



Long-term Urban Road Restrictions During Special Events

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ABSTRACT

Numerous special events and festivals (i.e. Celebrate Yonge, BuskerFest, Summer in the Village, etc.) occur annually throughout the City of Toronto, notably within the downtown core, to provide enhanced and extended pedestrian realms (which is a desirable urban condition since pedestrian needs and movements are significantly higher than vehicular movements in the downtown urban core area). These events create a desirable attraction for additional walking and cycling traffic (active modes of transportation); however, there is the need for partial or full road closures along arterial road networks to accommodate these events. This results in displaced vehicular traffic as ambient traffic patterns are required to detour along alternate adjacent routes.

In order to facilitate the implementation of these public realm enhancement projects, a transportation program was developed to plan, implement, and monitor the impacts of these projects. This was especially important given the emphasis on multi-modal and sustainable transportation planning wherein transportation planning must address all vehicular, cycling and pedestrian travel modes.

To quantify the magnitude of the impacts in traffic patterns during these special events, turning movement traffic counts (TMCs) were conducted during Friday AM and PM peak periods for pre-event and during-event conditions along the road network within the study area. TMCs included separate counts for vehicles, cyclists, and crossing pedestrians.

Screenline and link analysis was undertaken to review the vehicular, bicycle, and pedestrian volumes to determine if there were notable changes in the traffic patterns along the closed road and in the study area as a result of the event and the resultant lane reductions or full road closure.

Additionally, a Traffic Management Plan (TMP) was prepared detailing the temporary detour route, and pavement marking and signage plan. Development of the TMP took into consideration the impacts of how loading/delivery service, waste management, and emergency vehicles would be accommodated, along with providing for thematic delineation and protective barriers (such as planters, and Muskoka granite armour stone, respectively) between the enhanced pedestrian zones and the vehicular travel lanes.

Post-event documentation was prepared to summarize the overall transportation program, identify impacts and lessons learned, and to be used as a tool for planning future long-term seasonal and permanent (full or partial) road closure events. A key element of the documentation was the framework to re-allocate future right-of-way space from an auto-oriented configuration to better reflect the pedestrian usage of the area in a new balanced mix of travel mode space.

INTRODUCTION

Numerous special events and festivals (i.e. Celebrate Yonge, BuskerFest, Summer in the Village, etc.) occur annually throughout the City of Toronto, notably within the downtown core, to provide enhanced and extended pedestrian realms (which is a desirable urban condition since pedestrian needs and movements are significantly higher than vehicular movements in the downtown urban core area).

Recent events include:

1. *Summer in the Village*: organized by the Church Wellesley Village Business Improvement Area, consisting of a network of ‘parklets’ within the existing on-street parking areas along the northbound curbside lane on the east side of Church Street. The parklets were flush with the sidewalk grade to create an enhanced walkable, accessible community space.

The event took place between Friday, July 19, 2013 to Sunday, October 6, 2013 along Church Street between Wood Street and Gloucester Street. Segments of the curbside lane on the east side of Church Street between Wood Street and Gloucester Street were subject to 24-hour lane closure. The lane closure provided for approximately 2.5 metres of additional pedestrian space within the roadway on Church Street. The pedestrian space was separated from vehicular traffic by the placement of decorative planters and other protective barricades;

2. *Celebrate Yonge*: organized by the Downtown Yonge Business Improvement Area, consisted of 11 themed event areas including patios, lounges, art installations and street furniture that expand the pedestrian space into the traditionally vehicular space of the street area.

The event took place between Friday, August 17 and Sunday, September 16, 2012 and comprised a lane reduction of four lanes to two lanes on the portion of Yonge Street between Queen Street and Gerrard Street in the downtown area of the City of Toronto. The lane closures allowed for approximately 4.0 to 4.5 metres of additional pedestrian space within the roadway on Yonge Street. This pedestrian space was separated from vehicular traffic by the placement of decorative planters and other protective barricades; and

3. *BuskerFest*: organized by the Downtown Yonge Business Improvement Area, consisted of 10 themed event areas including stages and street vendors that expand the pedestrian space into the traditionally vehicular space of the street area.

The event took place between Thursday, August 22 and Sunday, August 25, 2013 and included full closures on the portion of Yonge Street between Queen Street and College Street/Carlton Street in downtown Toronto.

While these events are typically planned to promote and enhance the community well-being or economic vitality of an area, such as in the downtown core or in a local urban community area, they also reflect transportation planning initiatives to promote various travel modes.

These events create a desirable attraction for additional walking and cycling traffic (active modes of transportation); however, there is the need for partial or full road closures along arterial road networks to accommodate these events. This results in displaced vehicular traffic as ambient traffic patterns are required to detour along alternate adjacent routes.

In order to facilitate the implementation of these public realm enhancement projects, a transportation program was developed to plan, implement, and monitor the impacts of these projects. This was especially important given the emphasis on multi-modal and sustainable transportation planning wherein transportation planning must address all vehicular, cycling and pedestrian travel modes.

A Traffic Management Plan (TMP) was prepared detailing the temporary detour route, and pavement marking and signage plan. Development of the TMP took into consideration the impacts of how loading/delivery service, waste management, and emergency vehicles would be accommodated, along with providing for thematic delineation and protective barriers (such as planters, and Muskoka granite armour stone, respectively) between the enhanced pedestrian zones and the vehicular travel lanes.

To quantify the magnitude of the impacts in traffic patterns during these special events, turning movement traffic counts (TMCs) were conducted during Friday AM and PM peak periods for pre-event and during-event conditions along the road network within the study area. TMCs included separate counts for vehicles, cyclists, and crossing pedestrians.

