Traffic Impact Study

720 Granite Court

1334281 Ontario Ltd.

13 September 2024

→ The Power of Commitment

Executive Summary

GHD is pleased to provide the following updated Traffic Impact Study for the proposed residential development located at 720 Granite Court in the City of Pickering.

This study represents an update to the previously submitted Traffic Impact Study prepared by GHD dated April 2023 in response to comments received from the Region and the City.

This report determines the site related traffic and subsequent traffic related impacts on the adjacent road network during the weekday a.m. and p.m. peak hours. These impacts are based on the projected future background traffic and road network conditions derived for a 2027, 2032, and 2037 planning horizon year.

The proposed site plan consists of a 10-storey high-rise building with a total of 262 dwelling units and 81 m^2 of ground floor commercial space.

Access to the subject site is proposed via a single full-moves driveway onto Granite Court located approximately 75 metres from the intersection of Whites Road and Granite Court/Oklahoma Drive.

The proposed new development is expected to generate a total of 78 new two-way trips consisting of 21 inbound and 57 outbound trips during weekday a.m. peak hour and 97 new two-way trips consisting of 59 inbound and 38 outbound trips during the weekday p.m. peak hour.

Under existing, future background, and future total conditions, all study intersections are operating within capacity.

GHD prepared a memo that assessed and recommended improvements to the intersection of Granite Court/Oklahoma Drive and Whites Road to address concerns raised by local residents and businesses with the queuing and delays through this intersection. The memo circulated to Region staff recommended modifying the signal timing to provide separate phases for the east and west approaches (split phasing) and changing the lane configuration in the eastbound approach to a left-turn and a shared through/right/left-turn lane. The proposed changes to the intersection were reviewed by the Region and considered to be acceptable.

Application of the current City of Pickering's By-Law parking rates to the subject site results in a requirement of 464 vehicle parking spaces, shared between residents and visitors.

The subject site provides a total of 404 parking spaces for vehicles (1.29 spaces per unit for residents, 0.25 spaces per unit for visitors, shared between the residential and non-residential component), a shortfall of 55 parking spaces from the By-law requirement. The proposed rates for the subject site are in line with the City's Draft Comprehensive Zoning By-law rates found in adjacent municipalities.

The proposed rates for the subject site match the required minimum parking rates found in the City's Draft Comprehensive Zoning By-law. The provision of 1.25 spaces per unit for residents and 0.25 spaces per unit for visitors is also consistent with recently updated parking rates found in adjacent municipalities such as Ajax, Whitby, and Whitchurch-Stouffville.

A series of Transportation Demand Management (TDM) measures are proposed for the site to reduce dependency on single-occupancy vehicle trips by encouraging residents to explore alternative modes of transportation. These measures include:

- Improved pedestrian and cycling connectivity to the municipal networks, to make it easy and safe for people to walk or bike to their destination
- One time Presto Pass for residents upon purchase of a unit
- The provision of bicycle parking for both residents and visitors
- Unbundled vehicle parking
- Communication strategy and information packages

These measures will not only help reduce traffic congestion and air pollution, but also promote a healthier and more active lifestyle for the residents.

The City of Pickering's Standard for accesses is found in Drawing P-605, Medium to high density residential, commercial, and industrial driveway access and states that the minimum and maximum access width requirement for two-way residential driveways ranges from 6.5 to 12 metres and the radius is required to be between 7.5 and 9 metres. The proposed site access has a width of 7.3 metres with an inbound and outbound radius of 7.5 metres, meeting the City's requirement.

A Vehicle Swept Path Analysis was undertaken to assess the site's ability to accommodate the required turning movements of an emergency vehicle, waste collection vehicle, an MSU Truck and a Passenger vehicle as per TAC design guidelines and confirmed that the site can sufficiently accommodate the aforementioned design vehicles.

A sightline assessment of the proposed location of the site access confirmed that sufficient sightlines are provided to satisfy intersection sight distances for a 40 km/h posted speed limit along Granite Court.

The traffic study concludes that the proposed development can be adequately accommodated by the existing and/or planned transportation network.

We trust that this satisfies your requirements, but do not hesitate to contact the undersigned if you have any questions.

Sincerely,

GHD

William Maria, P. Eng.

Transportation Planning Lead

September 13, 2024

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1. Introduction

1.1 Retainer and Objective

GHD Limited was retained to prepare a Transportation Impact Study in support of a proposed residential development located on lands with the municipal address 720 Granite Court in the City of Pickering. This study represents an update to the previously submitted Traffic Impact Study prepared by GHD dated April 2023 in response to comments received from the Region and the City. The Region and City's comments as well as GHD's responses are provided in **Appendix A**.

The site location is illustrated in **Figure 1**.

The purpose of this study is to:

- Establish baseline traffic conditions for the study area in 2023 and determine future background operating conditions for a future planning horizon in 2027, 2032, and 2037.
- Utilizing Institute of Transportation Engineer's (ITE) Trip Generation data and first principles to estimate the site trips generated by the proposed development and distribute the traffic to the adjacent road network.
- Determine future operating traffic conditions during the weekday peek periods through intersection capacity analysis.
- Review the number of proposed parking spaces in accordance with the City of Pickering's Zoning By-law.
- Provide Travel Demand Management (TDM) measures to encourage residents to reduce dependencies on single occupancy vehicle trips.
- Complete a sightline assessment of the proposed driveway location.
- Review the swept path of the expected design vehicles for the subject site.

The scope of work and terms of reference for the traffic study were confirmed with the City of Pickering and Durham Region via email correspondence. A copy of the correspondence is provided in **Appendix A**.

1.2 Study Team

The GHD team involved in the preparation of the study are:

- William Maria, P. Eng., Transportation Planning Lead
- Rafael Andrenacci, B.Eng., Transportation Planner
- James Emerson, B. Eng., Transportation Planner

Figure 1 Site Location

2. Site Characteristics

2.1 Study Area

The study intersections reflect the agreed terms of reference for the study and include:

- Whites Road and Bayly Street
- Whites Road and Granite Court/Oklahoma Drive
- Granite Court and the site access

2.2 Proposed Development Content

A site plan prepared was by onespace unlimited inc. and consists of a 10-storey high-rise building with a total of 262 dwelling units, 81 m^2 of ground floor commercial space, and both surface and underground parking.

Access to the subject site is proposed via a full-moves access on Granite Court.

Sidewalks are proposed to be provided along the site's frontage on Whites Road and Granite Court. In addition, the existing guide rail located west of the proposed site access on Granite Court will be removed and replaced with a new crash attenuator system at the parapet wall. The grade of the subject site will be raised to match the grade at Granite Court which will eliminate the need for the same length of guiderail as is currently provided.

