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Partners LLP  
Rene Silva, ML Group

**Date:** November 16, 2013

**From:** Peter Hillier, MMM

**Job No.:** 1612111-001

**Subject:** Traffic Regulation Amendments -  
Judson Street, Technical Memorandum:  
Transportation Impact Review

**CC:** David Richardson, MMM  
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## Executive Summary

MMM Group has been commissioned by Davies Howes Partners LLP on behalf of ML Group to review the efficacy of instituting a driveway turn prohibition plus day-time truck prohibitions on Judson Street. These changes were proposed in the City of Toronto Transportation Services staff report entitled: Traffic Regulation Amendments – Judson Street, dated October 24, 2013. Specifically, staff recommends the following key actions:

- Convert the current 7:00pm – 7:00am truck restriction to “No Heavy Vehicles Any time” on Judson Street between Harold Street and Islington Avenue; and
- Introduce “No Left Turn Any time” at the intersection of Judson Street and the driveway at 29 Judson Street, for northbound traffic exiting the driveway access.

In effect, this action would redirect traffic – including heavy trucks - from the ML Group site at 29 Judson Street to the intersection of Royal York Road and Judson Street; a significant adjustment to the current access to an arterial road at the signalized intersection of Islington Avenue at Judson Street. This alternate routing would introduce significant traffic safety risks, primarily to pedestrians, cyclists and motorists at the intersection of Royal York Road at Judson Street, which is controlled by a stop sign on the side street. Furthermore, this forced rerouting of trucks would expose significantly more properties and residents to truck traffic on less appropriate travel routes than Islington Avenue; namely Royal York Road and Evans Avenue.

To summarize the risks, some of which are discussed in more detail later in this memo:

### A. Safety at Royal York Road and Judson Street -

- i) Large slow-moving trucks would be turning left from Judson close to the rail overpass where sight lines are compromised by metal bridge piers;
- ii) Northbound traffic approaching Judson – which would be more likely to encounter a slow moving truck entering Royal York Road. These trucks would at times be entering bright daylight from the dim rail overpass and thus need time to adjust to the conditions ahead, increasing the risk of a collision with the truck;
- iii) Royal York Road has one southbound lane which is on a down slope as it approaches Judson, with less than ideal sight lines to view traffic entering from Judson;
- iv) There is a low bridge clearance on Royal York immediately south of Judson, illustrated in **Figure 1**;
- v) There is a pedestrian access to the Mimico GO facility on the east side of Royal York Road at Judson; and
- vi) There are bike lanes on Royal York Road so cyclists are encouraged to use this roadway.



**B. Inappropriate Alternate Routing -**

- i) Currently traffic – including large trucks – has safe direct access to and from the industrial properties on Judson Street to the Gardiner Expressway interchange via the signalized intersection of Judson at Islington Avenue, which is a multi-lane major arterial road;
- ii) Trucks would be forced onto Royal York Road which is a two-lane minor arterial road with bike lanes and more frequent mixed use driveways than Islington;
- iii) Trucks would access Islington Avenue during day-time hours from Royal York Road via the two-lane Evans Avenue residential minor arterial, on which trucks are prohibited from 7:00pm to 7:00am; and
- iv) Because Chapter 240-18 of the Municipal Code of the former City of Etobicoke does provide an exemption to allow heavy vehicle access “insofar as is unavoidable in getting to and from such premises,” large truck access to and from the properties on the westerly half of this section of Judson would still be legal via Islington. However, all heavy vehicle access to and from properties on the easterly half of this section of Judson would have to be via Royal York Road.

**C. Access from the Driveway at 29 Judson Street -**

- i) The proposed northbound left-turn prohibition at the 29 Judson Street driveway would severely limit the manoeuvrability of large vehicles at this business site, where the operators now can be assured of an unobstructed turn through the Judson at Harold Street intersection, without entering Harold;
- ii) The right turn out of the driveway could be obstructed by vehicles parked legally on the north side of Judson immediately east of Harold, thus requiring the trucks to maneuver back and forth to complete the turn;
- iii) Similarly a left turn into the driveway by a westbound truck would be severely compromised by a vehicle parked on the north side of Judson east of Harold Street; and
- iv) There is a full time truck prohibition on Harold Street, so it is not a route option for heavy truck operators.

In conclusion, from the perspective of traffic safety for all road users, the routing of traffic from Judson Street to the traffic signals at Islington Avenue (a major arterial road) is a more appropriate access than the forced routing of large vehicles to the stop-controlled intersection of Royal York Road (a narrower minor arterial road) at Judson Street and their subsequent route northbound and then westbound on Evans Avenue.

