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December 16, 2014

Reimer Properties
c/o Mr. Keith Riley
Project Manager
Argue Construction Ltd.
105-A Willowlea Road
Carp, Ontario
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Dear Mr. Riley:

**1599 ST. LAURENT BOULEVARD
TRANSPORTATION OVERVIEW**

Introduction

The following is a Transportation Overview of a proposed truck terminal at 1599 St. Laurent Boulevard which is being developed by Reimer Properties and which will serve as a cross docking facility for Apex Motor Express Ltd. The subject property is located at 1599 St. Laurent Boulevard but will be accessed solely from Triole Street. It is our understanding that Site Plan Control Approval is being sought from the City of Ottawa for the development proposal.

The City of Ottawa has confirmed that a Transportation Overview is required as part of the Development Application. In particular, the City has indicated that the following information is to be included in the study:

- An estimate of projected site generated traffic.
- An assessment of the impact to non-auto modes.
- A review of truck turning movements at the Belfast Road and Triole Street intersection.

The Transportation Overview will also include a review of the existing transportation network within the study area with a particular focus on the existing intersection of Belfast Road and Triole Street.

Proposed Development

The proposed development is located within the Newmarket-Cyrville Industrial Area on vacant land bounded by: St. Laurent Boulevard to the west; the existing properties along Triole Street to the north; the existing properties along Michael Street to the east; and an abandoned railway corridor to the south. The property is split into two parcels: a west parcel that is zoned for General Industrial land use, and an east parcel that is zoned for Light Industrial land use. The location of the proposed development is indicated on **Exhibit 1**. The development will be located on the east parcel of land and includes a building consisting of 19,000 sq. ft. of warehouse

Reimer Properties –December 16, 2014

Exhibit 1 – Site Location



space and 3,000 sq. ft. of attached offices. The warehouse will accommodate 40 loading docks and the site will also provide the following surface parking spaces:

- 28 general parking spaces
- 17 tractor parking spaces
- 17 trailer parking spaces

Access to the site is proposed from Triole Street via a private approach at the south terminus of the street. The private approach is proposed as a 6.7 m wide asphalt roadway.

The cross docking facility will be surrounded by security fences with sliding gates to allow access for trucks. The general parking spaces are proposed in an area outside of the security fences.

A site plan indicating details of the development is included in **Appendix A**.

Reimer Properties –December 16, 2014

Existing Conditions

Road Network

St. Laurent Boulevard is a north-south arterial road under the jurisdiction of the City of Ottawa. The section of St. Laurent Boulevard between Smyth Road and Montreal Road has a four-lane divided cross-section and is designated as a truck route. St. Laurent Boulevard is an important arterial road in the City and provides connections to Provincial Highway 417 and major east-west arterial roads, including: Innes Road, Industrial Avenue, Ogilvie Road and Montreal Road.

Triole Street is a two-lane local road with an average pavement width of 7.8 m.

Belfast Road (east of St. Laurent Boulevard) is a two-lane local road with a pavement width of 11 m. Belfast Road is also designated as a truck route.

The intersection of Belfast Road and Triole Street is unsignalized with stop control on the Triole Street approaches and free flow conditions on Belfast Road.

Pedestrian and Cycling Facilities

A continuous concrete sidewalk is provided along the south side of Belfast Road between St. Laurent Boulevard and Michael Street. A concrete sidewalk is provided long the north side between St. Laurent Boulevard and Triole Street.

There are no formal pedestrian facilities provided along Triole Street.

There are no formal cycling facilities along either Belfast Road or Triole Street within the study area.

Transit Service

The following transit routes are within 400 m walking distance from the proposed development:

- Route 114 is a regular bus route providing all-day transit service between the Greenboro Transitway station and Hurdman Transitway station via the South Keys and Greenboro neighbourhoods, Conroy Road, St. Laurent Boulevard and the Transitway. The nearest bus stops serving Route 114 are located at the intersection of St. Laurent Boulevard and Belfast Road.
- Route 192 is a peak period bus route providing service between Hurdman Transitway station and the Newmarket-Cyrville, Sheffield and Hawthorne-Stevenage Industrial Areas. The nearest bus stops serving Route 192 are located at the intersection of Belfast Road and Michael Street.

Copies of the detailed OC Transpo route maps for each of the bus routes noted above are provided in **Appendix B**.

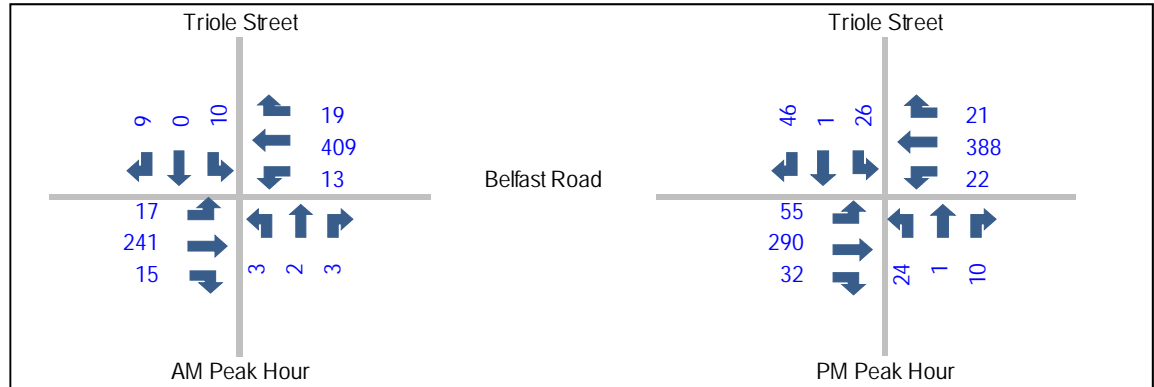
Existing (2014) Traffic

Representative peak period traffic volumes at the Belfast Road/Triole Street intersection have been established based on data recorded at the intersection on Thursday, September 19, 2014.