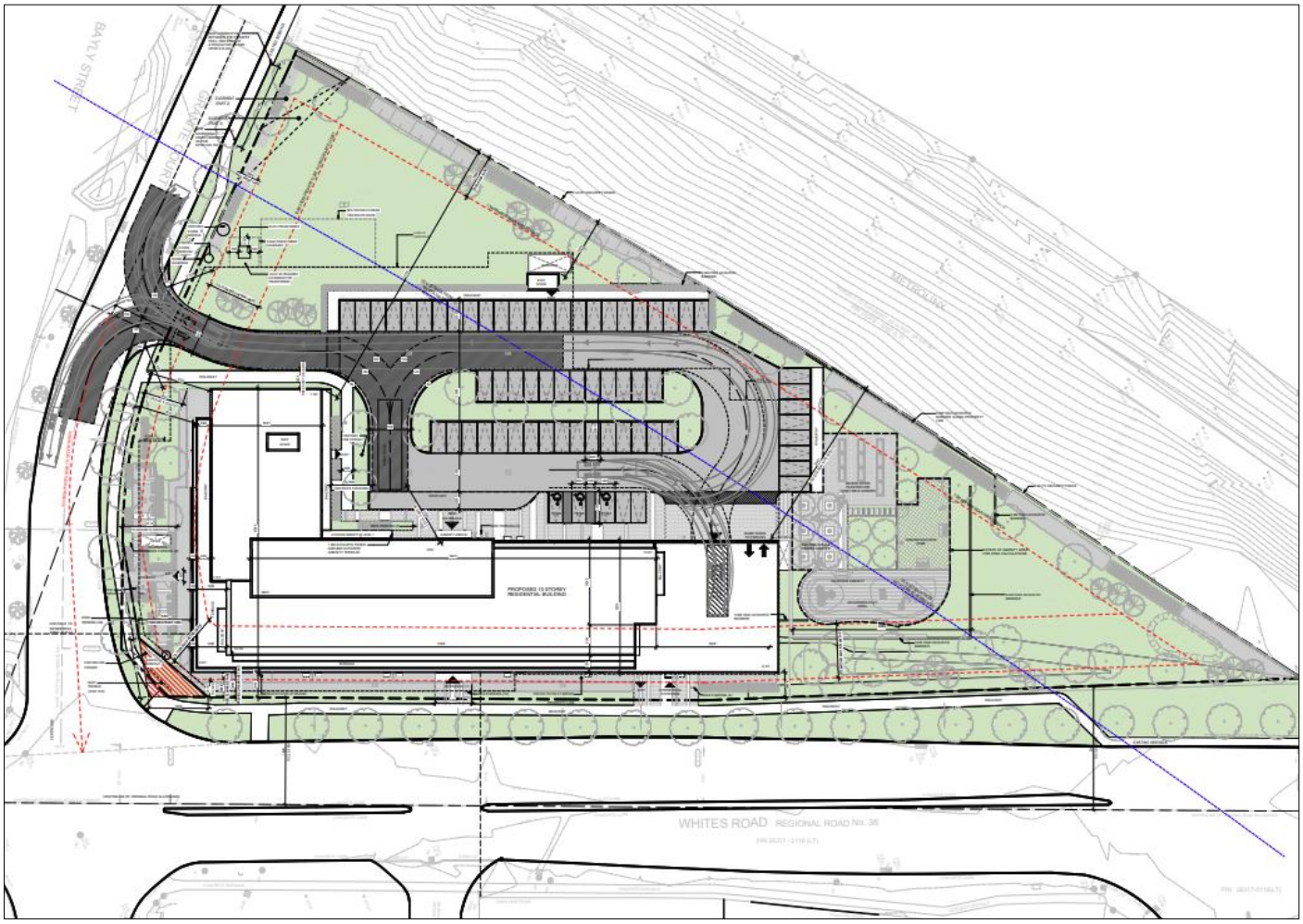

Figure 2 Site Plan

3. Existing Conditions

3.1 Existing Road Network

Whites Road is a north/south Type A arterial road under the jurisdiction of the Region of Durham with a four-lane cross-section from the north of the study area to the intersections of Granite Court/Oklahoma Drive. Whites Road is then reduced to a two-lane collector road under the jurisdiction of the City of Pickering south of Granite Court/Oklahoma Drive. Its intersection with Bayly Street is a signalized T-intersection with an auxiliary left-turn lane in the southbound direction and an auxiliary right-turn lane in the northbound direction. Its intersection with Granite Court/Oklahoma Drive is also signalized with an auxiliary left-turn lane in both the northbound and southbound directions and a right-turn lane in the southbound direction to transition to its two-lane cross-section. The posted speed limit along Whites Road is 60 km/h north of its intersection with Granite Court/Oklahoma Drive and 50 km/h south of it.

Bayly Street is an east/west Type A arterial road under the jurisdiction of the Region of Durham with a four-lane cross-section within the study area. The signalized T-intersection with Whites Road is signalized, with a left-turn lane and a right-turn lane in the westbound direction. The posted speed limit along Bayly Street is 60 km/h.

Granite Court is an east/west collector road under the jurisdiction of the City of Pickering with a two-lane cross-section within the study area. Its intersection with Whites Road is signalized with an auxiliary left-turn lane in the eastbound direction. East of Whites Road, Granite Court continues as Oklahoma Drive. The posted speed limit along Granite Court is 40 km/h.

Oklahoma Drive is an east/west collector road under the jurisdiction of the City of Pickering with a two-lane cross-section within the study area. Its intersection with Whites Road is signalized with auxiliary left-turn and right-turn lanes in the eastbound and westbound directions. The posted speed limit along Oklahoma Drive is 40 km/h.

The existing lane configurations at the study intersections is provided in the figure below.

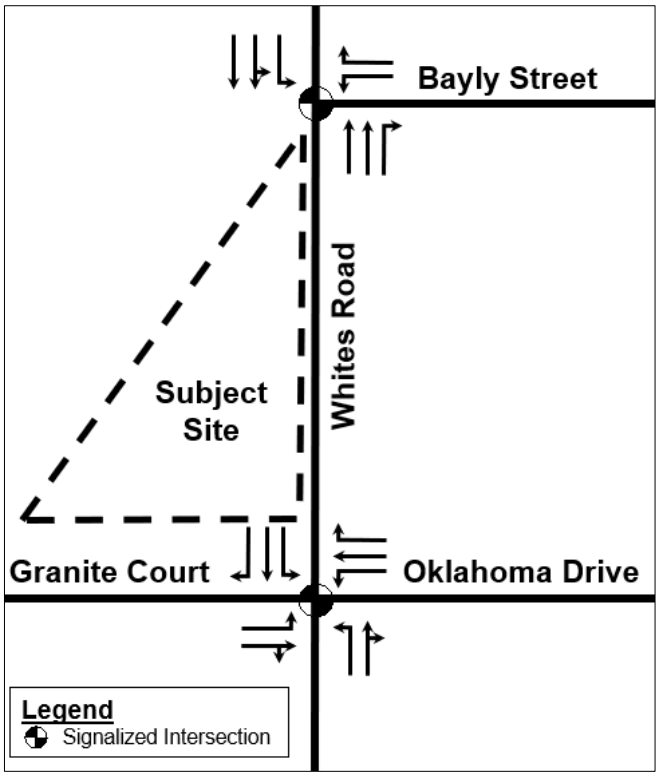

Figure 3 Existing Lane Configurations

3.2 Pedestrian and Bicycle Routes

Sidewalks are provided on at least one side of the road throughout the study area, and include the south side of Bayly Street, the east side of Whites Road, the north side of Granite Court and along both sides of Oklahoma Drive.

Bike lanes are provided on both sides of the road along Granite Court.

The existing pedestrian and cycling amenities are illustrated in the following figure.

Figure 4 Existing Sidewalks and Bicycle Routes

3.3 Transit Services

Durham Region Transit (DRT) currently offers service along Route 120 (Whites) within the study area. The route operates between the Pickering GO Station in the east, towards the west along Bayly Street, south along West Shore Boulevard, west along Oklahoma Drive, and north along Whites Road towards Sunbird Trail. The route operates with a 30-minute headway throughout the week and weekends from 6:00 a.m. to 10:00 p.m..

The nearest transit stop is located at just east of the intersection of Whites Road and Granite Court/Oklahoma Drive for both directions approximately 160 and 220 metre walking distance from the lobby.

The existing transit routes and their associated bus stops are shown in **Figure 5**.

Figure 5 Existing Transit Routes and Transit Stops

3.4 Existing Traffic Data

GHD contracted Ontario Traffic Inc. to collect updated turning movement counts at the existing study intersections.