**Introduction**

MMM Group has been commissioned to review the impact of changing the traffic regulations on Judson Street between Islington Avenue and Royal York Road. The Transportation Services staff recommendations would prohibit heavy vehicles from using Judson Street between Harold Street and Islington Avenue at all times. Northbound left turns from the driveway access at 29 Judson Street would be prohibited for all traffic leaving the driveway at all times as well.

This memo provides a summary of our observations and technical analyses of select traffic and transportation issues related to the proposed regulations. It highlights the impacts to public safety as well as traffic operations associated with the ML Group site and the surrounding industrial and residential properties.

**Road Network**

The recommended traffic regulations would divert heavy vehicles exiting 29 Judson Street from travelling west along Judson Street to Islington Avenue (a direct route to the Gardiner Expressway

interchange). Instead, heavy vehicles would need to travel east along Judson Street to Royal York Road, and subsequently along Evans Avenue to access Islington Avenue. **Figure 2** provides an illustration of the road network in the impacted area, and the current heavy vehicle route as well as the probable alternate route resulting from implementation of the recommended traffic regulations.

Judson Street between Islington Avenue and Royal York Road is designated a collector roadway with a speed limit of 50 km/h plus a sidewalk on the north side of the street. The majority of properties on the north side of Judson, in this section, are residential versus industrial on the south side. Islington Avenue to the west is a major arterial road having two traffic lanes in each direction, limited property access and a speed limit of 60 km/h. Royal York Road is classified as a minor arterial road, having one motor vehicle lane and a bike lane in each direction, the Mimico GO station pedestrian access, sidewalks on both sides, a speed limit of 50km/h in the study area and frequent TTC bus service. Evans Avenue is also designated as a minor arterial road with sidewalks on both sides, a speed limit of 50km/h in the study area and numerous residential driveways abutting the roadway.

### **Railway Underpass Restrictions (Height and Lane Width)**

On Royal York Road, a height restriction of 3.8 metres is currently in place at the bridge underpass just south of Judson Street. The width of the roadway below the bridge is also reduced due to bridge support structures and bike lanes. These obstructions deter heavy vehicle operators from turning right onto Royal York Road to proceed southbound from Judson Street. This reduces alternate route options, which in turn would divert truck traffic to Evans Avenue, a minor arterial residential road.

### **Data Collection**

As reported, City staff counted traffic movements at the driveway to 29 Judson Street. Recent traffic volume data is not available from the City of Toronto for the intersection of Islington Avenue at Judson Street, so the overall volume of traffic and trucks using this section of Judson Street is unknown at this time. A site visit was conducted to obtain sight distance measurements at the intersection of Royal York Road at Judson Street in order for a sight line analysis to be conducted. A more comprehensive analysis would require access to the City's street plan for Judson Street and Royal York Road, including roadway dimensions and profiles. These plans were not available from the City at the time of this analysis. In addition, Transportation Services staff has advised that there is currently a good traffic safety record at the intersection of Royal York Road and Judson Street.

### **Turning Radius Analysis**

Traffic regulation amendments would prohibit heavy vehicles exiting 29 Judson Street from turning left onto Judson towards Islington Ave. As a result, operators could now be obstructed by vehicles parked legally on the north side of Judson immediately east of Harold Street, thus requiring the trucks to move back and forth to complete the turn. A recent site visit confirmed that vehicles do park on the north side of Judson Street, with one vehicle being parked directly in front of the 29 Judson Street driveway at the time of the visit. While smaller trucks can complete the turn without difficulty, larger trucks cannot and may impede traffic flow as they attempt to exit the driveway. Currently, ML Group, located at 29 Judson Street utilizes a variety of truck sizes that are imperative to business operations. Notably, trucks cannot access Harold Street as an alternative route due to a full time truck prohibition.

In order to explore the impact of the proposed northbound "No Left Turn Any time" at the intersection of Judson Street and the driveway at 29 Judson Street, for traffic exiting the driveway access, MMM conducted a turning radius analysis. The findings of our assessment are documented below.





**LEGEND**

- Existing Route
- Alternate Route

**FIGURE 2**  
Site Overview

## Site Circulation Assessment

Our site circulation assessment was completed using the AutoTURN 8.2 software package to ensure adequate manoeuvrability into and out of the site. The vehicle movements were tested using the CAD site plan “*LSG-2180UPL.dwg*”.

The vehicles used for the AutoTURN analyses were a combination of Transportation Association of Canada (TAC) vehicles. **Figures 3A, 3B, 4A and 4B** are attached for reference, and the findings and recommendations are as follows:

### Figure 3A and 3B - TAC Heavy Single Unit (HSU) Truck

An HSU truck, which is the largest single unit truck at 11.5m in length, was tested entering the site in **Figure 3A** and exiting in **Figure 3B**. The westbound left turn from Judson St. into the site can be executed with cars parked along the north side of Judson Street; however, the truck will need to utilize most of the driveway width. The outbound right turn from the site can be made in one movement, providing a portion of Judson Street on the north side is controlled by a no parking prohibition. Without this prohibition, large trucks will not be able to exit the site in a single maneuver.