The existing weekday morning and afternoon peak hour traffic volumes are presented in Exhibit 2 below.

Reimer Properties –December 16, 2014

Exhibit 2 – Existing (2014) Traffic



Existing Intersection Operating Condition

Intersection capacity analysis has been undertaken for the Belfast Road/Triole Street intersection under 2014 peak hour traffic conditions using Synchro Version 7 software.

The capacity of an unsignalized intersection can be expressed in terms of the “Level of Service” it provides. For an unsignalized intersection, the Level of Service is defined in terms of the average movement delays at the intersection. This is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line, this includes the time required for a vehicle to travel from the last-in-queue position to the first-in-queue position. The average delay for any particular minor movement at the unsignalized intersection is a function of the capacity of the approach and the degree of saturation.

The Highway Capacity Manual 2010 (HCM2010), prepared by the Transportation Research Board, includes Levels of Service criteria for unsignalized intersections related to average movement delays at the intersection, as indicated in **Table 1**.

Table 1: Level of Service Criteria – Unsignalized Intersections

LEVEL OF SERVICE	DELAY (S)
A	<10
B	>10 and <15
C	>15 and <25
D	>25 and <35
E	>35 and <50
F	>50

The unsignalized intersection capacity analysis technique included in the HCM and used in the current study provides an indication of the Level of Service for each movement of the intersection under consideration. By this technique, the performance of the unsignalized intersection can be compared under varying traffic conditions, using the Level of Service concept in a qualitative sense. One unsignalized intersection can be compared with another unsignalized intersection using this concept. Level of Service “E” represents the capacity of the movement under consideration and generally, in large urban areas, Level of Service “D” is considered to represent an acceptable operating condition (Level of Service “E” is considered an acceptable

Reimer Properties –December 16, 2014

operating condition for planning purposes for intersections located in Ottawa’s Urban Core— the downtown and its vicinity). Level of Service “F” indicates that the movement is operating beyond its design capacity.

The results of the intersection capacity analysis indicate that the Belfast Road/Triole Street intersection is presently operating at Level of Service “C” during the weekday morning peak hour and at Level of Service “D” during the afternoon peak hour.

Collision Records

Collision records for the Belfast Road/Triole Street intersection have been reviewed for the period between January 1, 2011 and January 1, 2014. The City of Ottawa Transportation Impact Assessment Guidelines indicate that further analysis may be warranted when there have been either 33 or more total collisions reported at a particular location, or at least 6 collisions of a particular type, over a three year period.

A total of three collisions were recorded during the three-year period. The collisions occurred between vehicles and resulted in property damage only. No pedestrians or cyclists were involved in the collisions.

Based on the above, there do not appear to be any significant safety issues at the Belfast Road/Triole Street intersection.

Site Generated Traffic

Estimates of anticipated traffic generated by the proposed development have been based on information provided by Apex Motor Express Limited. Traffic generated by the facility will consist of employee trips and truck trips. Employee trips include truck drivers, dock staff and office staff arriving to and leaving from the facility in their personal vehicles. Truck trips will be made up of pickup and delivery (P&D) trips to destinations within the City and long line truck trips to/from other cities. The P&D trips will be made by a combination of Single-Unit (MSU/HSU) trucks and tractor semi-trailer trucks with a maximum trailer length of 53 feet. The line haul trips will be made by tractor semi-trailer only.

Table 2 presents a summary of the estimated peak hour and total daily trips that are expected to be generated by the facility.

Table 2: Trip Generation

TRIP TYPE	TRIP GENERATION (VEHICLES)							
	TOTAL DAILY TRIPS (TWO-WAY)	% OF TRIPS DURING PEAK HOURS	AM PEAK HOUR			PM PEAK HOUR		
			TOTAL	IN	OUT	TOTAL	IN	OUT
Employees (Personal Vehicles)	64	55 %	18	16	2	18	3	15
Trucks (Pickup and Delivery)	80	45 %	36	7	29	36	29	7
Trucks (Line Haul)	30	10 %	3	3	0	-	-	-
Total	174		57	26	31	54	32	22

Reimer Properties –December 16, 2014

Notes:

1. Directional distribution – employee trips: AM = 90% In/ 10% Out; PM = 15% In/ 85% Out (based on typical directional splits for employment uses)
2. Directional Distribution – P&D Trucks: AM = 20% In/ 80% Out; PM = 80% In/ 20% Out
3. Directional Distribution – Line Haul Trucks: AM = 100% In; No PM trips anticipated.

Based on the above, it is anticipated that the proposed cross-docking facility will generate 174 total daily trips.

A total of 57 new trips (26 vehicles entering and 31 vehicles exiting) and 54 new trips (32 vehicles entering and 22 vehicles exiting) are estimated to be generated by the facility during the weekday morning and afternoon peak hours, respectively. Of these, it is estimated that 8 trips in the morning peak hour and 5 trips during the afternoon peak hour will be by tractor semi-trailer trucks.

It is considered that there is sufficient capacity available at the Belfast Road/Triole Street intersection to accommodate the projected traffic generated by the proposed facility.

Details of the analysis are provided in Appendix C.

Truck Turning Movements

A review of truck turning movements at the intersection of Belfast Road and Triole Street has been undertaken using AutoTURN Version 8 software. Truck turning movements to/from Triole Street were simulated using the WB-20 design vehicle defined by the Transportation Association of Canada (TAC).

Exhibits showing the simulated truck turning movement paths are included in Appendix D.