Screenline and link analysis was undertaken to review the vehicular, bicycle, and pedestrian volumes to determine if there were notable changes in the traffic patterns along the closed road and in the study area as a result of the event and the resultant lane reductions or full road closure.

CASE STUDY: CELEBRATE YONGE

This paper is based on the Celebrate Yonge event as a case study, and summarizes the overall transportation program, identifies impacts and lessons learned, to be used as a tool for planning future long-term seasonal and permanent (full or partial) road closure events. A key element of the documentation was the framework to re-allocate future right-of-way space from an auto-oriented configuration to better reflect the pedestrian usage of the area in a new balanced mix of travel mode space.

As noted, the “Celebrate Yonge” event was organized by the local Downtown Yonge Business Improvement Area, consisting of 11 themed event areas including patios, lounges, art installations and street furniture that expand the pedestrian space into the traditionally vehicular space of the street area.

The event included the reduction of the existing four lanes down to two lanes on the portion of Yonge Street between Queen Street and Gerrard Street. Generally, north of Dundas Street the two lanes on the west side of the street were closed; south of Dundas Street the two east lanes

were closed. The lane closures allowed for approximately 4.0 to 4.5 metres of additional pedestrian space within the roadway on Yonge Street. This pedestrian space was separated from vehicular traffic by the placement of decorative planters and other protective barricades (such as planters, and immovable Muskoka granite armour stone, respectively).

Exhibits 1-6 illustrate the themed areas and the sample locations of sidewalk/patio expansions.

The event road closures were as follows:

- Event Set-up: Monday August 13, 2012 to Friday August 17, 2012;
- Event Duration: Friday August 17, 2012 to Sunday September 16, 2012; and
- Event Take-down: Sunday September 16, 2012 to Thursday September 20, 2012.

Due to the lane closures on Yonge Street some traffic was expected to be diverted to adjacent alternate north-south travel routes including University Avenue, Bay Street, Church Street., and Jarvis Street. Traffic counts at several intersections in the area, including Yonge Street and parallel routes, were conducted to determine changes in traffic volumes.

AREA CONTEXT

The study area was disaggregated into two areas; the primary study area consisting of the “Celebrate Yonge” event and the broader area covered in the traffic monitoring program.

The primary “Celebrate Yonge” event area includes the portion of Yonge Street between Gerrard Street and Richmond Street that experienced lane closures during the event.

The broader study area was identified based on input from City of Toronto staff. This area included several Major Arterials roads, and was bounded by University Avenue to the west, Gerrard Street to the north, Jarvis Street to the east and Queen Street to the south. The specific corridors that were considered included University Avenue, Bay Street, Yonge Street, Victoria Street, Church Street., and Jarvis Street.

The following is a summary of the characteristics of the key north-south corridors in the area:

- University Avenue is a Major Arterial road under the jurisdiction of the City of Toronto. It has an eight-lane divided cross-section within the study area;
- Bay Street is a Major Arterial road under the jurisdiction of the City of Toronto. It has a four-lane cross-section within the study area, with reserved lanes for buses, taxis and cyclists (Monday to Friday, 7:00 a.m. to 7:00 p.m.);
- Yonge Street is a Major Arterial road under the jurisdiction of the City of Toronto. It has a four-lane cross-section within the study area, and features turn prohibitions at many locations. During the “Celebrate Yonge” event, Yonge Street was reduced to two lanes;

- ❑ Church Street a Minor Arterial road under the jurisdiction of the City of Toronto. It has a four-lane cross-section including on-street parking in each direction within the study area; and
- ❑ Jarvis Street a Major Arterial road under the jurisdiction of the City of Toronto. It has a four-lane cross-section with bicycle lanes within the study area.

There is ample TTC subway, streetcar and bus service within the “Celebrate Yonge” area.

The City of Toronto bikeway network, as documented in the Toronto Bike Plan, for the study area includes bicycle routes, sharrows, and lanes. The bikeway network serves both commuter and recreational cycling and is comprised of connected bicycle lanes, shared roadway routes and multi-use pathways in parklands and hydro and rail corridors. There are numerous Bixi bicycle stations in the area.

EVENT PLANNING

Traffic Management Plan

The Business Improvement Area (BIA) and their project team developed a comprehensive program related to the implementation and operations of the closure. The following key items were considered in the development of the Traffic Management Plan for the lane closures:

- ❑ Identification of changes to turn prohibitions at intersections in the area to facilitate diversion of traffic movements from Yonge Street to other parallel north-south corridors during the event;
- ❑ Temporary signage and pavement markings requirements were determined in consultation with the City of Toronto. The installation and layout of these traffic control devices were in accordance with the principles in Ontario Traffic Manual - Book 7, Temporary Conditions;
- ❑ Transit stop changes for Toronto Transit Commission (TTC);
- ❑ Alternative loading/delivery locations for businesses including lay-bys were provided on each block for loading/delivery;
- ❑ Waste management was provided including lay-bys on Yonge Street to allow for waste collection and loading/delivery for businesses. City and private waste collection areas were designated in each block to allow for city waste collection according to regularly schedules waste removal and maintenance;
- ❑ Emergency services requirements including access and mobility around existing fire hydrants, plus space for fire, police and ambulance to stop in case of emergency;
- ❑ Barrier delineation including planters and decorative Muskoka granite stone (used in lieu of jersey barriers). Spacing, height and weight requirements of the barriers took into account pedestrian/traffic sight lines, separation between traffic and pedestrians; and

- Review of pedestrian transitions between the curb lane and the existing sidewalk areas;

An extract of the comprehensive version of the Traffic Management Plan is attached as **Figure 1: Traffic Management Plan Extract**.