### Figure 4A and 4B – Wb-12 Tractor Trailer Truck

A 15.2m Wb-12 truck, which represents the smallest Canadian tractor trailer, was used to test the inbound truck movements in **Figure 4A** and outbound movement in **Figure 4B**. Similar to the maneuvers tested for the HSU truck, the westbound left turn from Judson St. into the can be executed with cars parked along the north side of Judson; however, the truck will need to utilize most of the driveway width. The outbound right turn from the site can be made in one movement, providing a longer section of Judson Street on the north side is controlled by a no parking prohibition.

No trucks larger than an 11.5 metre single unit delivery truck or a 15.2 metre tractor trailer have been tested for manoeuvrability into or out of 29 Judson Street.

## Sight Distance Analysis

Sight line and stopping distance calculations were completed for the intersection of Judson Street and Royal York Road based on measurements for sight distance obtained during a site visit to the study area. Recommended heavy vehicle and turn prohibitions will result in a significant increase in heavy vehicle traffic at this unsignalized intersection.

Surveys and plans of the roadway were not available at the time of this analysis. As a result, calculations were based on first principles, utilizing measurements taken at the study site. Specifically, the analysis employs the use of a 0.4 metre object height, representing the head-light height of approaching vehicles, and the sight distance of vehicles exiting Judson Street and turning left (north) onto Royal York Road. Notably, this method is based on actual field work and reflects realistic driver experiences. **Figure 5** provides a visual illustration of the analysis. Measurement data and the result of the analysis are summarized in **Table 1**.

**Table 1: Sight Line Analysis for Left Turns Out of Judson Street at Royal York Road**

Traffic Direction	Sight Distance (m)	Minimum Stopping Sight Distance (m)	Optimal Decision Sight Distance (m)
Traffic Moving SB on Royal York Road	26.1	95 - 110	145
Traffic Moving NB on Royal York Road	35.2	95 - 110	125

Notes: 1. The Approach Design Speed on Royal York Road is 70 km/h (50 km/h speed limit + 20 km/h).  
 2. Minimum Stopping Sight Distances are listed for Level Grade Automobiles and Trucks with Antilock Braking Systems (TAC Manual September 1999).

An analysis of sight distance is critical to ensure vehicle operators can adequately see ahead in order to make safe driving decisions at intersections. There are different types of sight distance; the two used in this analysis are stopping sight distance and decision sight distance. Stopping sight distance is a type of sight distance measurement which describes the distance a driver requires to perceive and avoid collisions with obstructions in the roadway. Stopping sight distance measurements were made for vehicles exiting from Judson Street with reference to approaching vehicles proceeding southbound and also northbound on Royal York Road. According to the current Transportation Association of Canada (TAC) guidelines, the design speed minimum stopping sight distance is between 95 and 110 metres for both scenarios. Results obtained from the site visit indicate that stopping sight distances do not meet minimum stopping sight distance requirements, increasing the risk of collisions (TAC, 1999). Notably, stopping sight distances between northbound motorists on Royal York Road and those stopped on Judson Street are significantly reduced by the bridge abutments and piers located just south of the intersection. The stopping sight distance for southbound motorists and those stopped on Judson Street are reduced by landscaping on the northwest corner.

Decision sight distance is the distance required for a driver to perceive an unexpected hazard in the roadway, and initiate appropriate speed and path adjustments to safely maneuver away from danger. Results of the decision sight analysis indicate that current sight distances at the intersection are below advisable decision sight distances, again increasing the risk of collisions (TAC, 1999). A higher volume of heavy vehicles in combination with inadequate sight distances is likely to result in an increase in the number and severity of collisions.