Eastbound Right-Turn/Westbound Left-Turn

The truck turning simulations indicate that WB-20 trucks making the eastbound right turn or westbound left-turn on to Triole Street from Belfast Road can complete the movement within the existing pavement width provided, but will have to encroach on the northbound lane on Triole Street in order to complete the movement. This requirement may result in minor delays to trucks if there is a vehicle in the northbound lane waiting to enter the intersection. However, these conflicts are expected to be infrequent as there were only 8 vehicles and 35 vehicles, respectively, recorded on the northbound approach on Triole Street during the weekday morning and afternoon peak hours.

Northbound Left-Turn

WB-20 trucks making the northbound left-turn movement on Triole Street to then head west on Belfast Road toward St. Laurent Boulevard, can complete the movement within the width of pavement provided on Belfast Road and without encroaching on adjacent lanes.

Northbound Right-Turn

WB-20 trucks making the northbound right-turn movement on Triole Street to then head east on Belfast Road, can complete the movement within the width of pavement provided on Belfast Road, but will encroach on the opposing westbound lane in order to complete the movement. These occurrences are expected to be infrequent as the majority of truck trips will be to/from St. Laurent Boulevard.

Reimer Properties –December 16, 2014

Conclusion

Based on the above, the main findings and conclusions of this Transportation Overview are as follows:

- The intersection of Belfast Road/Triole Street is presently operating at acceptable levels of service during the weekday morning and afternoon peak hours.
- There do not appear to be any significant safety issues at the intersection based on the recorded collisions at the intersection during the 3-year period from 2011 to 2014.
- The proposed development is estimated to generate 57 new trips during the weekday morning peak hour and 54 new trips during the afternoon peak hour. It is considered that these additional trips can be adequately accommodated at the Belfast Road/Triole Street intersection.
- Truck turning simulations undertaken at the Belfast Road/ Triole Street intersection indicate that WB-20 trucks can complete turning movements to/from Triole Street within the pavement width provided. For the eastbound right-turn, westbound left-turn and northbound right-turn movements, trucks will encroach on adjacent lanes during the turns. However, based on the projected volumes of WB-20 truck trips during the peak hours, these occurrences will be infrequent and are not expected to significantly impact traffic operations at the Belfast Road/ Triole Street intersection.

If you have any questions regarding the above, please do not hesitate to contact me at (613) 225-1311 Ext. 508.

Yours truly

IBI GROUP

Justin Date, P.Eng.
Associate

:jcd



Attachments:

Appendix A – Site Plan

Appendix B – OC Transpo Maps

Appendix C – Intersection Capacity Analysis

Appendix D – Truck Turning Simulations

Appendix A – Site Plan

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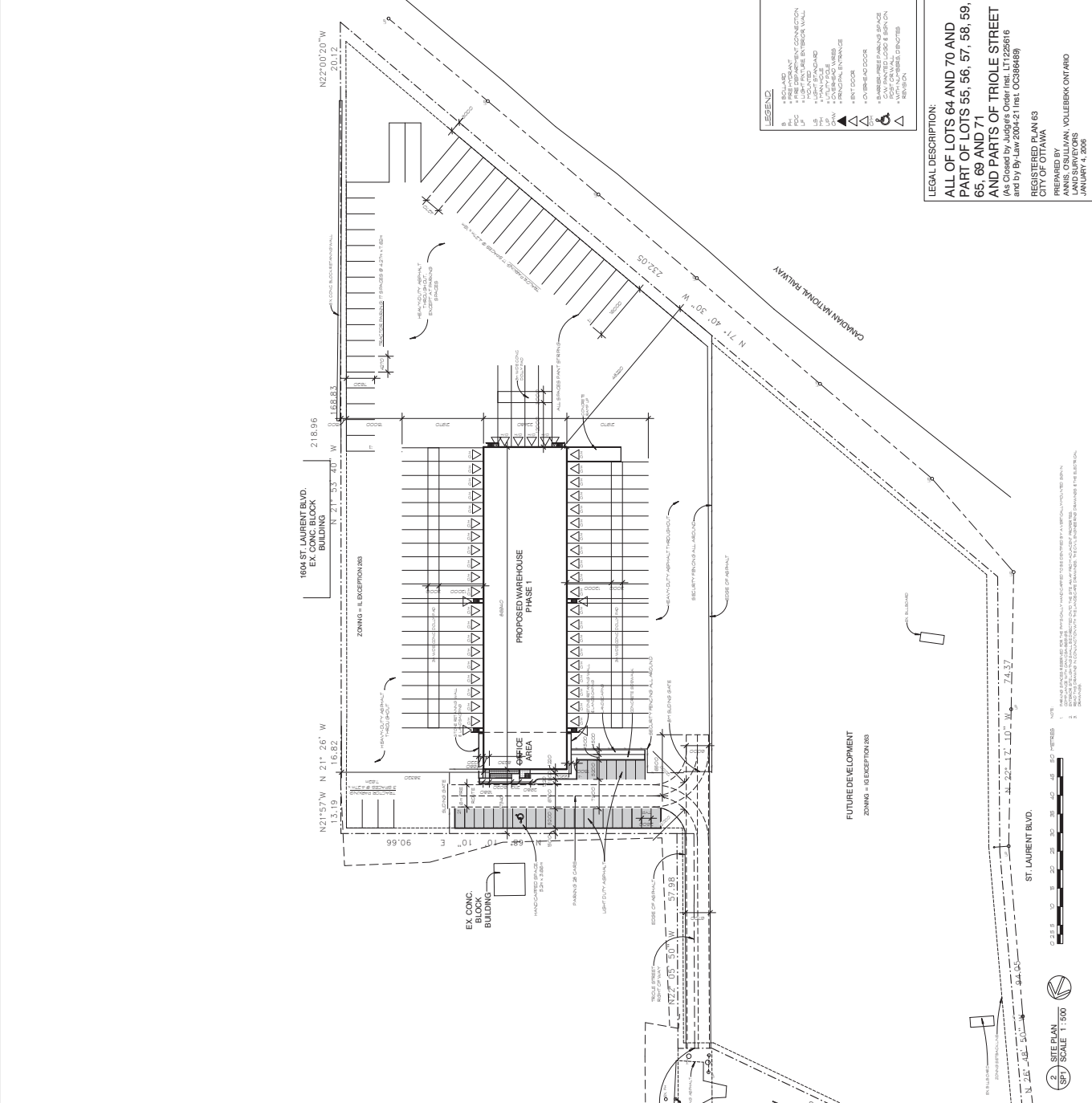
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PROJECT:
APEX MOTOR EXPRESS TRUCK TERMINAL
 1899 ST. LAURENT BLVD.
 OTTAWA, ON.