Consultation

During the development of the Traffic Management Plan numerous stakeholders, agencies and departments at the City of Toronto were consulted regarding the event. This included:

- (Local) Councillor, Ward 27 Toronto Centre-Rosedale;
- Other City Councillors (as requested by their individual offices);
- City of Toronto (various departments);
- Toronto Transit Commission;
- Toronto Police Services;
- Toronto Fire Services;
- Emergency Medical Services; and
- Downtown Yonge Business Improvement Area members and stakeholders.

PRE-EVENT TRAFFIC CONDITIONS

Traffic data (turning movements) for the broader study area was collected. The counts were conducted during the commuter peak periods on a typical weekday (Tuesday, Wednesday, or Thursday) in July prior to implementation of the Celebrate Yonge event. In addition, the counts were conducted in September during the event in order to facilitate a before and after implementation comparison of traffic conditions.

The above noted counts and schedule was coordinated with City staff to avoid any notable construction or maintenance projects on the adjacent street system during the undertaking of the counts. After the pre-event survey period, URS did a review to identify and document any conditions that could have potentially impacted the traffic counts (such as severe weather, film crews obstructing lanes, collisions, street construction/maintenance, other street events, etc.).

In addition to the turning movement counts conducted at area intersections, the Downtown Yonge BIA was able to provide pedestrian count information extracted from Springboard automatic counters installed on Yonge Street at Dundas Street, Shuter Street, and Queen Street.

The local weather was typical for the summer period. No traffic impacts were likely given that there was no precipitation and temperatures were in the range of 19.4°C to 36.7°C (the average low and high temperatures for July are 17.9°C to 26.4°C, respectively; source

<http://www.theweathernetwork.com>) over the three-day survey period.

In summary, given that the weather conditions were seasonably typical and that there were no identified notable road events, it is noted that the observed traffic volumes are expected to be consistent with typical traffic conditions for the area and within the traditional day-to-day variation of about 15%.

The observed traffic volumes prior to the implementation of the Celebrate Yonge event within the study area for the weekday a.m. and p.m. peak hours are summarized in **Figure 2**. It contains a link summary of the observed vehicular traffic volumes (summary of directional traffic) for each of the weekday a.m. and p.m. peak hours. This figure also shows a total screenline volume summing all directional traffic volumes in the study area. Screenline volumes were developed for screenlines immediately south Gerrard Street as well as immediately north of Queen Street.

In addition, given the high amount of bicycle activity in the area, the observed bicycle movements are summarized in **Figure 3**. It provides a link and screenline summary of the observed bicycle volumes for the weekday a.m. and p.m. peak hours.

Based on a review of the northerly Gerrard Street screenline, the northbound and southbound directional volumes are each $\approx 4,700$ vehicles/hour. The Queen Street screenline had slightly less observed traffic at about $\approx 4,500$ and $\approx 4,200$ vehicles/hour for the southbound and northbound flows, respectively. Peak flows are southbound during the a.m. peak hour, and northbound during the p.m. peak hour.

The primary travel corridor is University Avenue, although both University Avenue and Bay Street accommodate similar peak directional traffic volumes in the order of ≈ 700 -800 vehicles per hour per lane (vphpl). Church Street and Jarvis Street both accommodate peak directional volumes in the order of ≈ 350 -450 vphpl.

Yonge Street experiences relatively uniform total peak directional traffic volumes throughout the corridor of ≈ 400 vph (≈ 200 vphpl), although the link south of Gerrard Street in the southbound direction experiences ≈ 600 vph (≈ 300 vphpl).

These lower volumes on the Yonge Street, Church Street, and Jarvis Street corridors are much less than typical arterial threshold capacities (of say 800 vphpl), which is reflective of the friction and capacity reducing factors common to a dense business area, namely significant pedestrian volumes at intersections and short intersection spacing. In a case like this, the threshold capacity for an urban arterial road may be in the order of about 500-600 vphpl.

All corridor segments experience directional bicycle volumes in the order of ≈ 100 bicycles per hour (bph), however up to ≈ 200 bph were observed along both University Avenue and Bay Street (near Gerrard Street).

EVENT TRAFFIC CONDITIONS

Similar to the pre-event survey period, a review was undertaken after the event survey period commenced to identify and document any conditions on the adjacent street system that could have potentially impacted the traffic counts (such as severe weather, film crews obstructing

lanes, collisions, street construction/maintenance, other street events, etc.).

The local weather was typical for the summer period. No traffic impacts were likely given that there was no precipitation and temperatures were in the range from 11.3°C to 28.5°C (the average September low and high temperatures are 13.2°C to 20.7°C, respectively; source <http://www.theweathernetwork.com>) over the three-day survey period.

In summary, given that the weather conditions were seasonably typical and that there were no identified extraordinary road events, it is noted that the observed traffic volumes are expected to be consistent with typical traffic conditions for the area and within the traditional day-to-day variation of about 15%.

The observed traffic volumes during the Celebrate Yonge event within the study area for the weekday a.m. and p.m. peak hours are summarized in **Figure 4**. It contains a link and screenline summary of the observed vehicular traffic volumes for the weekday a.m. and p.m. peak hours.

The observed bicycle movements are summarized in **Figure 5**. It contains a link and screenline summary of the observed bicycle volumes for the weekday a.m. and p.m. peak hours.