The baseline 2023 traffic volumes for the a.m. and p.m. peak hours are summarized in **Figure 6** with the updated counts conducted by Ontario Traffic Inc. provided in **Appendix B**.

Signal timing plans also obtained from the Region of Durham and are provided in **Appendix B.**

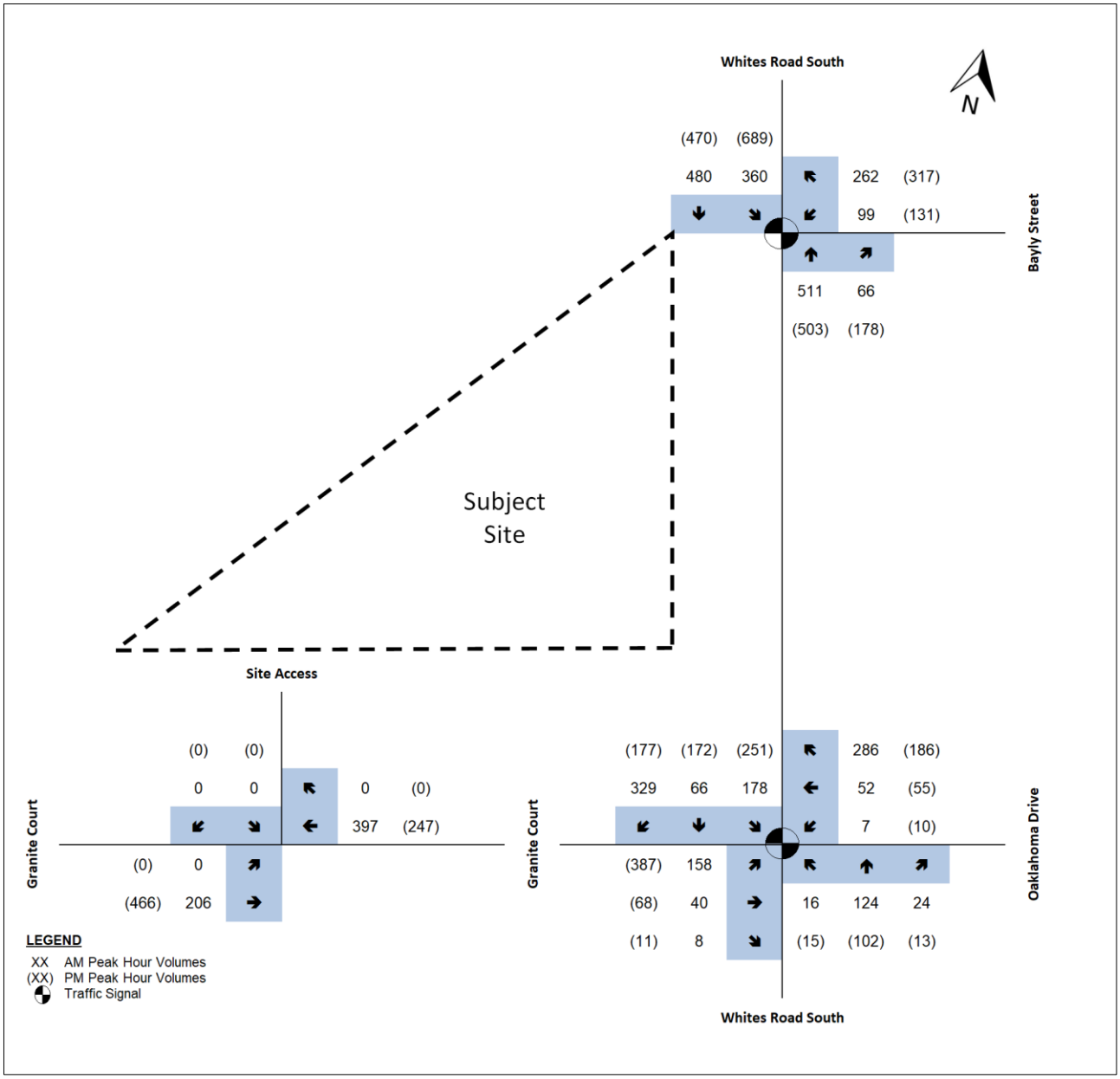

Figure 6 Baseline 2023 Traffic Volumes

4. Future Background Traffic

4.1 Study Horizon Year

Future horizon years of 2027, 2032 and 2037 were selected for the analysis of future traffic conditions, generally corresponding with the MTO's Transportation Impact Study Guidelines of the year of full build-out, a period of five years post build-out, and a period of ten years post build-out. The horizon years were agreed and confirmed in the terms of reference with City and Region staff, while MTO staff were contacted but did not provide comments.

4.2 Future Roadway Improvements

As identified by Region and City staff, a multi-use path is planned along Whites Road as a short-term infill project (2022-2029) from Bayly to Petticoat Creek Conservation Area.

4.3 Corridor Growth

GHD applied a 1% growth rate along the study area roadways up to the year of full build-out and a 0.5% growth rate for 5 and 10-year post build-out. This growth rate was confirmed with Region of Durham staff.

4.4 Background Development Traffic

City staff requested that the following three background developments located near the subject site and would contribute additional traffic volumes to the study intersections be included in the study:

- 14-storey apartment building on the east side of Whites Road north of Kingston Road
- Stacked townhouse development located on the north side of Kingston Road west of Whites Road
- The new Shell service station at the northwest corner of Whites Road and Kingston Road.
- Development in the southwest corner of Whites Road and Kingston Road (603-643 & 645-699 Kingston Road)

The location of the four background developments are identified in **Figure 7** below.

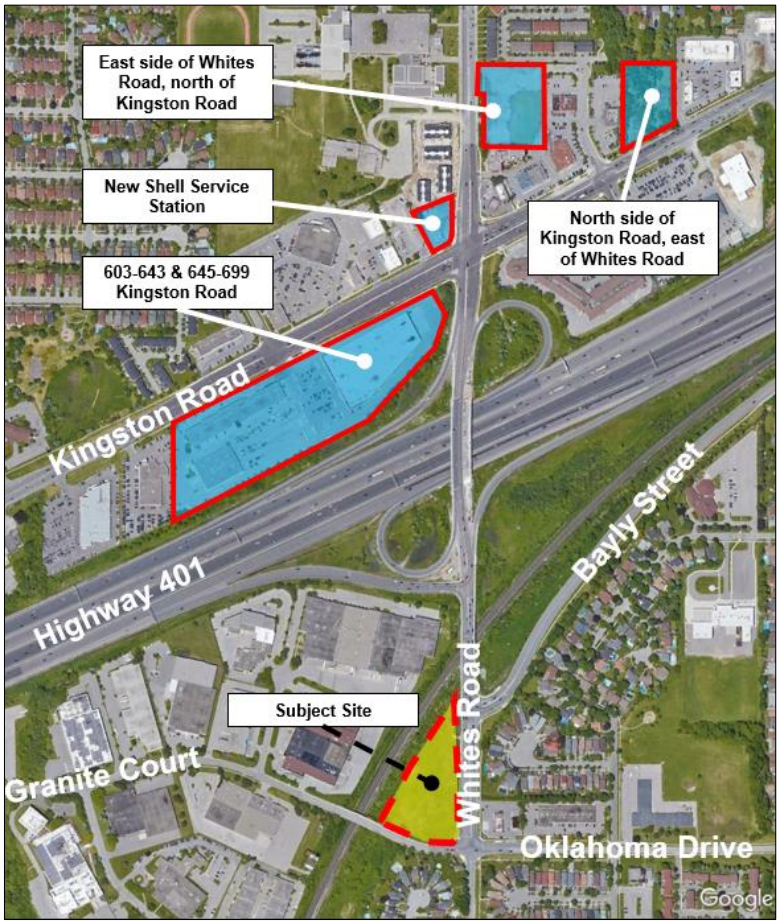

Figure 7 Background Development Locations

The proposed development at 603-643 & 645-699 Kingston Road results in a negative net trip generation along the study intersections as a result of the change in land use. As a conservative measure, the negative trip assignment from this development was not included in this study.