DATE: 2014.07.01
 SCALE: AS SHOWN
 PROJECT NUMBER: 1899
 SHEET NUMBER: 1/10
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91	2014.07.01	ISSUED FOR THE PURPOSE OF PERMITTING
92	2014.07.01	ISSUED FOR THE PURPOSE OF PERMITTING
93	2014.07.01	ISSUED FOR THE PURPOSE OF PERMITTING
94	2014.07.01	ISSUED FOR THE PURPOSE OF PERMITTING
95	2014.07.01	ISSUED FOR THE PURPOSE OF PERMITTING
96	2014.07.01	ISSUED FOR THE PURPOSE OF PERMITTING
97	2014.07.01	ISSUED FOR THE PURPOSE OF PERMITTING
98	2014.07.01	ISSUED FOR THE PURPOSE OF PERMITTING
99	2014.07.01	ISSUED FOR THE PURPOSE OF PERMITTING
100	2014.07.01	ISSUED FOR THE PURPOSE OF PERMITTING

LEGAL DESCRIPTION:
 ALL OF LOTS 64 AND 70 AND PART OF LOTS 55, 56, 57, 58, 59, 65, 69 AND 71 AND PARTS OF TRIOLE STREET (As Crossed by Judges Order Inst. LT122616 and by By-Law 2004-21 Inst. OC388489) REGISTERED PLAN 63 CITY OF OTTAWA
 PREPARED BY: ANNIS OSULLIVAN VOLLEBEK ONTARIO
 REGISTERED PROFESSIONAL ENGINEER
 REGISTRATION NO. 1000
 EXPIRES: JANUARY 4, 2016

LEGEND

- REGULATORY
- EXISTING
- PROPOSED
- AS SHOWN
- AS NOTED
- AS PER PLAN
- AS PER SPECIFICATION
- AS PER CONTRACT
- AS PER PERMIT
- AS PER ORDER
- AS PER BY-LAW
- AS PER ZONING
- AS PER ACT
- AS PER REGULATION
- AS PER CODE
- AS PER STANDARD
- AS PER PRACTICE
- AS PER CONVENTION
- AS PER USAGE
- AS PER CUSTOM
- AS PER COURSE
- AS PER TRADE
- AS PER OCCUPATION
- AS PER INDUSTRY
- AS PER PROFESSION
- AS PER ART
- AS PER SCIENCE
- AS PER TECHNOLOGY
- AS PER INNOVATION
- AS PER RESEARCH
- AS PER DEVELOPMENT
- AS PER GROWTH
- AS PER CHANGE
- AS PER TRANSITION
- AS PER ADAPTATION
- AS PER RESILIENCE
- AS PER WELL-BEING
- AS PER QUALITY
- AS PER VALUE
- AS PER EQUITY
- AS PER JUSTICE
- AS PER INCLUSION

Appendix B – OC Transpo Maps



HURDMAN TRAIN ST. LAURENT



OTTAWA TRAIN YARDS

Belfast
Farm Boy
Industrial
Innes

ELMVALE ACRES
S.C. / C.C.