A comparison of the traffic and bicycle volumes was undertaken to determine if there was a notable change in the traffic patterns along Yonge Street and in the study area as a result of the event and the resultant lane reductions. Small volume changes or changes less than 10% along corridors were deemed to be insignificant, and henceforth not noted. The following is a summary of key traffic findings related to a comparison of the pre-event and Celebrate Yonge event conditions:

- ❑ For the most part, all of the screenlines experienced a very minor change with only an overall minor increase in traffic volume. This minor increase is likely attributable to the survey being undertaken in September, whereas the pre-event surveys were completed in July during the summer when some commuters would be on vacation and the adjacent downtown post-secondary institutions would be in reduced class operations. The only exception is the Gerrard Street southbound screenline during the a.m. and p.m. peak hours, which experienced a somewhat greater increase of up to ≈8%. In summary, the screenlines are for the most part unchanged, meaning that travel and trip-making characteristics of commuters and visitors to the overall area were relatively unchanged. That is, it did not appear that the Celebrate Yonge event resulted in travelers avoiding or changing their trips (via carpooling, taking transit or travelling at other periods) to the area;
- ❑ A summary of the average of the a.m. and p.m. peak hour changes for the links is in the table below:

Table 3-2: Summary of Link Traffic Changes

LINK	DIRECTION	
	Southbound	Northbound
University Avenue (South of Gerrard Street)	+13%	-4%
Bay Street (south of Gerrard Street)	+5%	+2%
Yonge Street (South of Gerrard Street)	-30%	-20%
Church Street (South of Gerrard Street)	+7%	+11%
Jarvis Street (South of Gerrard Street)	+20%	-3%
Screenline (South of Gerrard Street)	+7%	-2%
University Avenue (North of Queen Street)	0%	-1%
Bay Street (North of Queen Street)	-18%	+31%
Yonge Street (North of Queen Street)	-16%	-3%
Victoria Street (North of Queen Street)	0%	+16%
Church Street (North of Queen Street)	+1%	+9%
Jarvis Street (North of Queen Street)	+21%	-14%
Screenline (North of Queen Street)	-1%	+3%

- Not surprisingly, the traffic volumes were observed to decrease along Yonge Street (due to the lane reductions). While some sections along Yonge Street experienced minimal changes in traffic volumes, most sections experienced a reduction of ≈ 50 -200 vph (per direction). The most notable reduction was the section of Gerrard Street in the southbound direction during the a.m. peak hour, which experienced a decrease of 200 vph.

(Although there was construction on the northwest corner of the Yonge Street/Gerrard Street intersection, this would not have had an impact on before/during event traffic volumes since the minor lane narrowing for the building construction existed before and during the Celebrate Yonge event.

Further, notwithstanding the temporary prohibition of northbound right turns during Celebrate Yonge, it does not appear that the installed northbound right turn prohibition impacted traffic notably. In fact, there was lots of right turn traffic still occurring (a violation of the sign prohibition). In all, the northbound right turn traffic went down by only four and six vehicles during the event for the a.m. and p.m. peaks hours, respectively.)

- The reduction in traffic volumes along Yonge Street were coupled with an increase in traffic volumes on some of the other north-south corridors.
 - In the southbound direction, the reduced Yonge Street traffic volumes appeared to

be accommodated on Jarvis Street. For example, most of the southbound Yonge Street links experienced a reduction of ≈ 100 -200 vph; this was coupled with a similar increase of ≈ 100 -200 vph along Jarvis Street. Other corridors didn't experience a notable change in traffic volumes (except southbound University Avenue at Gerrard Street which experienced a notable traffic increase of ≈ 400 vph, although this appears to be anomalous since the overall screenline at Gerrard Street experienced an increase of ≈ 400 vph, and also since none of the other seven University Avenue segment volumes experienced a notable increase).

In summary, some southbound Yonge Street traffic migrated to Jarvis Street. This is a very desirable location for traffic to migrate to since this street has the most apt capability to accommodate the burden of ≈ 100 -200 vph since it has a multi-lane configuration. Thus, the actual per-lane increase on Jarvis Street was only ≈ 50 -100 vphpl;

- In the northbound direction along Yonge Street, there was reduced traffic at Gerrard Street in the order of ≈ 50 -100 vph, however there was no change in traffic at Queen Street. Of peculiar note is that Jarvis Street (at Queen Street) also experienced a notable decrease in traffic volumes of ≈ 100 -150 vph, which makes it challenging to draw a conclusion on diverted traffic volumes and patterns. Given the proximity of Bay Street and the observed increase of ≈ 150 -200 vph at this location, it is opined that the diverted Yonge Street traffic migrated to Bay Street (and the diverted Jarvis Street traffic migrated to Church Street).

In summary, some northbound Yonge Street traffic migrated to Bay Street. Although the segment of Bay Street just north of Queen Street experienced a traffic increase of ≈ 150 -200 vph, the resultant traffic volumes are consistent with the peak directional volumes along Bay Street for other northbound segments (for example, the peak observed northbound volume was 841 vph during the event, and 830 pre-event).

FINDINGS AND CONCLUSIONS

While it is noted that there were some changes to traffic patterns in the downtown core associated with the Celebrate Yonge event (such as migration of southbound traffic to Jarvis Street, and northbound traffic to Bay Street), these traffic volumes were not overly substantial since Yonge Street is generally not a significant throughput corridor.

In fact, a review of the pre-event traffic volumes for Yonge Street reveals that it has the lowest corridor and per-lane volumes in comparison to all of the other observed Major Arterials (i.e. University Avenue, Bay Street, Church Street, and Jarvis Street) in the study area.