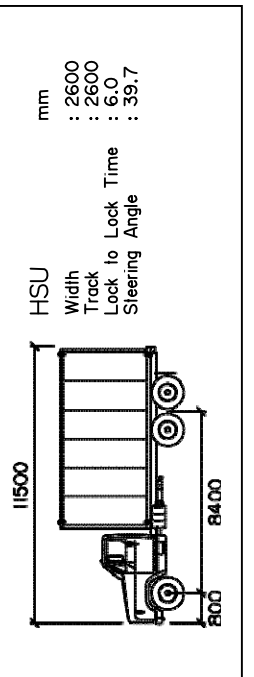
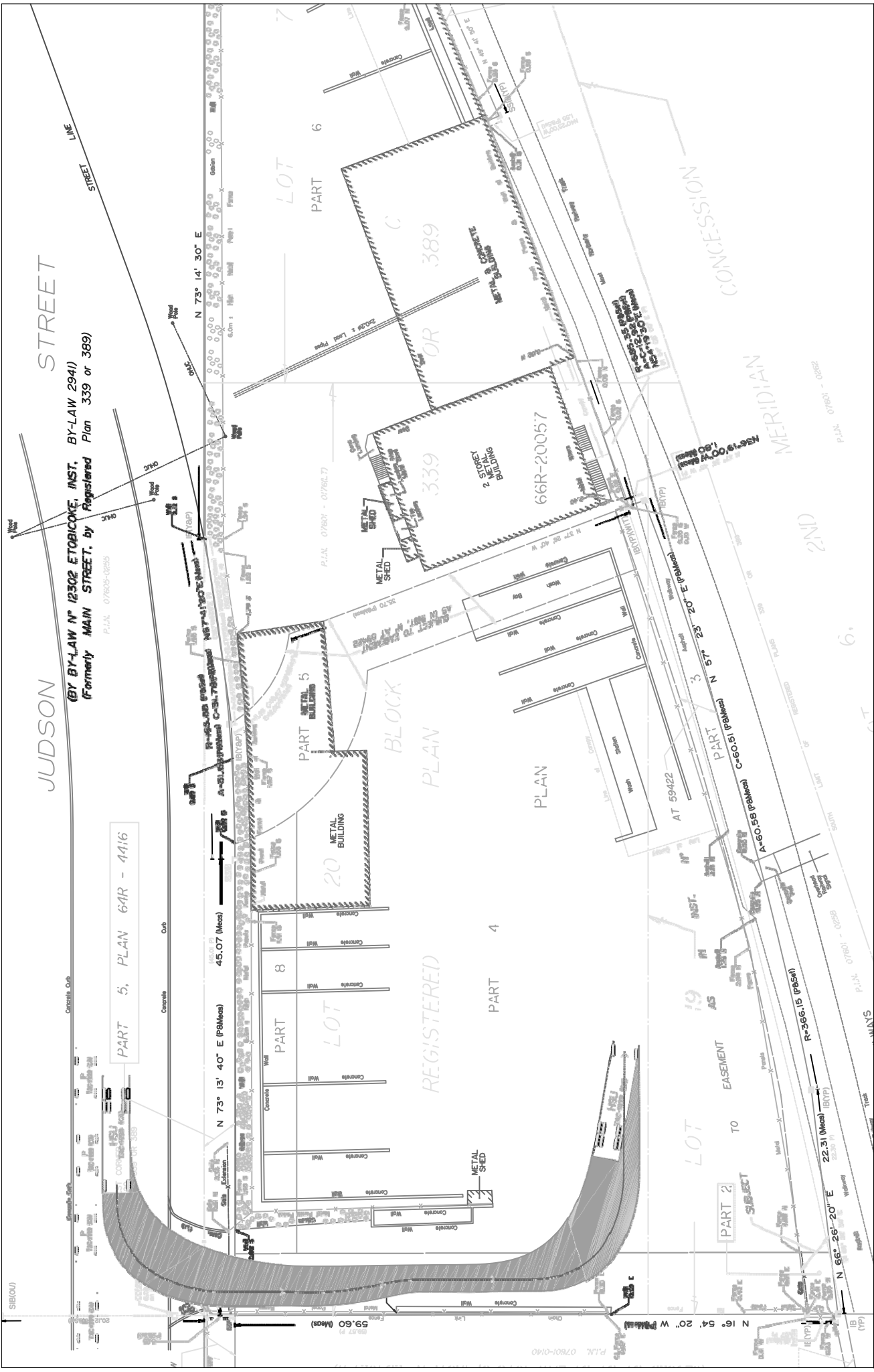
We also considered the potential impact of reduced operating speeds and standards on Royal York Road, and can report that the sight lines would still be significantly below safe thresholds, as represented in **Table 2**.

**Table 2: Sight Line Analysis for Left Turns Out of Judson Street at Royal York Road, Reduced Operating Speeds**

Traffic Direction	Sight Distance (m)	Minimum Stopping Sight Distance (m)	Optimal Decision Sight Distance (m)
Traffic Moving SB on Royal York Road	26.1	75 - 85	125
Traffic Moving NB on Royal York Road	35.2	75 - 85	112

Notes: 1. The Approach Design Speed on Royal York Road utilized - 60 km/h (40 km/h speed limit + 20 km/h).  
 2. Minimum Stopping Sight Distances are listed for Level Grade Automobiles and Trucks with Antilock Braking Systems (TAC Manual September 1999).