The Shell service station was not included as a background development as it has been constructed and site traffic from this development has been captured in the updated turning movement counts at the study intersections.

The proposed trip generation from each remaining background development is summarized in the table below, with the trip distribution for each site provided in **Appendix C**. The total site trips from each of the three background developments are provided in **Figure 8** and **Table 1.**

Table 1 Background Development Traffic

Background Development	GFA/Unit Count	Peak Hour Trips					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
East side of Whites Road, north of Kingston Road	227 high-rise dwelling units (LUC 222)	18	51	69	51	31	82
North side of Kingston Road, west of Whites Road	88 townhouse dwelling units (LUC 220)	12	38	50	37	21	58
Total		**30**	**89**	**119**	**88**	**52**	**140**

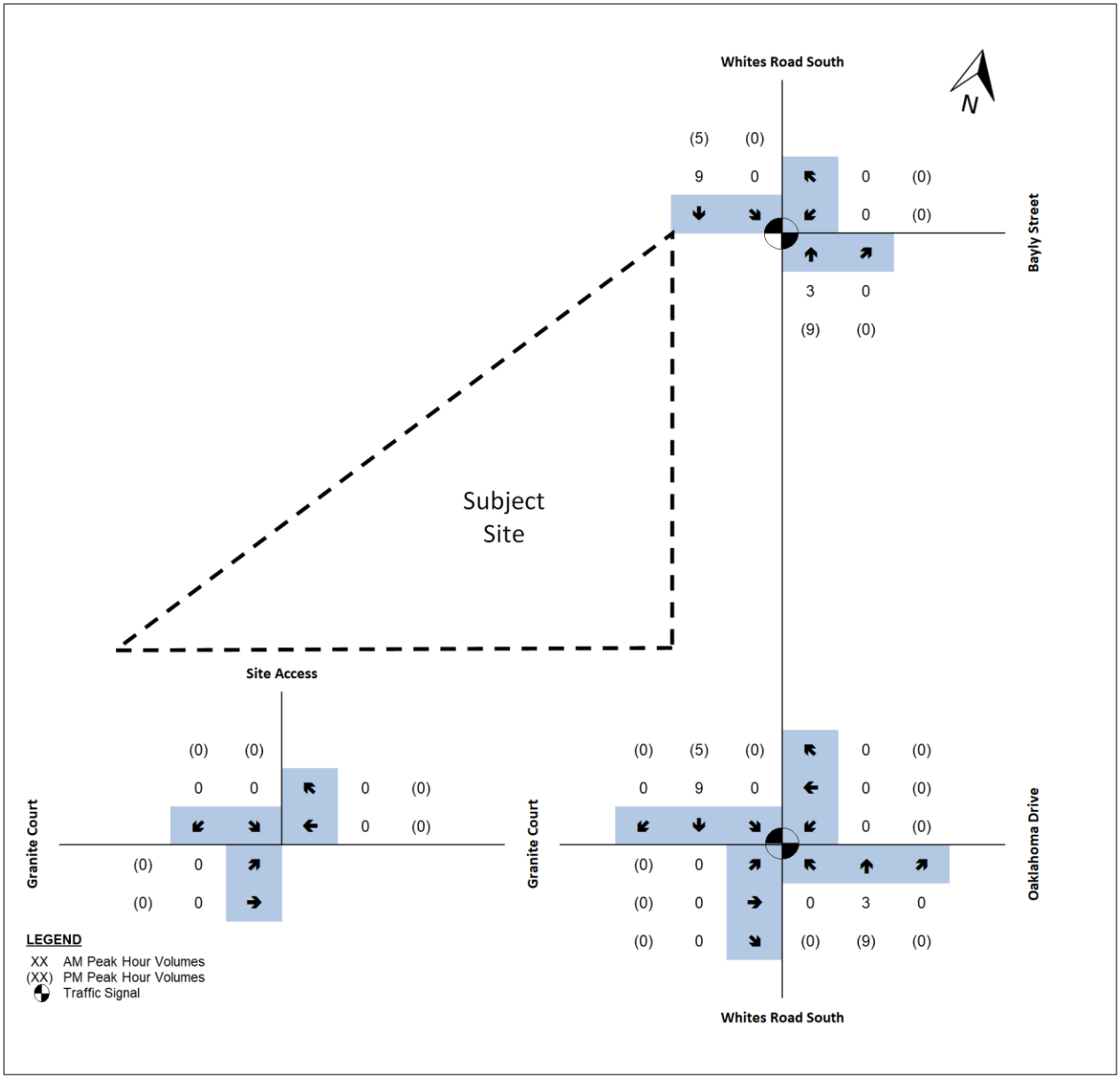

Figure 8 Total Background Development Site Traffic

4.5 Future Background Traffic Volumes

The background traffic volumes for the 2027, 2032, and 2037 horizon years were derived by applying the respective growth rates to the study area road network and adding the total background development site traffic from **Figure 8**. The resulting 2027, 2032, and 2037 future background traffic volumes are summarized in **Figure 9** , **Figure 10**, and **Figure 11**.