This is in part due to the fact that Yonge Street does not provide much access through the study area (i.e. many intersections feature turn prohibitions/restrictions limiting the ability to turn to and from Yonge Street, thereby discouraging local traffic from the corridor) and also since Yonge Street has limited north-south capacity at signalized intersections.

The reduction in the number of lanes from four down to two lanes would reduce the overall throughput capacity of each Yonge Street link. However, the true capacity limitations along Yonge Street (as with most roads) are due to signalized intersections. In the case of Yonge Street, the Yonge Street/Dundas Street intersection poses significant capacity impacts due to the needs for east-west vehicular traffic along Dundas Street, plus the signal timing needs for pedestrians and notably the all-movements pedestrian phase at the intersection limit the north-south capacity of the corridor.

(As an example, there did not appear to be any significant impacts at the Yonge Street / Shuter Street / Toronto Eaton Centre parking facility intersection, such as queues or excessive delays at that intersection that would have created an operational issue for inbound or outbound movements for the parking garage. However, this location experienced some indirect impacts arising from the Yonge Street / Dundas Street intersection, which caused some northbound queue accumulation through to the Shuter Street intersection.)

As such, given that there are reduced day-to-day traffic volumes along Yonge Street in the study area, it is not unexpected that the Celebrate Yonge lane closures were not that significant.

- ❑ The study area experienced a notable increase in bicycle volumes during the September surveys. This increase is not attributable to the ‘attractiveness’ of the Celebrate Yonge event, but instead it is likely a reflection of seasonal variation (pre-event surveys were completed in July during the summer when some commuters would be on vacation and since the adjacent downtown post-secondary institutions would be in reduced class operations). All corridor segments generally experience peak directional bicycle volumes in the order of ≈ 150 -200 bph.
- ❑ A significant number of pedestrians were observed in the area and there was an increase from the same period a year earlier. In summary, a total of 6,865,124 pedestrian movements were observed throughout the area, for an average daily total of 221,456 peds/day. This was an increase of +10% from the same period a year earlier. (It should be noted that this quantity is not specifically the number of people that were observed in the area since multiple counters could observe pedestrians as they moved through the study area); and
- ❑ Given the nature of the reduction of Yonge Street from four lanes down to two lanes throughout the study area, the impacts of other traffic capacity reducing factors must be cautiously considered. For example, significant community events/fairs, construction and road maintenance activities, and film activities would have a notable impact on the corridor if they were to be permitted and thereby occupy a further component of the Yonge Street space. For example, film trailers and equipment parked along any one side of Yonge Street would have significantly impacted the corridor. Likewise, temporary construction (curb-side works, hydrant venting etc.) would occupy a portion of the traveled portion of the road and have had a significant impact on corridor operations.