**Figure 3A: HSU Truck (Inbound)**  
 Truck Manoeuvring Assessment  
 29 Judson Street, City of Toronto  
 Scale 1:500

**100 Commerce Valley Drive West**  
**Thornhill, ON, L3T 2G2**  
**(905) 882-1100**

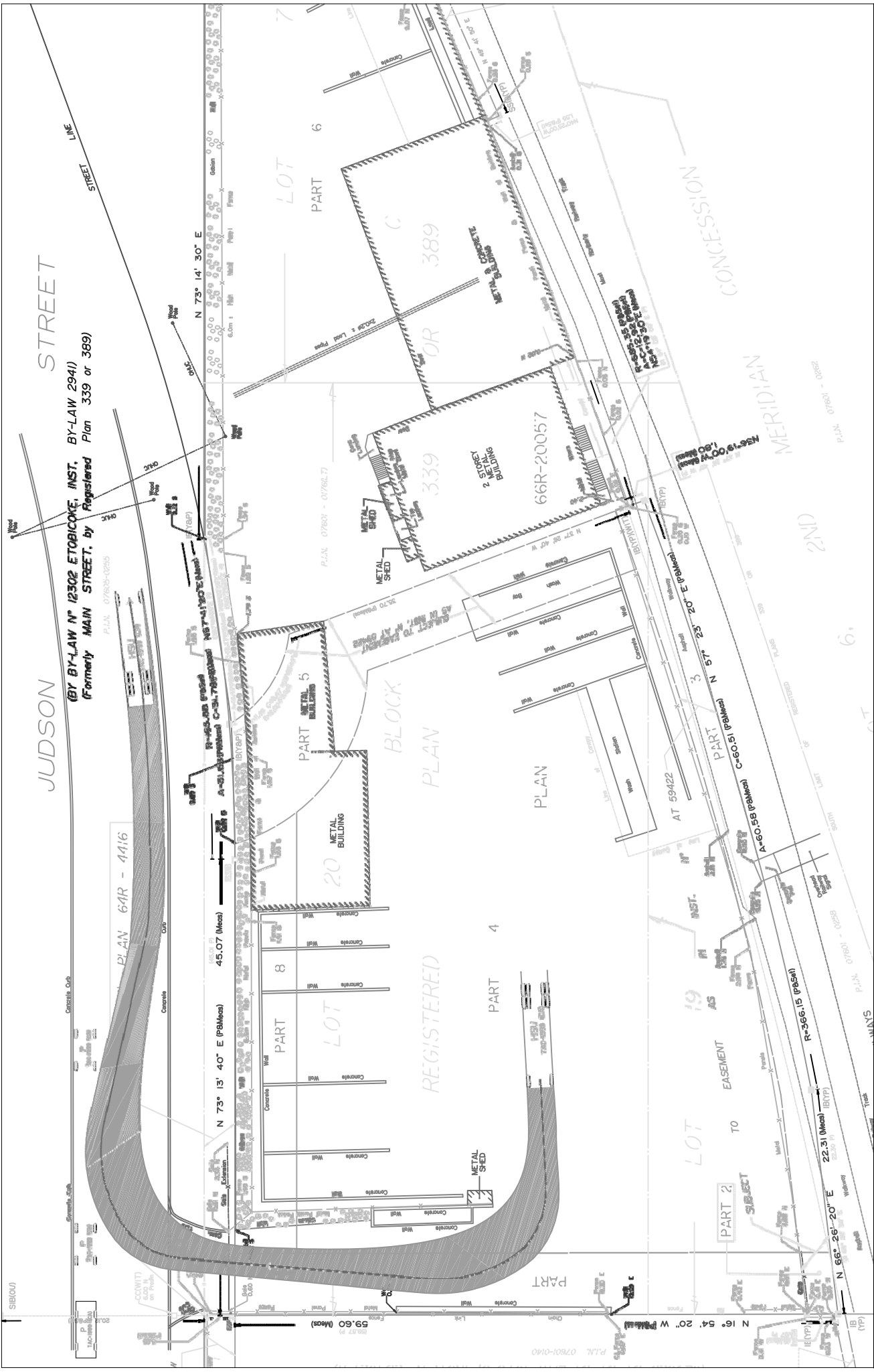
**MMM GROUP**

Date: November 15, 2013

Assessed by: KE

Checked by: PH





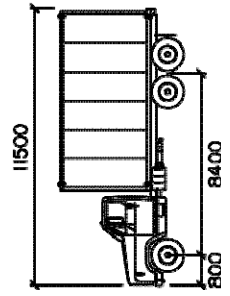
100 Commerce Valley Drive West  
 Thornhill, ON, L3T 2G2  
 (905) 882-1100

