhibit 1 The 512 St Clair Streetcar Route



Exhibit 2

St. Clair Streetcar Dedicated Right-of-Way

Concept 1

No Road Widening*

*Widening required on some sections west of Laughton
Not to scale

- Features**
- Raised streetcar right-of-way
 - 2.4 m wide farside streetcar platforms
 - Spadina type signal operation
 - Full movements at signalised intersections
 - 24 hour parking (//////)

Illustrative Cross-Section

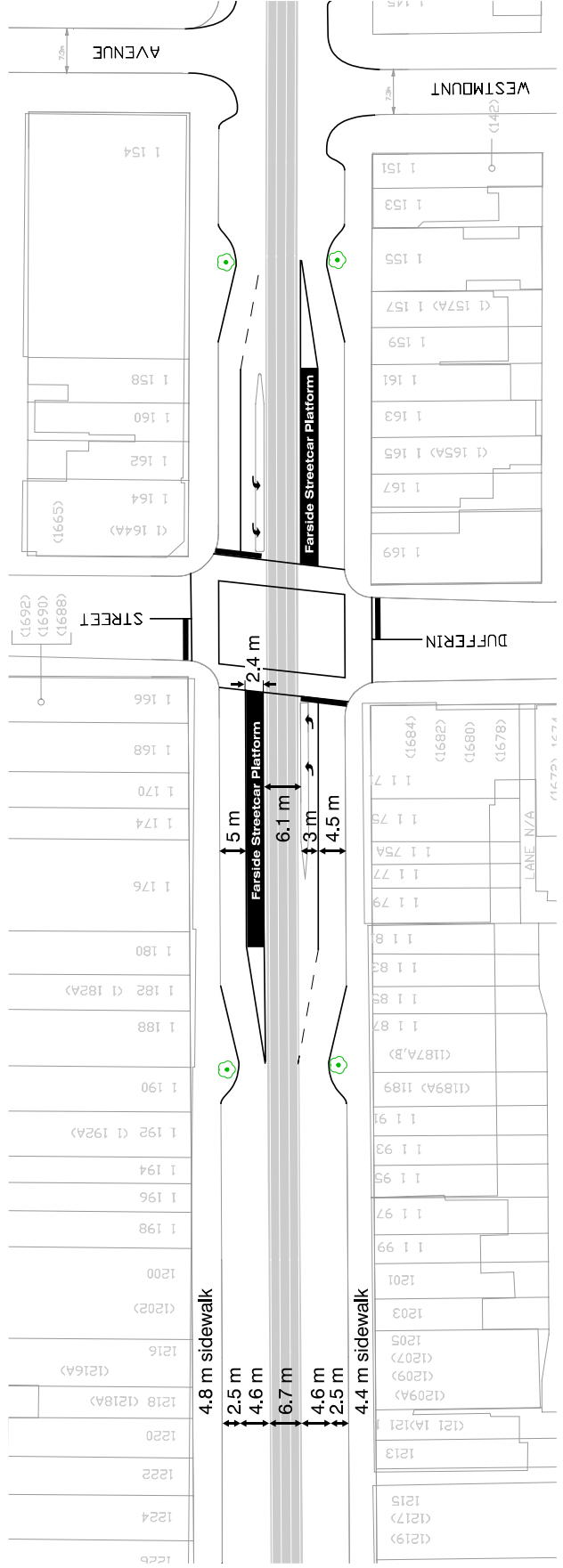
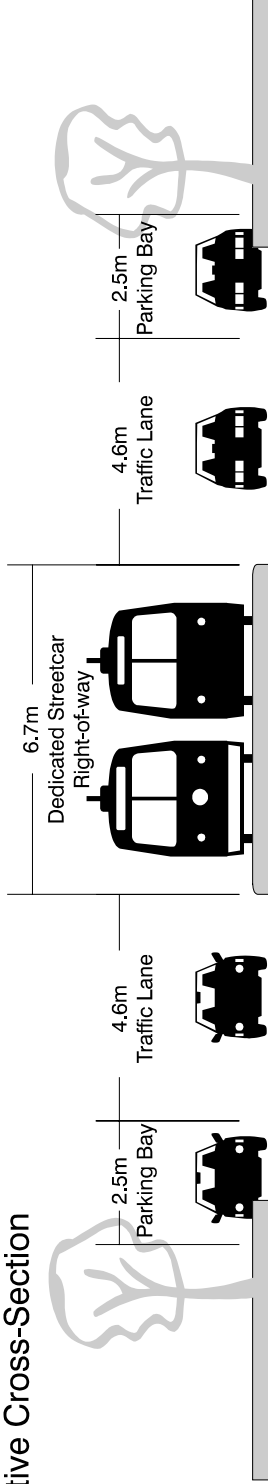