EXHIBIT 1: SITTING AREA



EXHIBIT 2: NATURAL SETTING WITH SITTING AREA



EXHIBIT 3: PLANTER DELINEATION ADJACENT TO SITTING AREA



EXHIBIT 4: LICENSED PATIO AREA

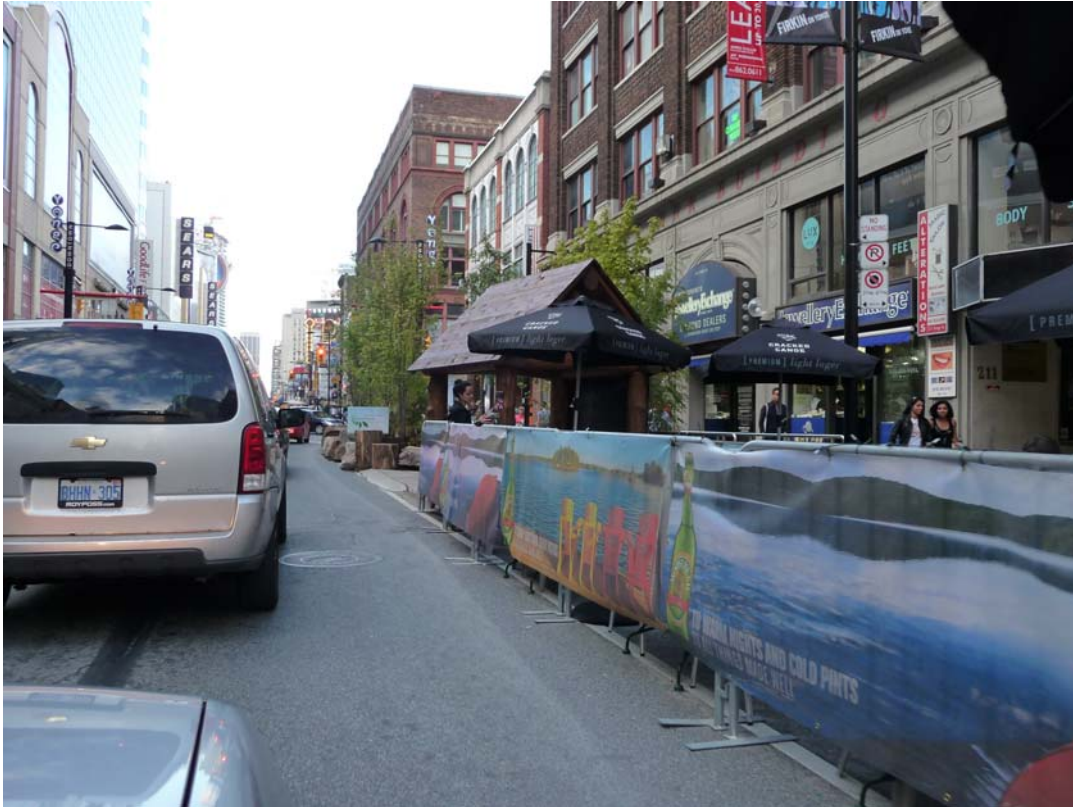


EXHIBIT 5: NATURAL SETTING WITH PAVERS



EXHIBIT 6: DIVERSION WITH PROTECTIVE ARMOUR STONE



FIGURE 1: TRAFFIC MANAGEMENT PLAN EXTRACT

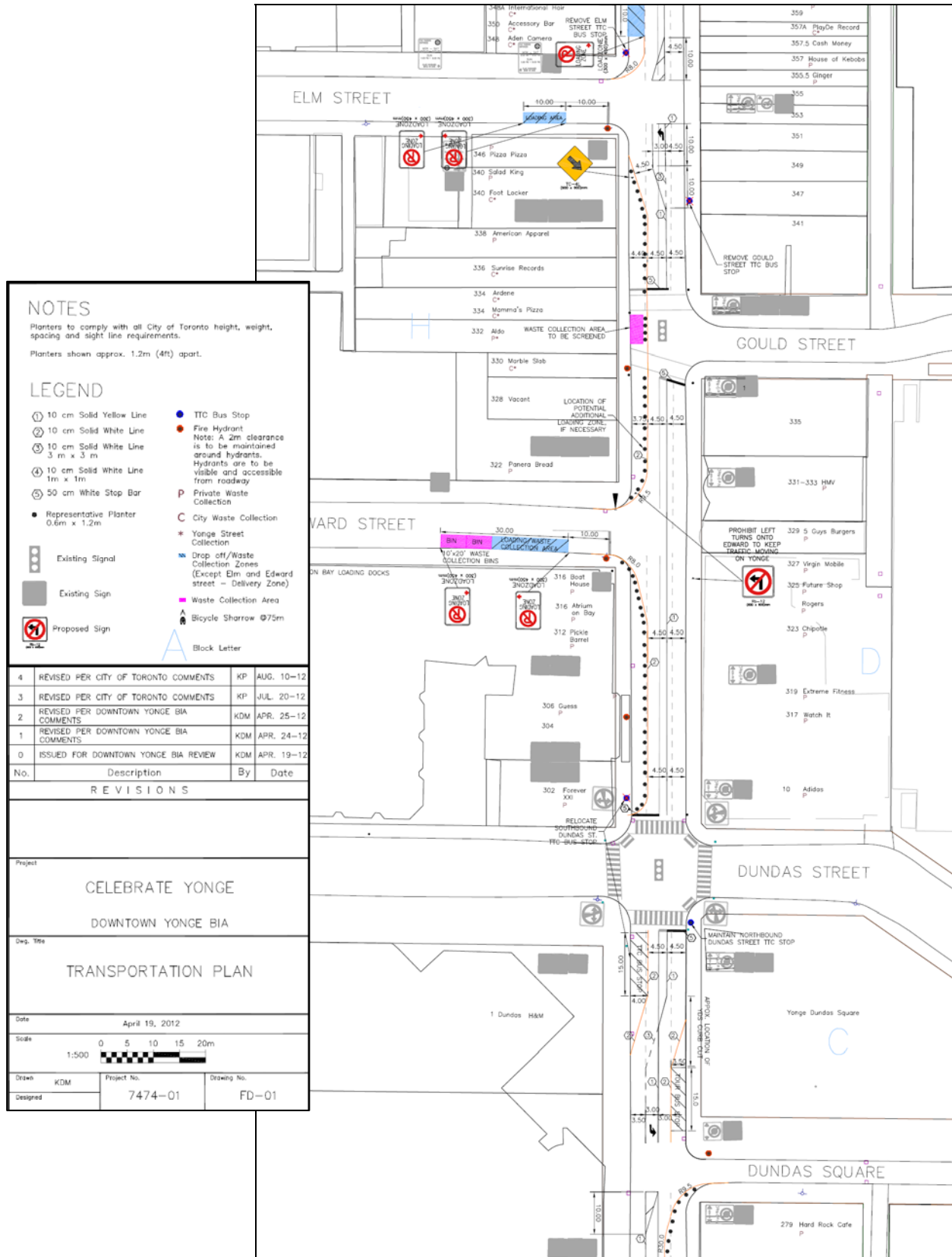


Figure 2: Traffic Volumes Link Summary (Pre-event; July)