Russell

Walkley

Don Reid

St. Laurent

GREENBORO

Johnston

SOUTH KEYS

Cahill

Lorry Greenberg

Karsh

Blohm

Esson

Hawthorne

Legend • Légende



Transitway & Station



Some trips early morning only /
Quelques trajets tôt le matin seulement



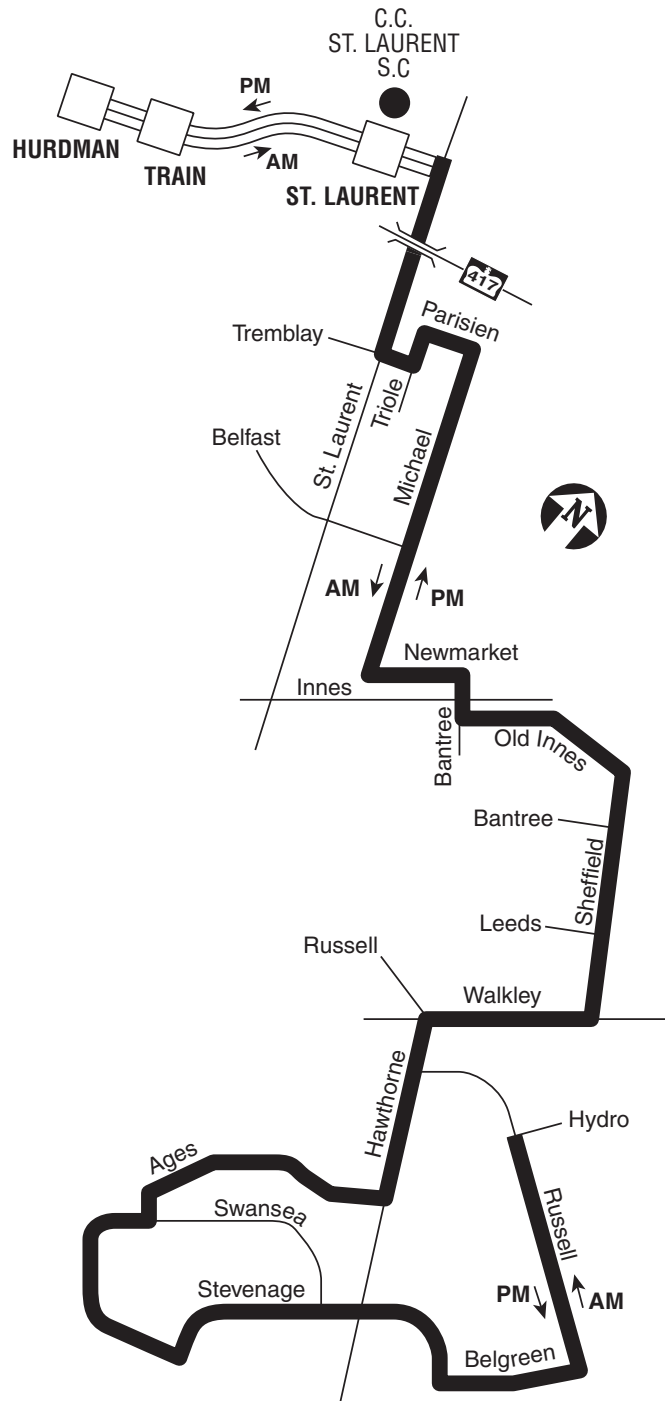
Light Rail Connection / Correspondance au train léger



Park & Ride / Parc-o-Bus



Timepoint / Heures de passage



















Legend • Légende

 Transitway & Station

Appendix C – Intersection Capacity Analysis

















1599 St. Laurent Boulevard
3: Belfast Road & Trioie Street

Existing (2014) Traffic
AM Peak Hr

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	241	15	13	409	19	3	2	3	10	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	262	16	14	445	21	3	2	3	11	0	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	465			278			800	801	270	795	798	455
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	465			278			800	801	270	795	798	455
tC, single (s)	4.3			4.2			8.1	7.0	7.2	7.5	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.3			4.4	4.5	4.2	3.9	4.0	3.3
p0 queue free %	98			99			98	99	99	96	100	98
cM capacity (veh/h)	1017			1213			204	261	582	256	312	605
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	297	479	9	21								
Volume Left	18	14	3	11								
Volume Right	16	21	3	10								
cSH	1017	1213	290	352								
Volume to Capacity	0.02	0.01	0.03	0.06								
Queue Length 95th (m)	0.4	0.2	0.6	1.3								
Control Delay (s)	0.7	0.4	17.8	15.9								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.7	0.4	17.8	15.9								
Approach LOS			C	C								
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			37.9%		ICU Level of Service				A			
Analysis Period (min)			15									

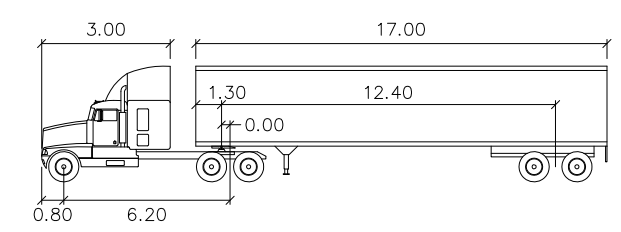
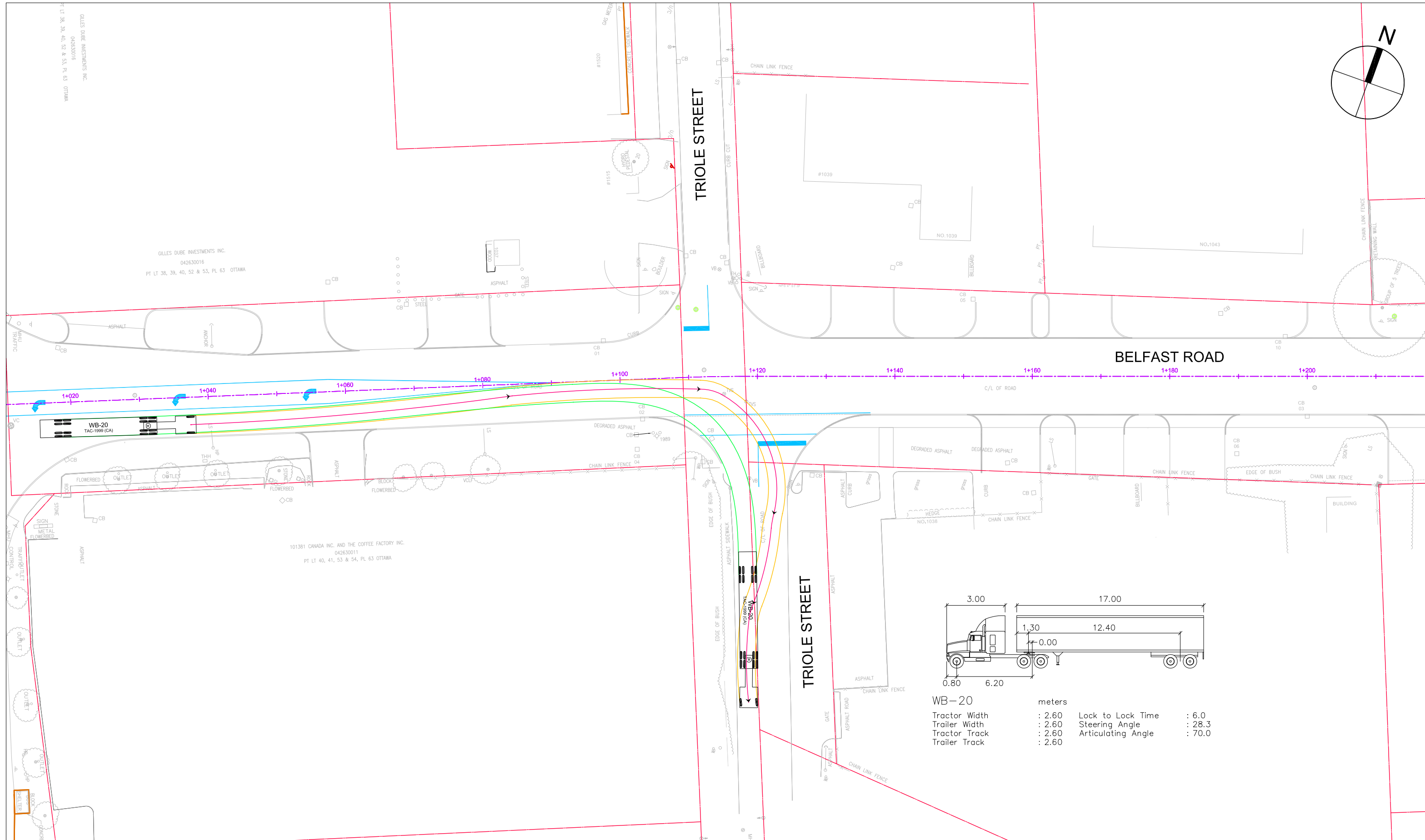
1599 St. Laurent Boulevard
3: Belfast Road & Trioie Street