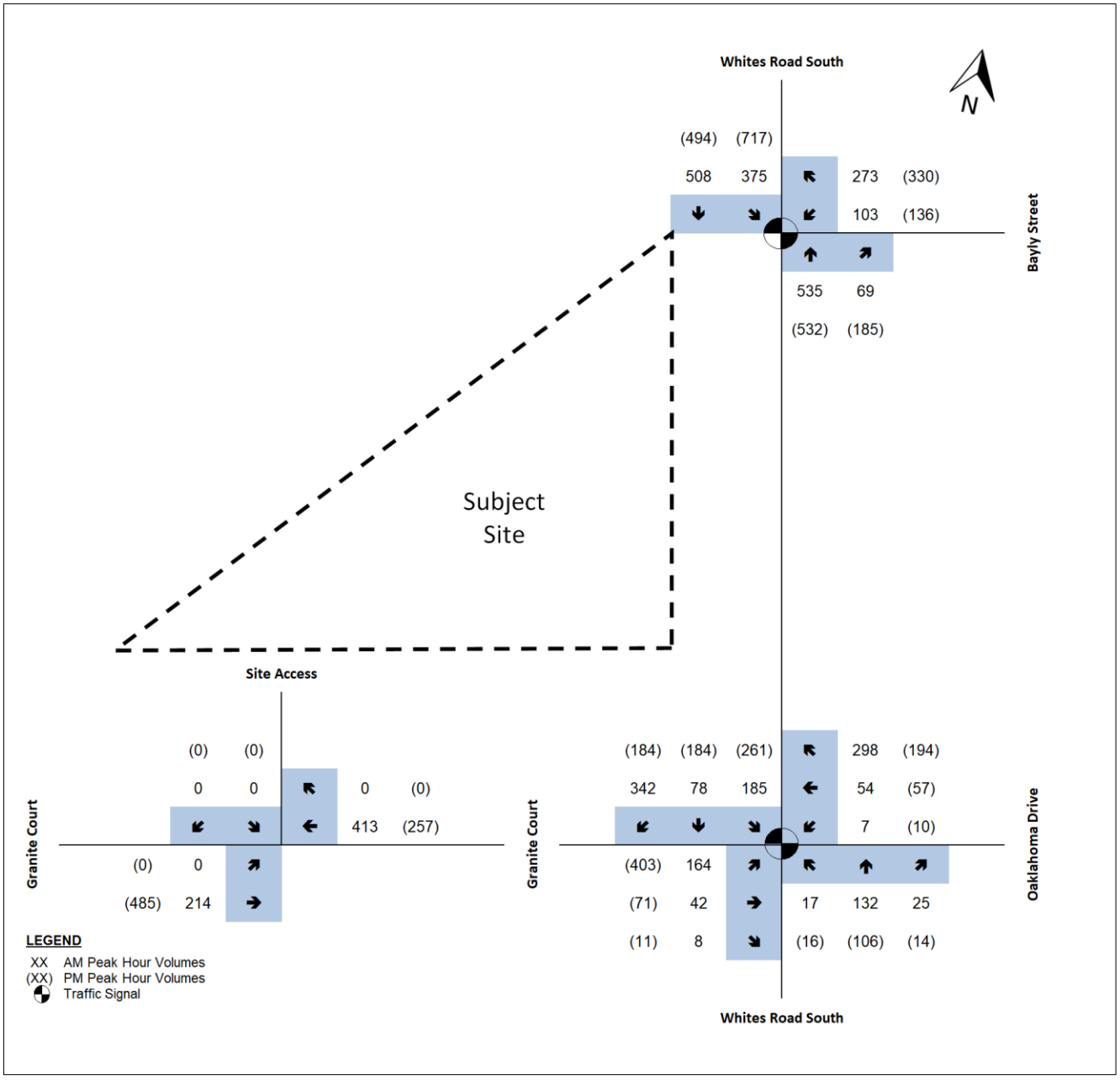

Figure 9 2027 Future Background Traffic Volumes

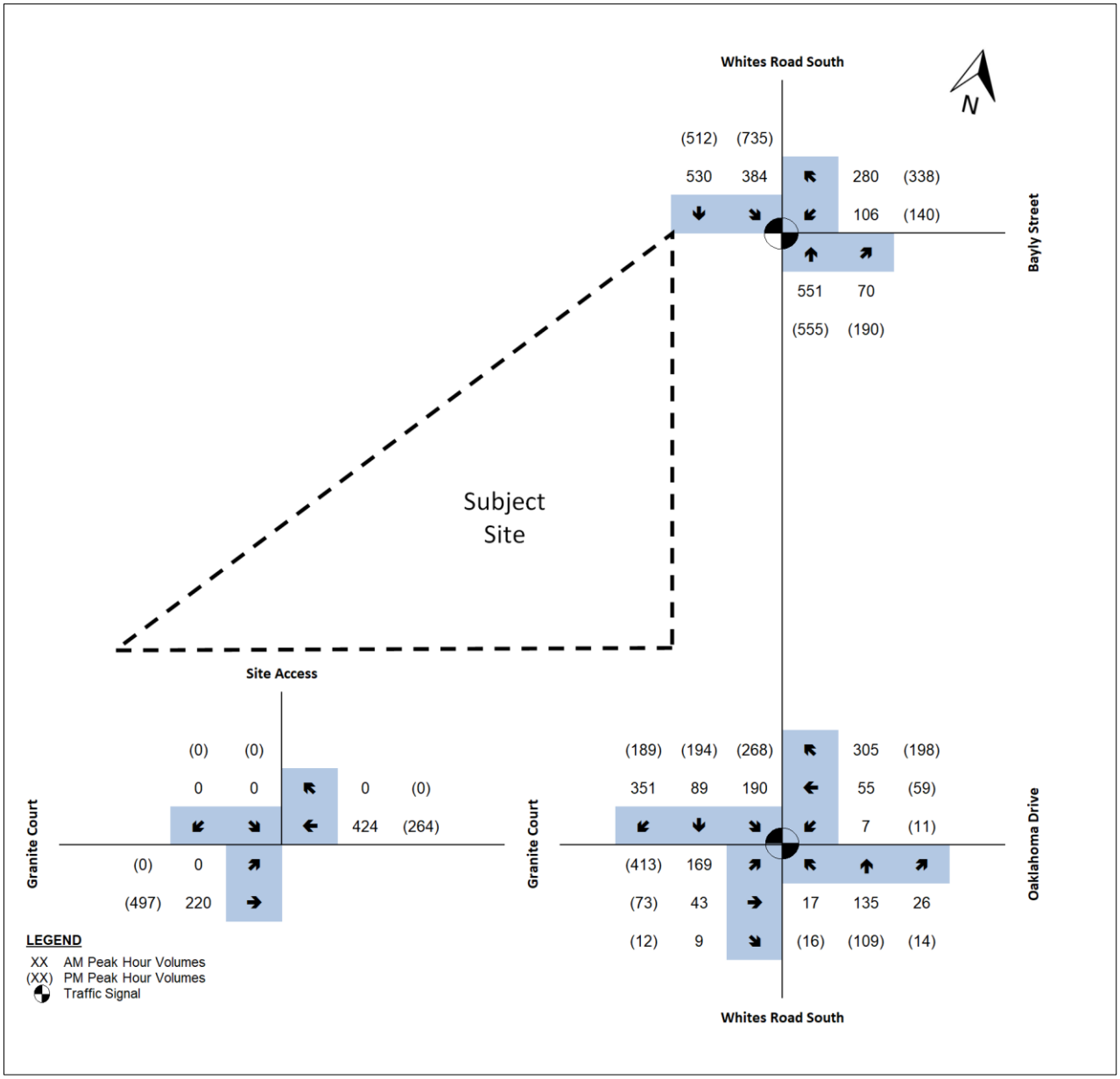

Figure 10 2032 Future Background Traffic Volumes

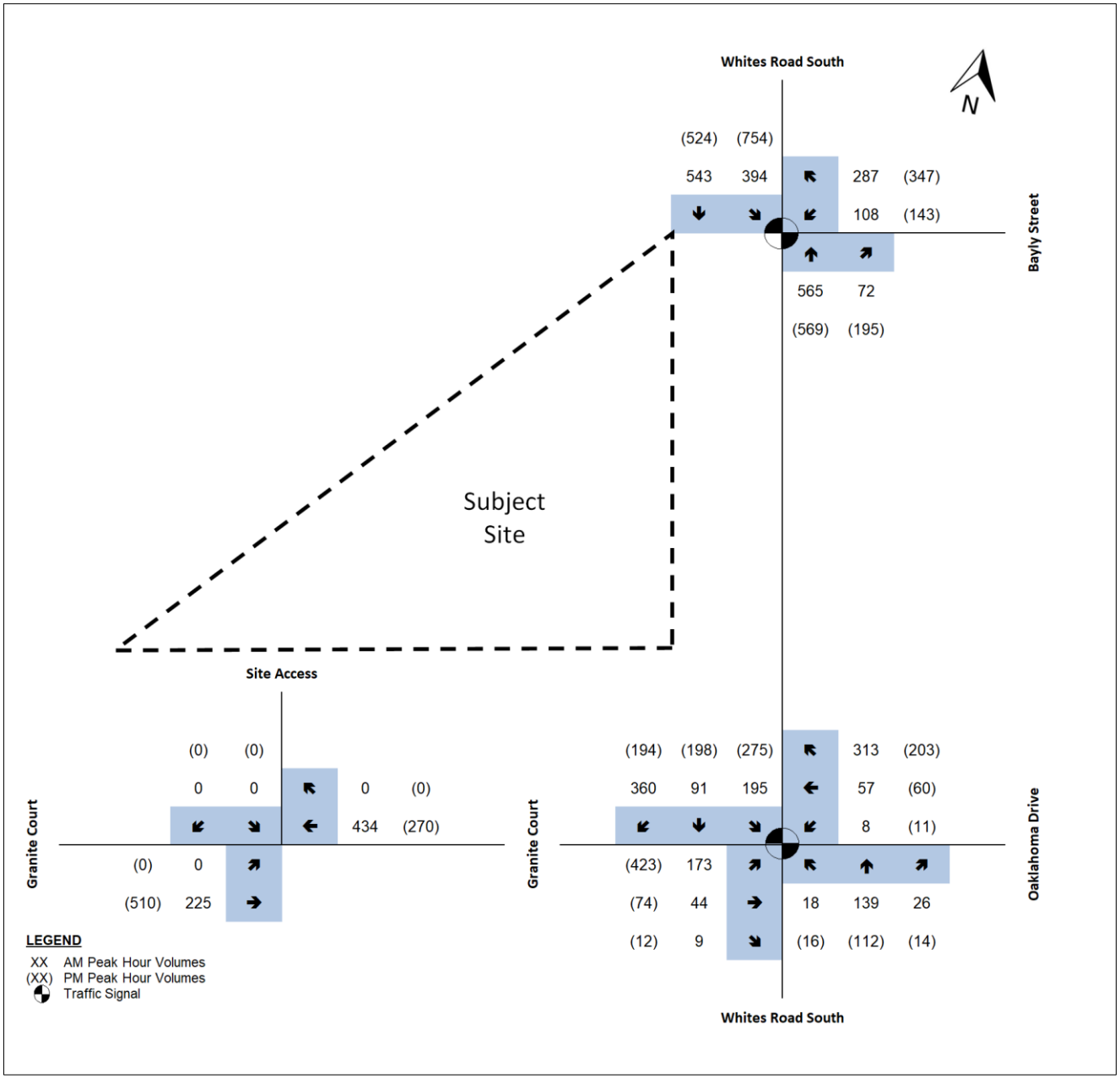

Figure 11 2037 Future Background Traffic Volumes

5. Site Generated Traffic

5.1 Site Traffic Generation

The proposed redevelopment consists of a 10-storey high-rise building with a total of 262 dwelling units.

Trip generation for the residential and retail components were calculated using rates provided in the Institute of Transportation Engineer's (ITE) Trip Generation Manual, 11th Edition using Land Use Code (LUC) 222 (Multifamily Housing – High-Rise) for the high-rise dwelling units and LUC 822 (Strip Retail Plaza (<40k)) for the commercial component.

As directed by Region staff, no additional reduction will be applied to the trip generation as an appropriate transit modal split is already included in the ITE Trip Generation rates.

Table 2 below summarizes the estimated trip generation for the proposed development.

Table 2 Estimated Site Trips

Land Uses	GFA/Dwelling Units	Parameters	Peak Hour					
			Weekday AM			Weekday PM		
			In	Out	Total	In	Out	Total
High-Rise Residential (LUC 222)	262 units	Trip Ratio	26%	74%	100%	62%	38%	100%
		Gross Trips	20	56	76	56	35	91
Retail (LUC 822)	81 m^2 (870 ft^2)	Trip Ratio	60%	40%	100%	50%	50%	100%
		Gross Trips	1	1	2	3	3	6
Total Primary Trips			***21***	***57***	***78***	***59***	***38***	***97***