Date: November 15, 2013

Assessed by: KE

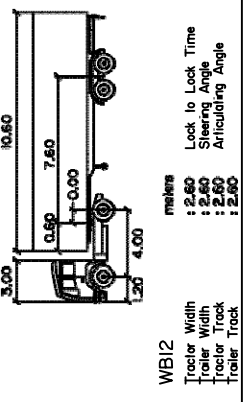
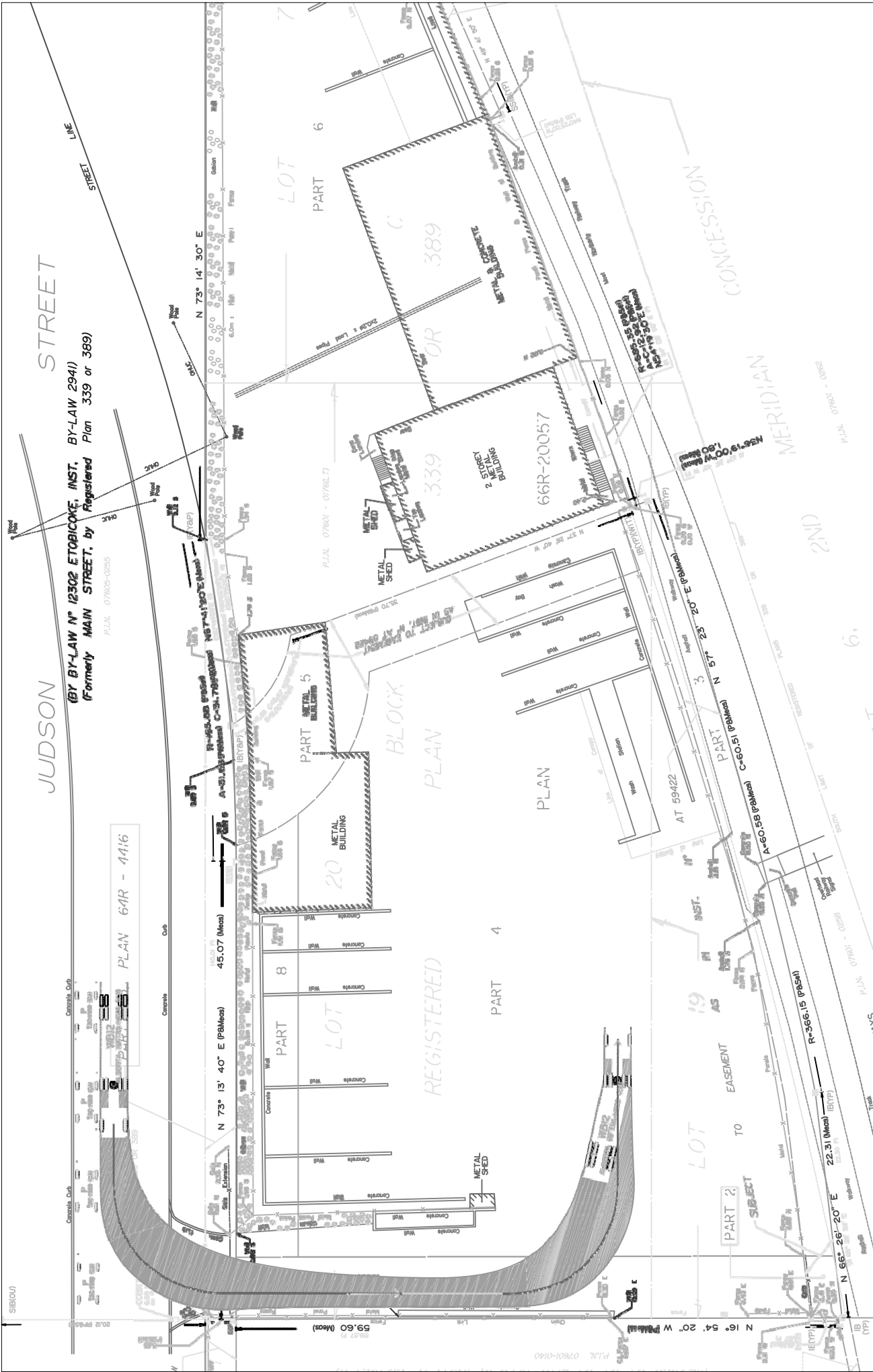
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**Figure 3B: HSU Truck (Outbound)**  
 Truck Manoeuvring Assessment  
 29 Judson Street, City of Toronto



HSU  
 Width : 2600 mm  
 Track : 8400 mm  
 Lock to Lock : 6.0 m  
 Steering Angle : 39.7