Existing (2014) Traffic
PM Peak Hr

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	55	290	32	22	388	21	24	1	10	26	1	46
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	315	35	24	422	23	26	1	11	28	1	50
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	445			350			984	945	333	945	951	433
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	445			350			984	945	333	945	951	433
tC, single (s)	4.3			4.3			7.4	7.5	6.6	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.4			3.8	4.9	3.7	3.5	4.0	3.3
p0 queue free %	94			98			85	99	98	87	100	92
cM capacity (veh/h)	1008			1125			172	168	630	224	241	627
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	410	468	38	79								
Volume Left	60	24	26	28								
Volume Right	35	23	11	50								
cSH	1008	1125	217	377								
Volume to Capacity	0.06	0.02	0.18	0.21								
Queue Length 95th (m)	1.3	0.5	4.3	5.5								
Control Delay (s)	1.8	0.6	25.1	17.1								
Lane LOS	A	A	D	C								
Approach Delay (s)	1.8	0.6	25.1	17.1								
Approach LOS			D	C								
Intersection Summary												
Average Delay			3.4									
Intersection Capacity Utilization			50.8%		ICU Level of Service				A			
Analysis Period (min)			15									

Appendix D – Truck Turning Simulations

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WB-20		meters	
Tractor Width	: 2.60	Lock to Lock Time	: 6.0
Trailer Width	: 2.60	Steering Angle	: 28.3
Tractor Track	: 2.60	Articulating Angle	: 70.0
Trailer Track	: 2.60		



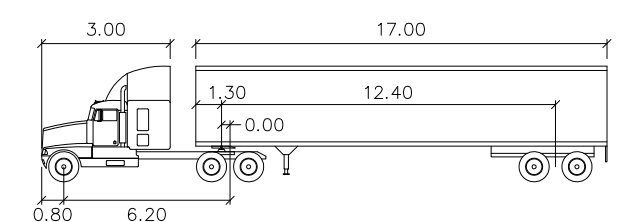
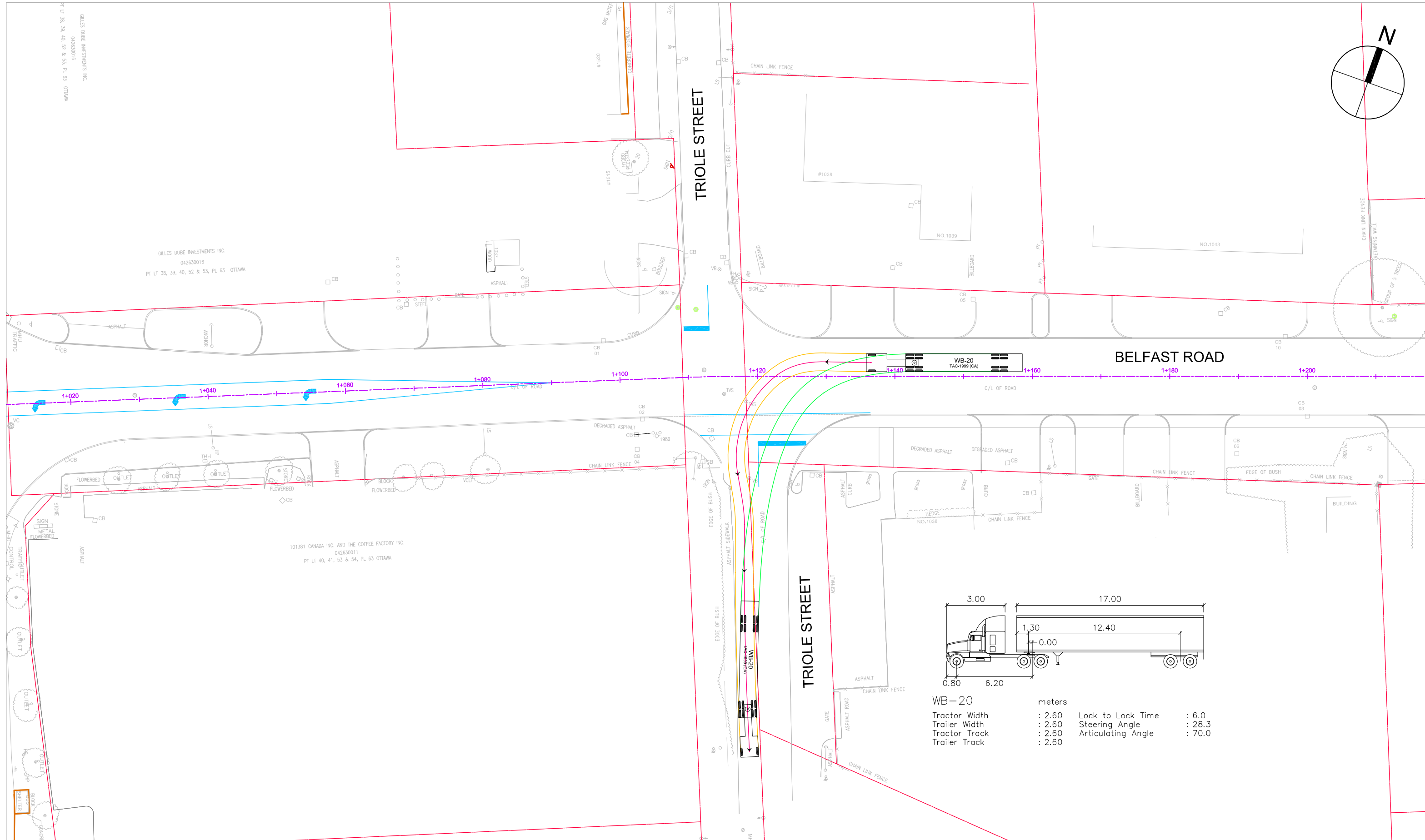
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Project Title
1599 St. Laurent Boulevard
Transportation Overview