Pre-event Link Traffic Volumes - AM/PM Peak Hours

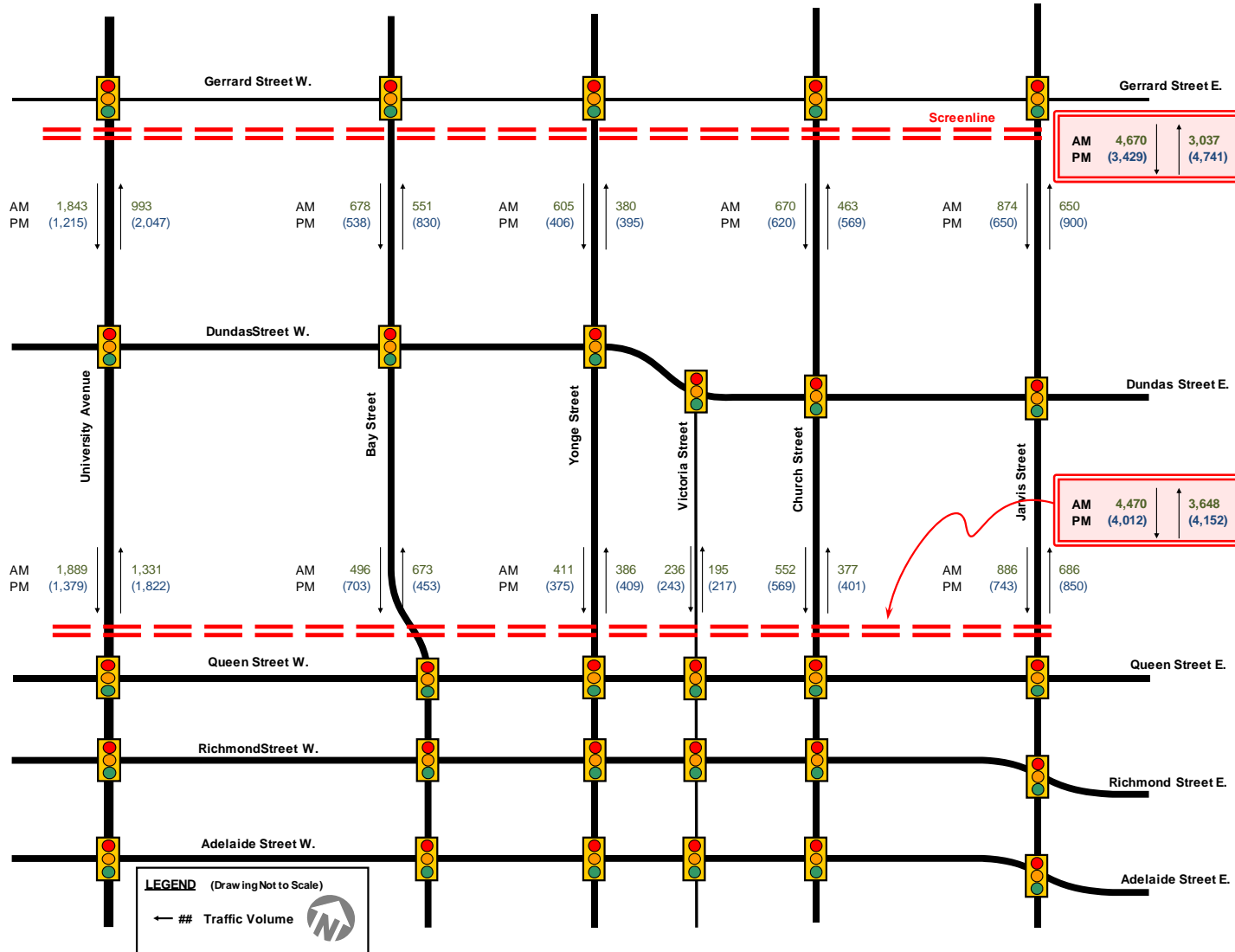


Figure 3: Bicycle Volumes Link Summary (Pre-event; July)