The proposed development is expected to generate a total of 78 new two-way trips consisting of 21 inbound and 57 outbound trips during weekday a.m. peak hour and 97 new two-way trips consisting of 59 inbound and 38 outbound trips during the weekday p.m. peak hour.

5.2 Site Traffic Distribution and Assignment

Site generated traffic for the residential development was distributed based on a review of the existing travel patterns and the 2016 Transportation Tomorrow Survey (TTS) data for residential trips along the Highway 7 corridor. We assigned trips to the study area intersections based on the most reasonable routes for vehicles, considering factors such as travel time and distance.

The directional split for the site traffic is provided in **Table 3** with the full 2016 TTS data calculation sheets provided in **Appendix D**.

The site generated traffic assignment to the study area road network for the weekday a.m. and p.m. peak hours provided in **Figure 12**.

Table 3 Directional Trip Distribution of Site Traffic

Peak Period	Direction	North (Whites)	South (Whites)	East (Bayly)	East (Oklahoma)	West (Granite)
AM	Inbound	65%	5%	15%	5%	10%
	Outbound	70%	5%	10%	5%	10%
PM	Inbound	65%	5%	15%	5%	10%
	Outbound	55%	5%	20%	10%	10%

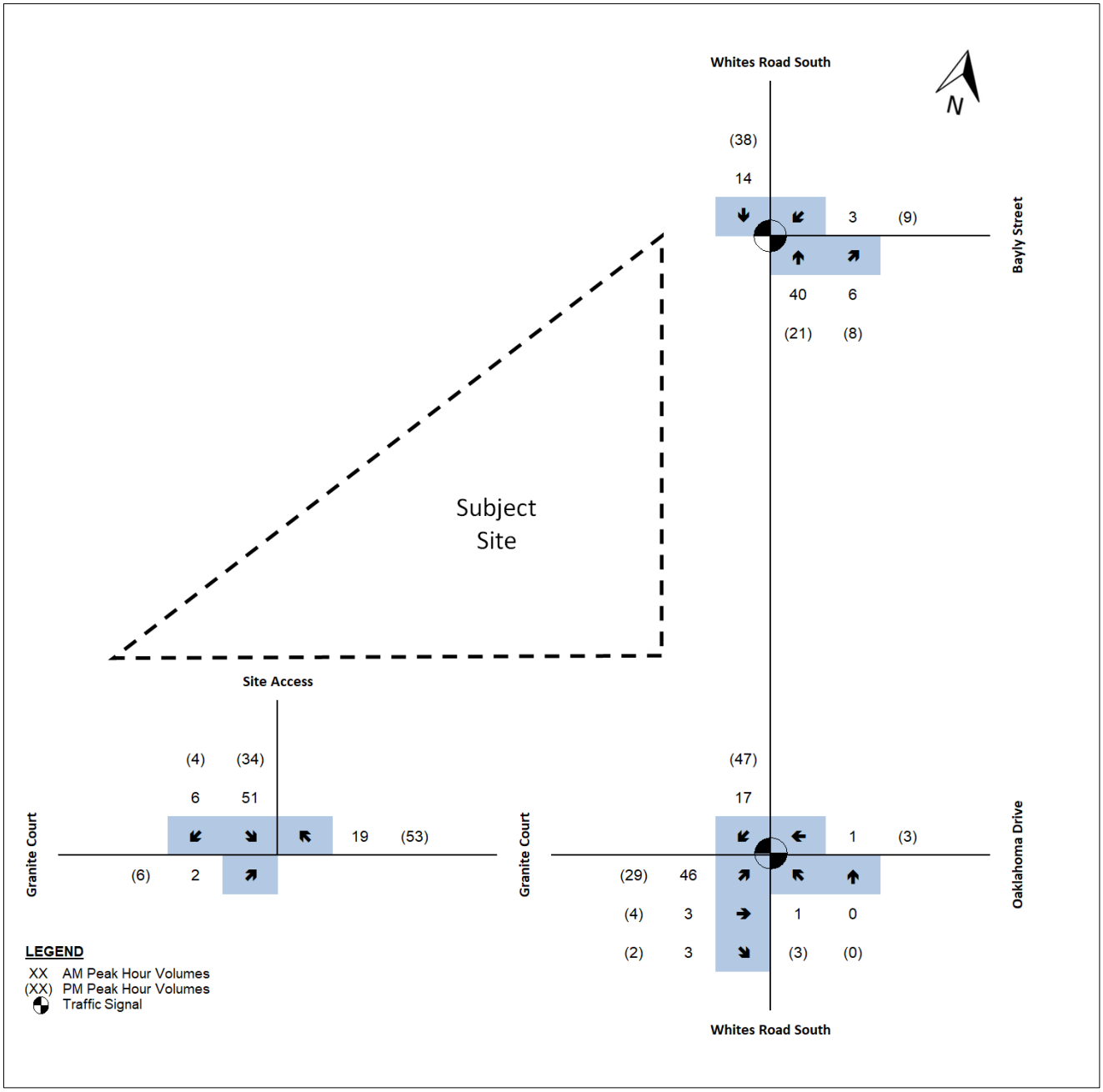

Figure 12 Total Site Trips

6. Future Total Traffic

The future total traffic conditions in the weekday a.m. and p.m. peak hours for the 2027, 2032, and 2037 planning horizon was derived by combining the projected future background traffic with the corresponding estimated site generated traffic. The resulting traffic volumes are presented in **Figure 13** , **Figure 14**, and **Figure 15.**