Scale 1:500



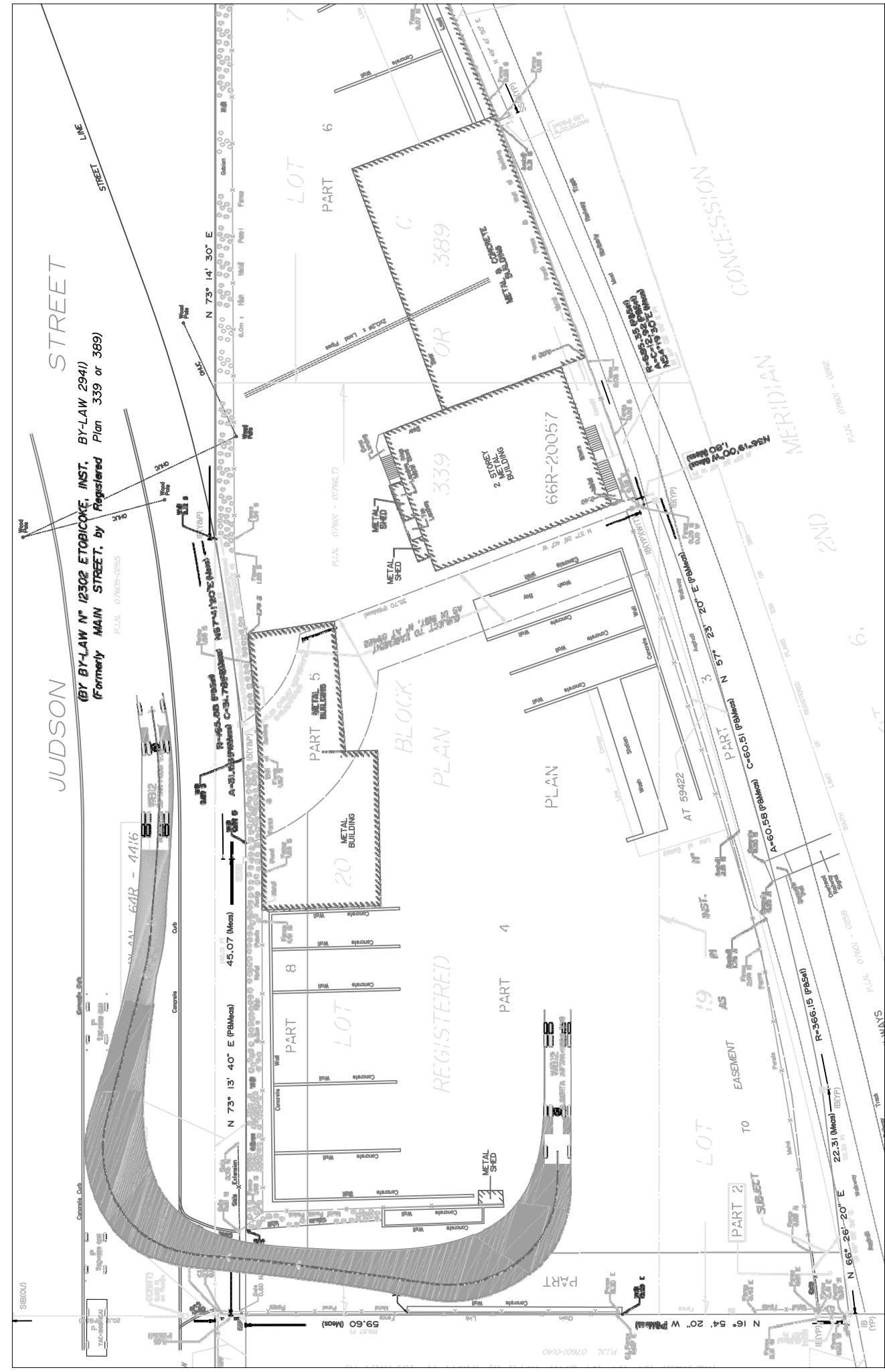
**Figure 4A: Wb-12 Truck (Inbound)**  
 Truck Manoeuvring Assessment  
 29 Judson Street, City of Toronto

100 Commerce Valley Drive West  
 Thornhill, ON, L3T 2G2  
 (905) 882-1100



Date: November 15, 2013  
 Assessed by: KE  
 Checked by: PH

Scale 1:500



**MMM GROUP**

Date: November 15, 2013

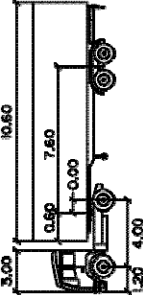
Assessed by: KE

Checked by: PH

100 Commerce Valley Drive West  
 Thornhill, ON, L3T 2G2  
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**Figure 4B: Wb-12 Truck (Outbound)**  
 Truck Manoeuvring Assessment  
 29 Judson Street, City of Toronto