Pre-event Link Bicycle Volumes - AM/PM Peak Hours

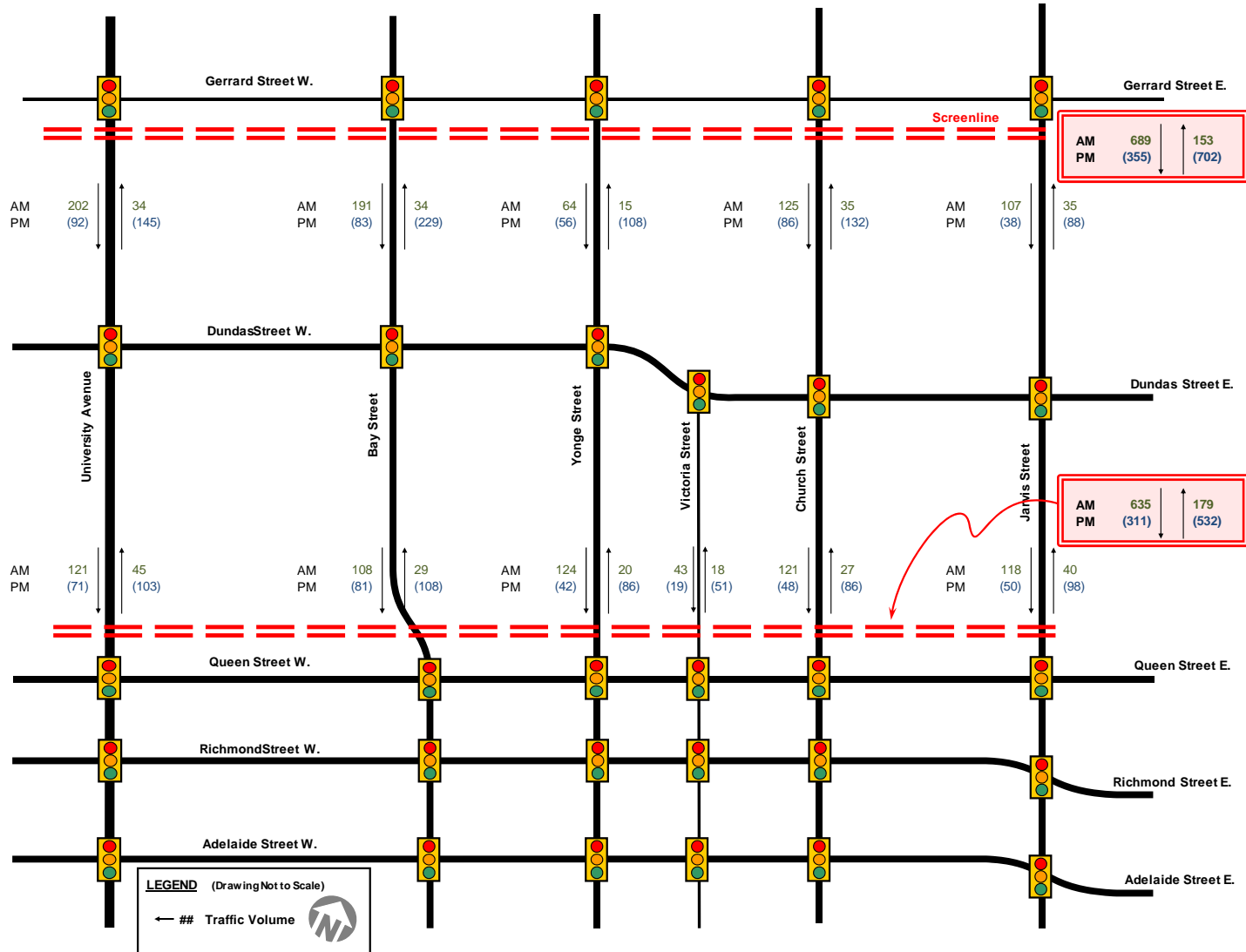


Figure 4: Traffic Volumes Link Summary (Event; September)

Event Link Traffic Volumes - AM/PM Peak Hours

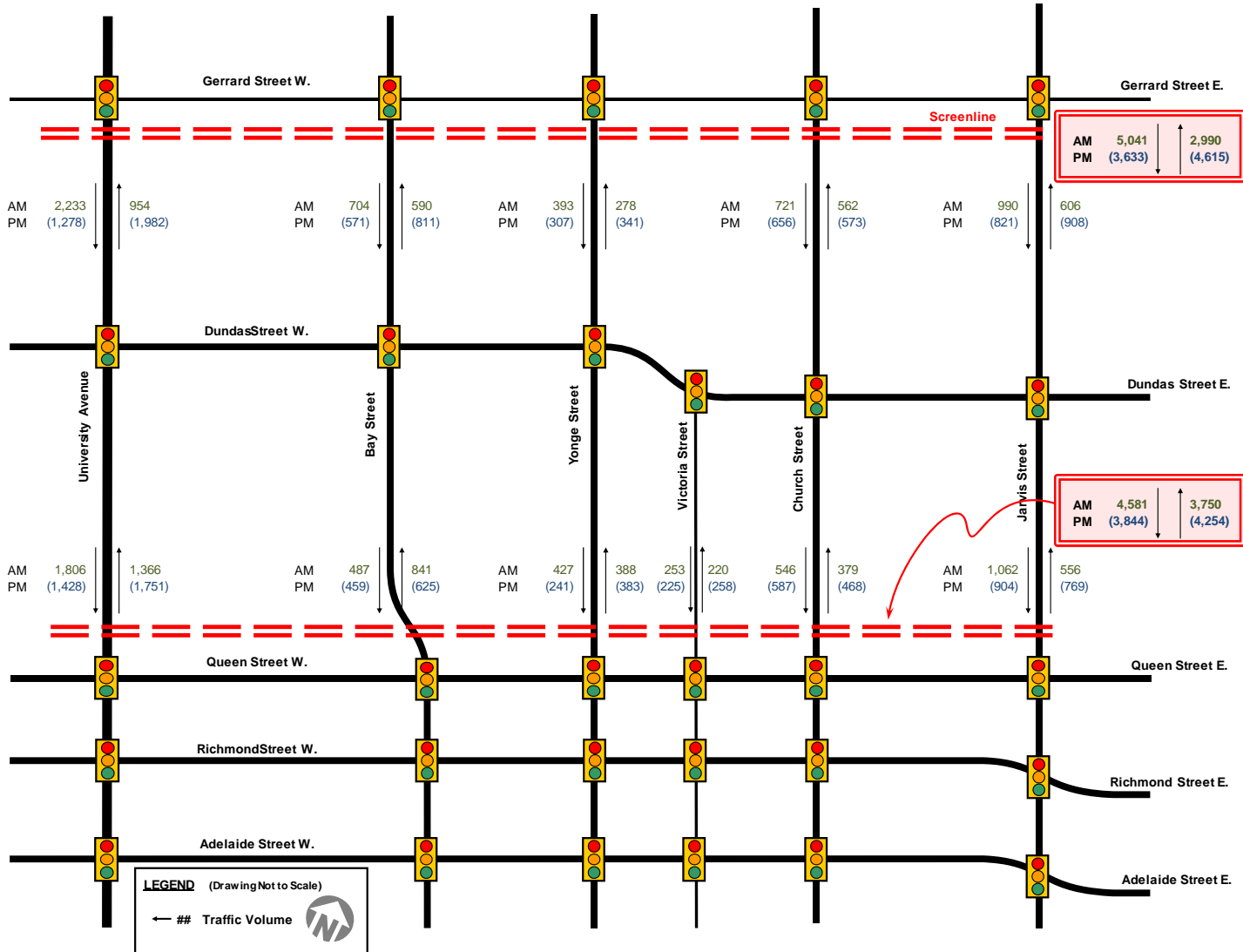


Figure 5: Bicycle Volumes Link Summary (Event; September)

Event Link Bicycle Volumes - AM/PM Peak Hours