Exhibit 3

Example of Raised Streetcar Right-of-Way (Queen's Quay West)



Exhibit 4

St. Clair Streetcar Dedicated Right-of-Way

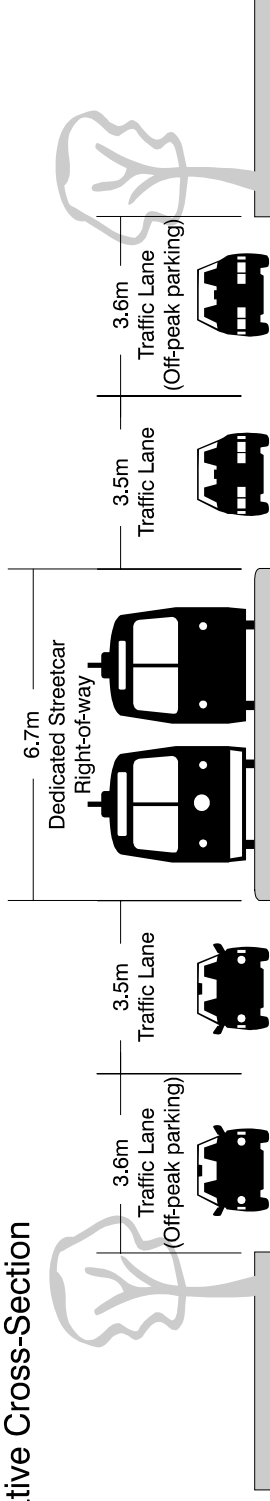
Concept 2

No Road Widening*

*Widening required on some sections west of Laughton
Not to scale

TTC SP 16-09-2002 DRG. No. 11658B

Illustrative Cross-Section



- ### Features
- Raised streetcar right-of-way
 - 1.4 m wide farside streetcar platforms
 - Queen's Quay type signal operation
 - Additional turning restrictions at signalised intersections
 - Rush hour parking prohibitions (////)