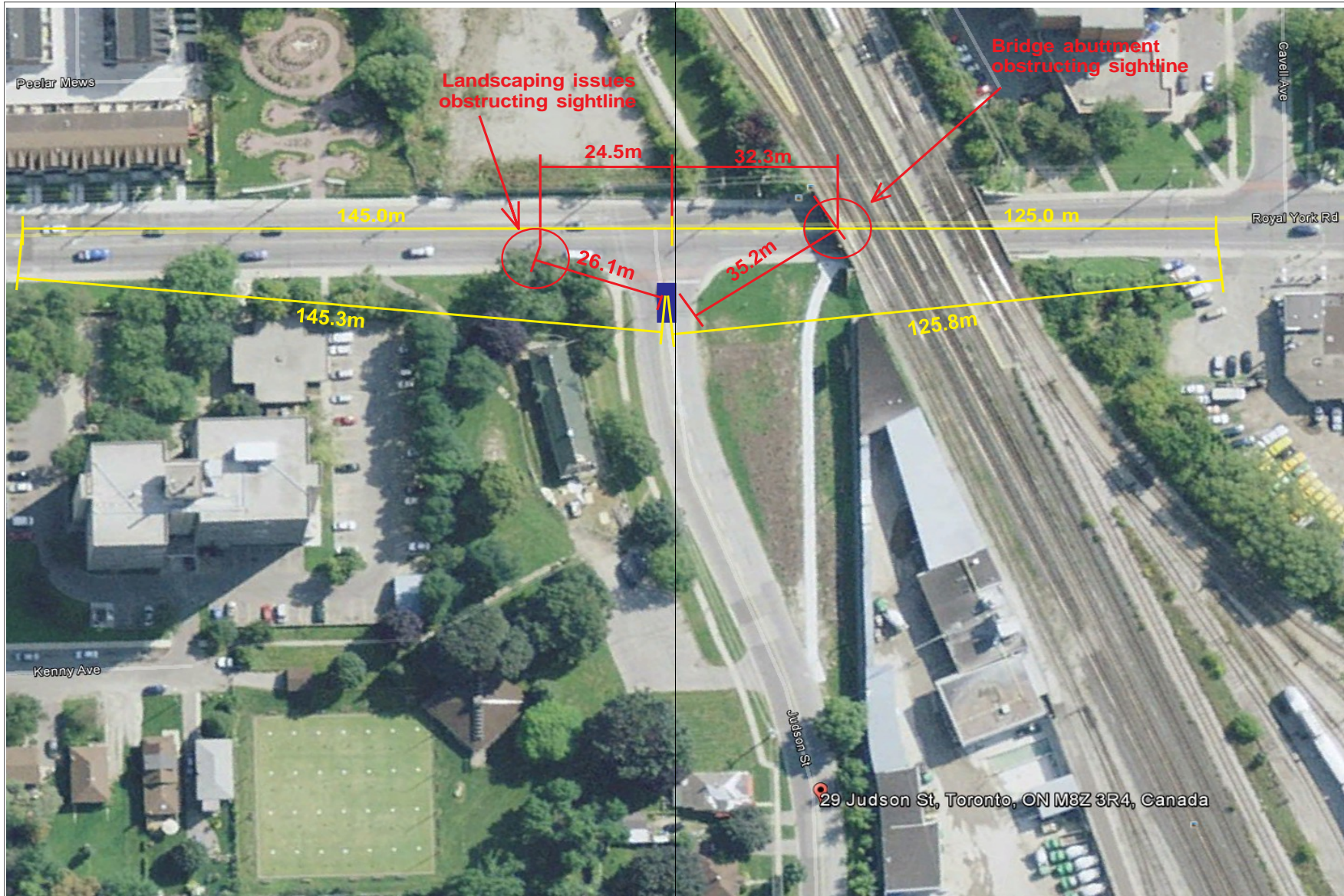
Scale 1:500



WB12 meters

Tractor Width	: 2.60	Lock to Lock Time	: 6.0
Tractor Length	: 2.60	Steering Angle	: 21.3
Tractor Track	: 2.50	Articulating Angle	: 70.0





**LEGEND**

- Existing Sightline
- Required Sightline

**FIGURE 5**  
Sightline Measurements



## Conclusions and Recommendations

City of Toronto staff has advised that updated traffic volume information is not available for Islington Avenue and Judson Street in the affected area. Therefore, the impact of more restrictive traffic regulations cannot be fully assessed. However, based upon our analysis, it appears that the proposed recommendations will result in reduced safety at the intersection of Royal York Road at Judson Street. Furthermore, access from 29 Judson Street could be directly compromised by vehicles parked on the north side of the street in close proximity to their driveway. The displacement of heavy vehicles resulting from these recommendations will negatively impact two minor arterial roads, namely Royal York Road and Evans Avenue.

Overall, the negative impacts can be summarized as follows:

- A. Safety issues at Royal York Road and Judson Street;
- B. Inappropriate alternate routing to neighbouring roads; and
- C. Restricted access from the driveway at 29 Judson Street.

We trust the above narrative provides an accurate and comprehensive analysis of the issues resulting from the proposed restrictions. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

## MMM GROUP LIMITED



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