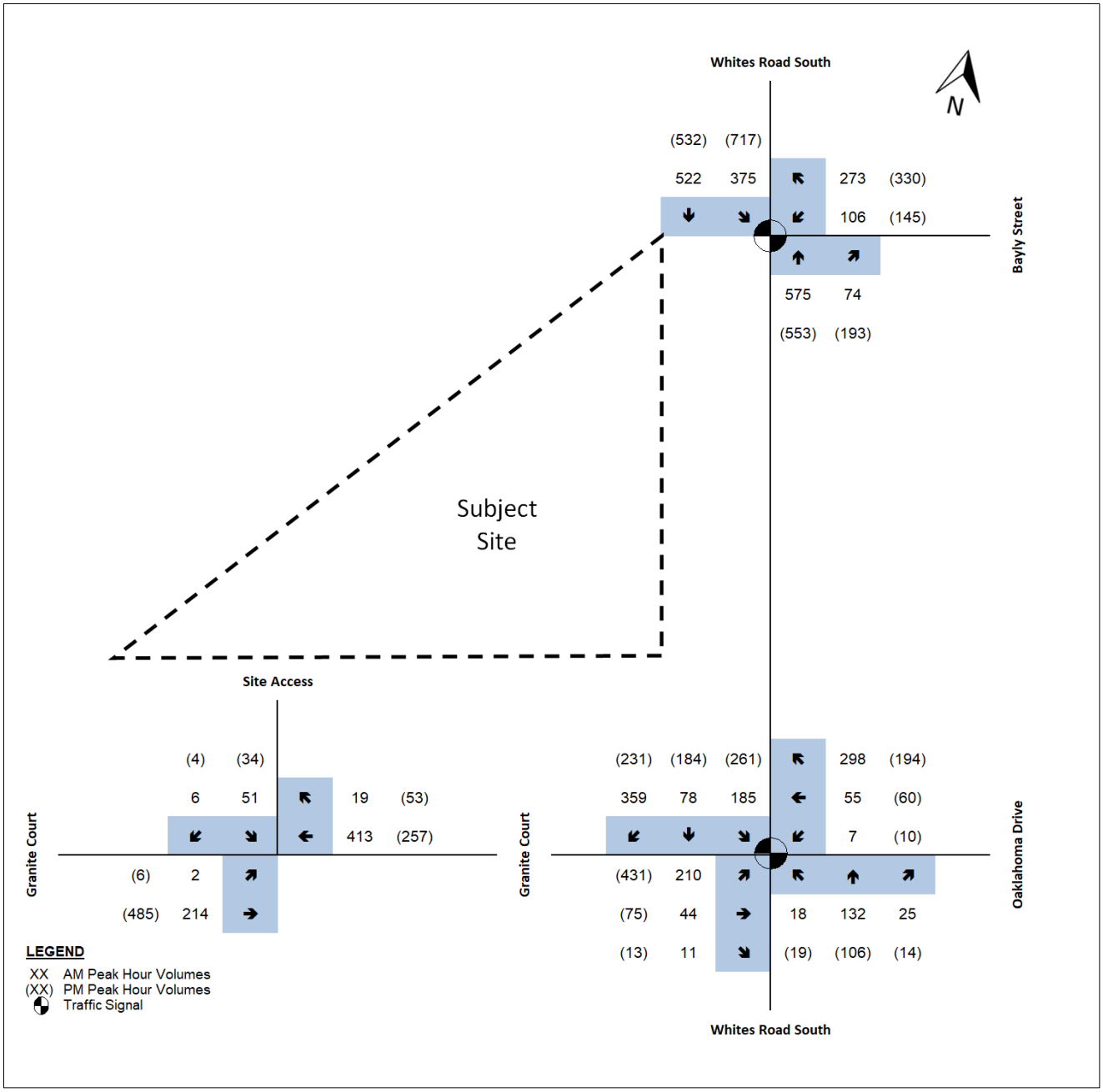

Figure 13 2027 Future Total Traffic Volumes

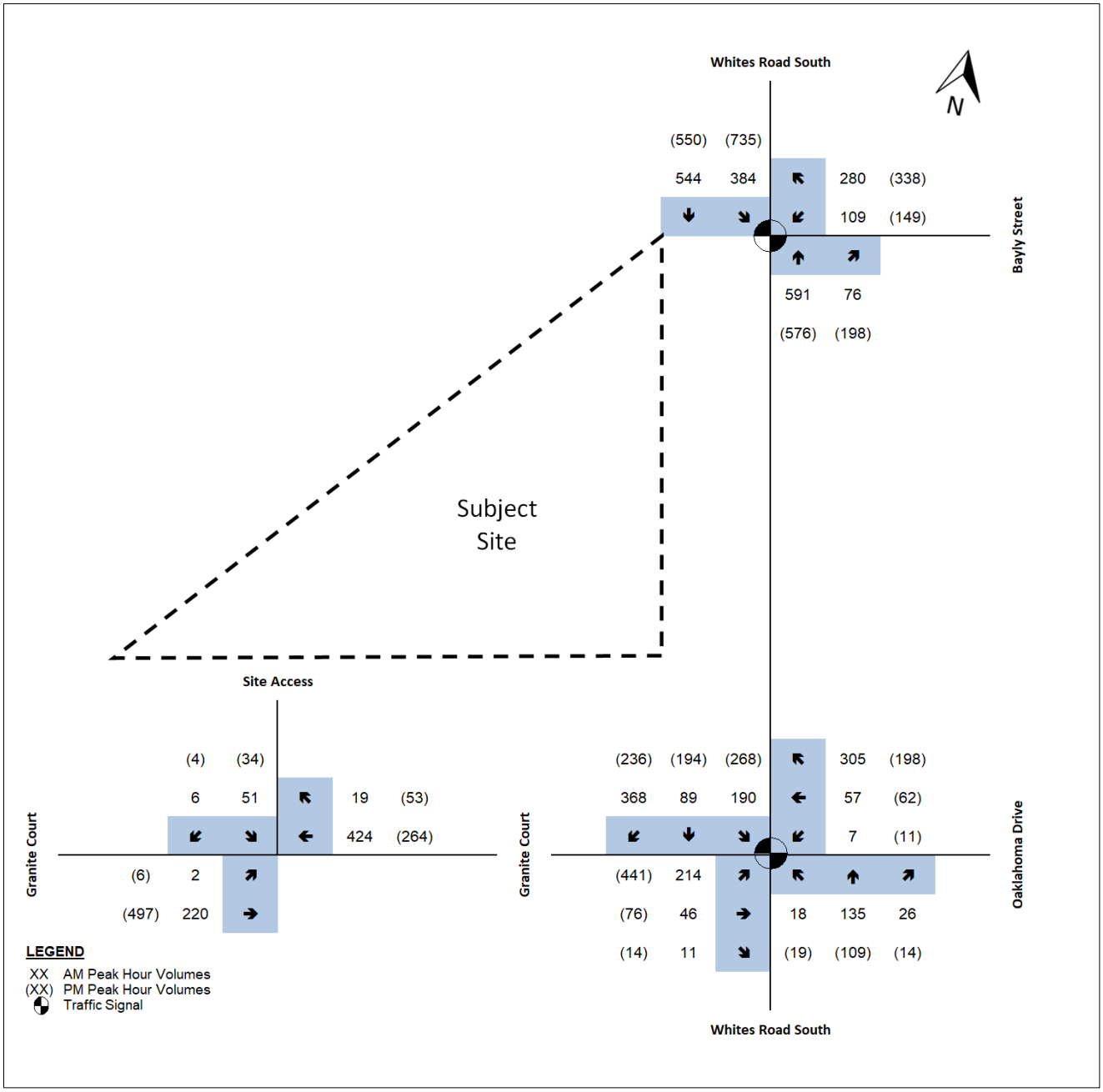

Figure 14 2032 Future Total Traffic Volumes

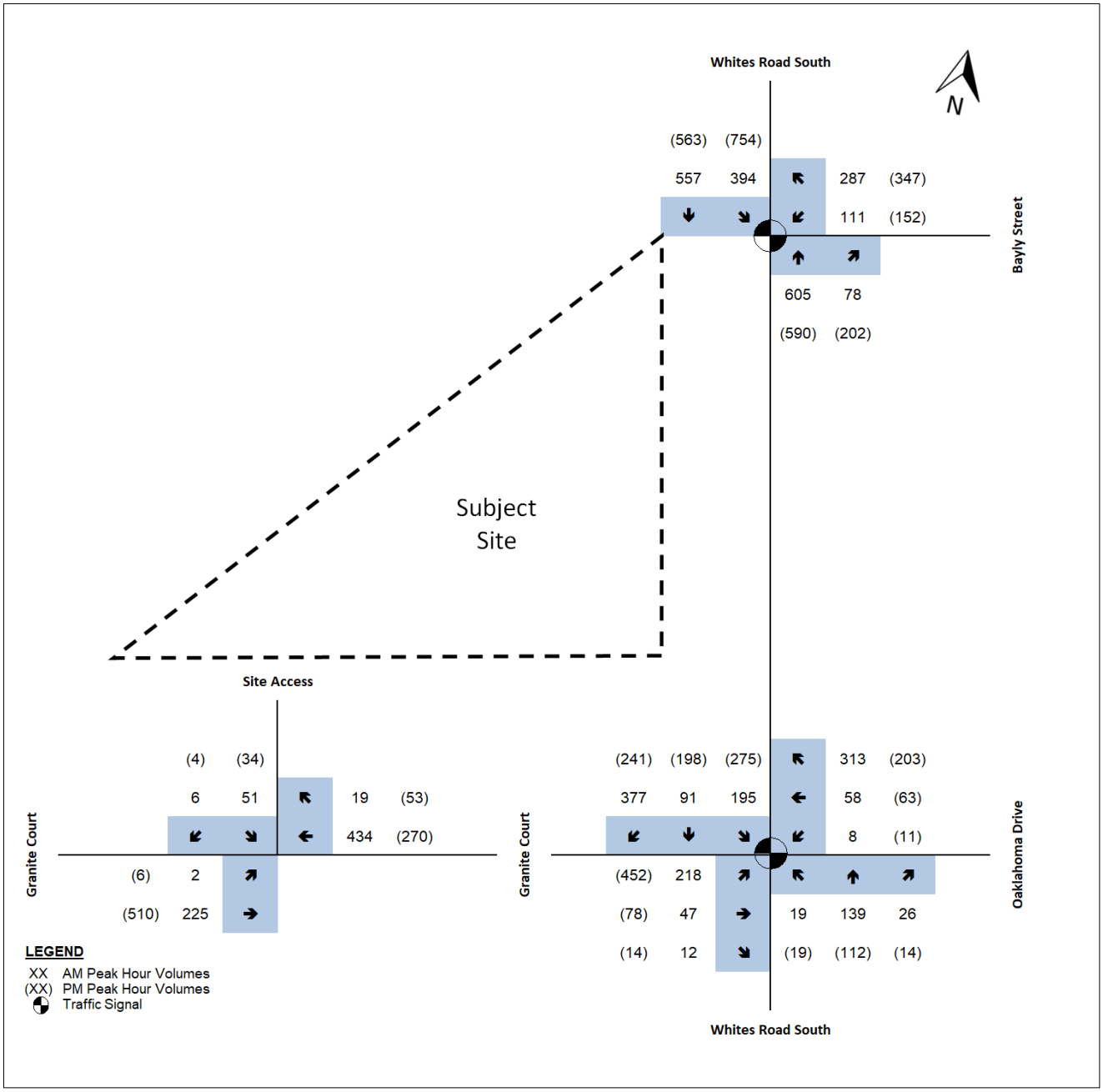

Figure 15 2037 Future Total Traffic Volumes

7. Capacity Analysis

The capacity analysis identifies how well the intersections and driveways are operating. The analysis contained within this report utilized the Highway Capacity Manual (HCM) 2000 procedure within the Synchro Version 10 Software package. The reported intersection volume-to-capacity ratios (v/c) are a measure of the saturation volume for each turning movement, while the levels-of-service (LOS) are a measure of the average delay for each turning movement. Queuing characteristics are reported as the predicted 95th percentile queue for each turning movement.

Both pedestrian crossing volumes and heavy vehicle proportions are included in the analyses. The peak hour factors from the historic counts were used to analyze existing and future traffic conditions.

The analysis includes identification and required modifications and improvements (if any) at intersections where the addition of background growth or background growth plus site-generated traffic volumes causes the following:

'Critical' intersections and movements for a signalized intersection include:

- V/C ratios for overall intersections operations, through movements, or shared through/turning movements increase to 0.85 or above;
- V/C ratios for exclusive movements increase to 0.95 or above; or