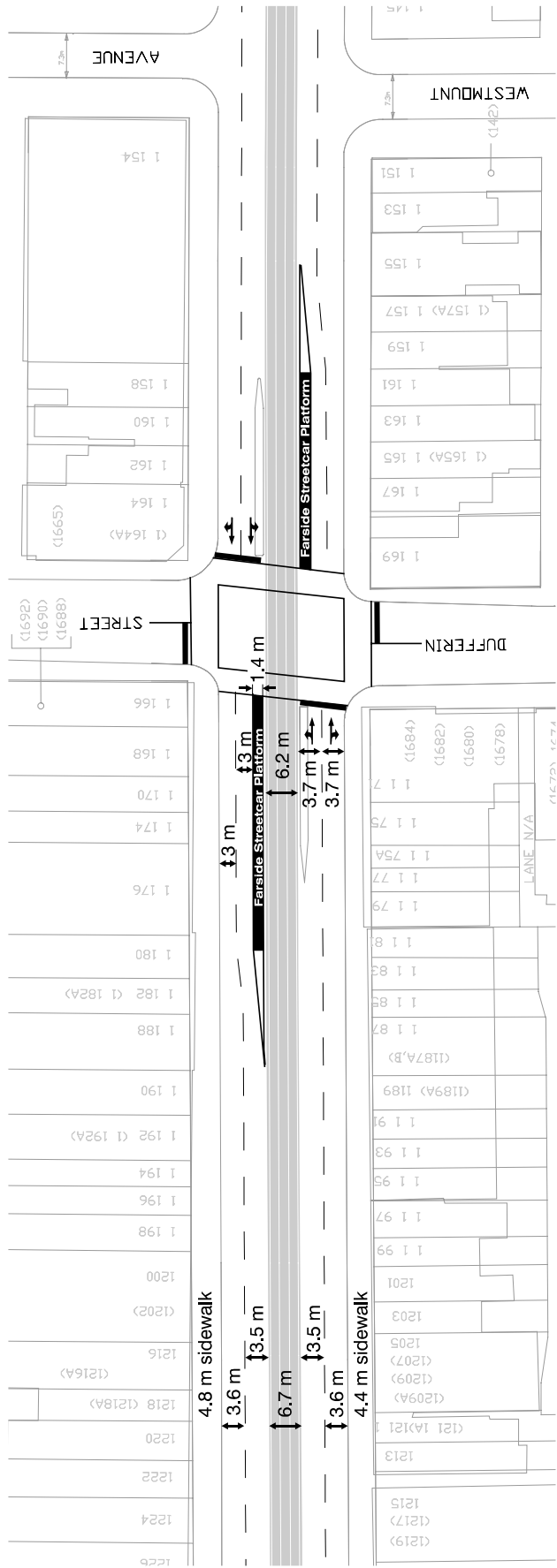


Exhibit 5

St. Clair Streetcar Dedicated Right-of-Way

Concept 3

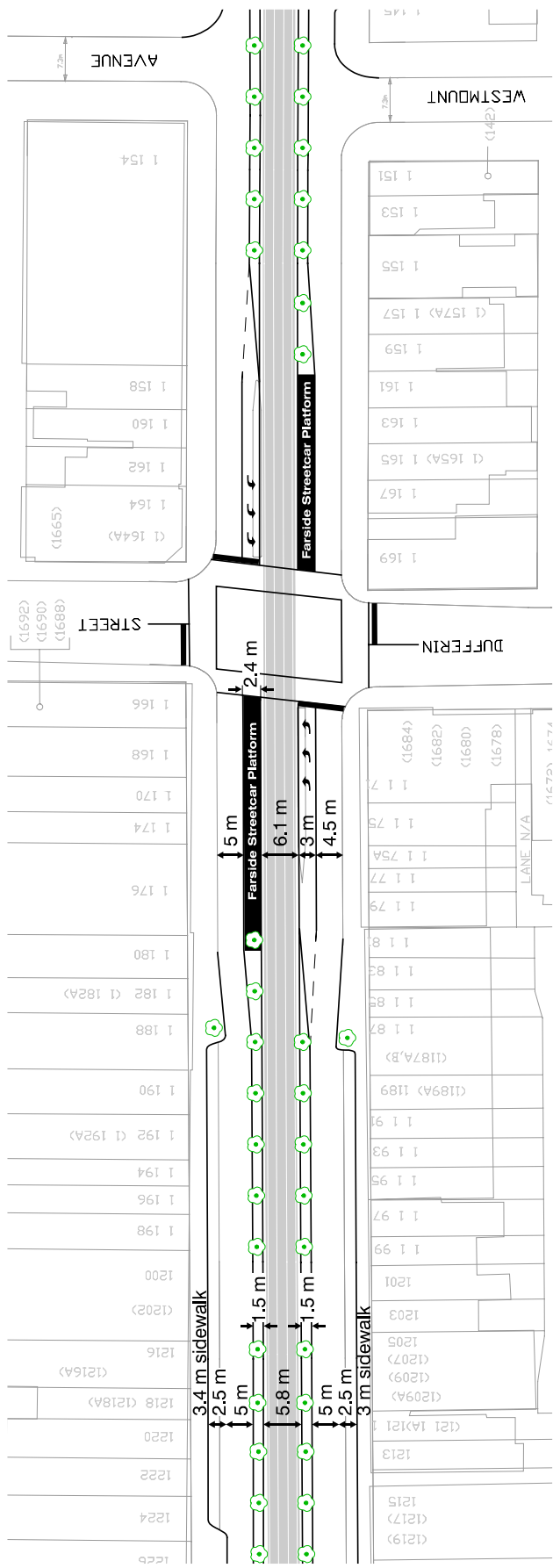
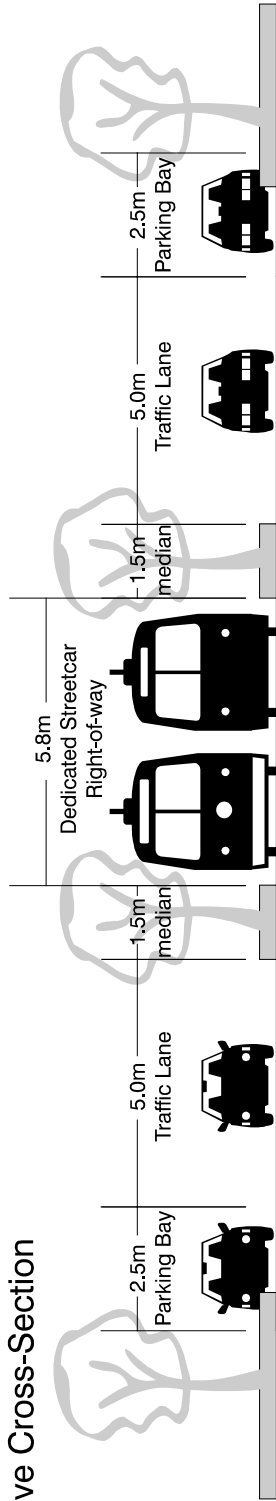
1.4 metre Midblock Road Widening*

*Additional widening required on some sections west of Laughton
Not to scale

Features

- Streetcar right-of-way separated by 1.5 m wide treed medians
- 2.4m wide farside streetcar platform
 - Spadina type signal operation
- Full movements at signalised intersections
- 1.4m narrower sidewalks at locations where 24 hour parking (////) is allowed

Illustrative Cross-Section



TTC SPT 16-09-2002 DRG. No. 11658A

Exhibit 6
**Example of Streetcar Right-of-Way Protected by Landscape Median
(Spadina Avenue)**