Drawing Title
WB-20 Truck Turning Simulation
Eastbound Right-Turn

Sheet No.
1

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WB-20		meters	
Tractor Width	: 2.60	Lock to Lock Time	: 6.0
Trailer Width	: 2.60	Steering Angle	: 28.3
Tractor Track	: 2.60	Articulating Angle	: 70.0
Trailer Track	: 2.60		



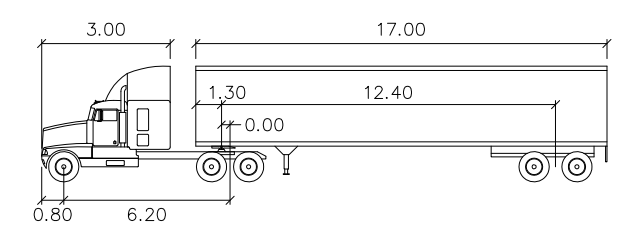
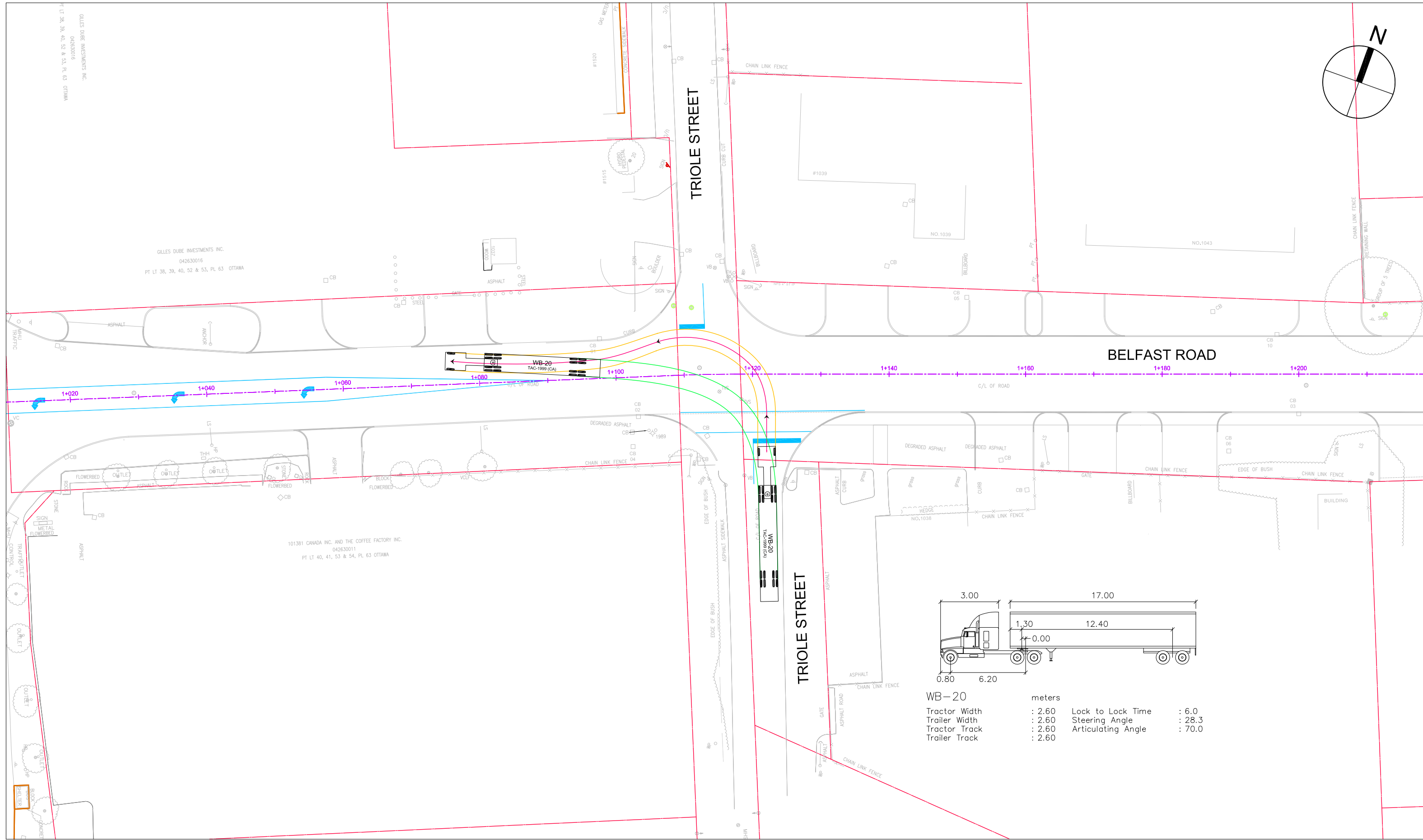
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Project Title
1599 St. Laurent Boulevard
Transportation Overview

Drawing Title
WB-20 Truck Turning Simulation
Westbound Left-Turn

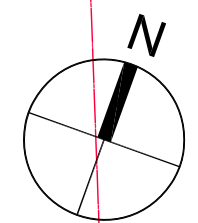
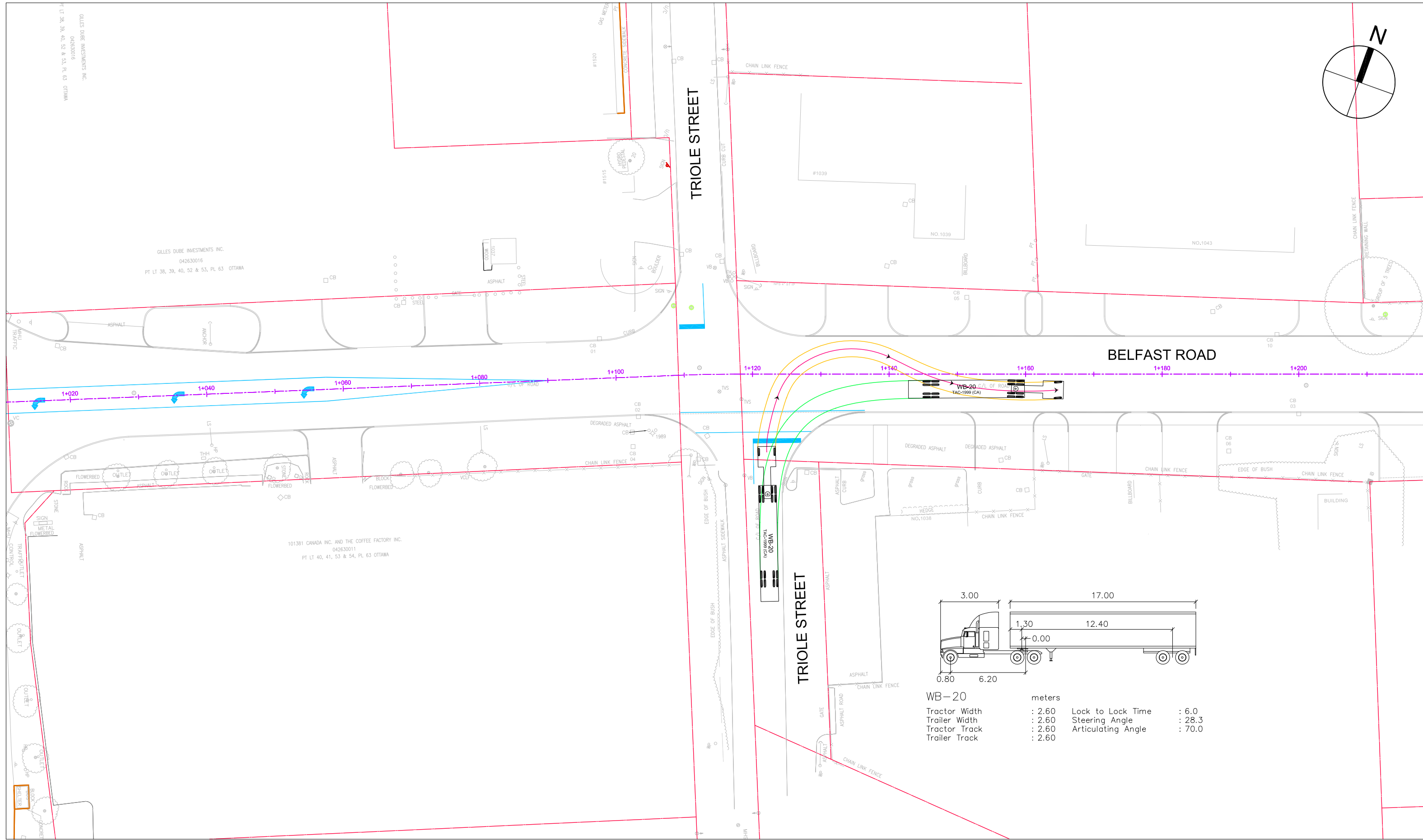
Sheet No.
2

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WB-20		meters	
Tractor Width	: 2.60	Lock to Lock Time	: 6.0
Trailer Width	: 2.60	Steering Angle	: 28.3
Tractor Track	: 2.60	Articulating Angle	: 70.0
Trailer Track	: 2.60		

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Scale
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Project Title
1599 St. Laurent Boulevard
Transportation Overview

Drawing Title
WB-20 Truck Turning Simulation
Northbound Right-Turn

Sheet No.
4