- 95th percentile queue length for individual movements that are projected to, or exceed, the storage length.

'Critical' intersections and movements for an unsignalized intersection include:

- Level of Services (LOS), based on average delay per vehicle, on individual movements greater than LOS "E"; or
- Queue length for individual movements that exceeds the lesser of 5 vehicles or the available queue storage.

The following tables summarize the HCM capacity results for the study intersections during the weekday a.m. and p.m. peak hours under existing (2023), future background (2027, 2032 and 2037) and future total (2027, 2032 and 2037) traffic conditions. The detailed calculation sheets are provided in **Appendix E**.

7.1 Whites Road and Bayly Street

Capacity analysis at this intersection during the weekday a.m. and p.m. peak hours for the existing, future background, and future total traffic conditions are summarized in the following table.

Table 4 Capacity analysis of Whites Road and Bayly Street

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que
Existing 2023	Overall: 0.55 (C) 25 WBL = 0.59 (D) 50 WBR = 0.29 (B) 12 NBT = 0.74 (C) 35 NBR = 0.08 (B) 19 SBL = 0.44 (C) 22 SBTL = 0.43 (C) 21	 WBL = 40 m WBR = 35 m NBT = 75 m NBR = 5 m SBL = 85 m SBTL = 75 m	Overall: 0.58 (C) 33 WBL = 0.62 (D) 51 WBR = 0.29 (B) 11 NBT = 0.69 (D) 51 NBR = 0.17 (F) 87 SBL = 0.52 (C) 23 SBTL = 0.52 (C) 21	 WBL = 45 m WBR = 35 m NBT = 80 m NBR = 35 m SBL = 115 m SBTL = 105 m
Future Background 2027	Overall: 0.57 (C) 26 WBL = 0.60 (D) 50 WBR = 0.31 (B) 12 NBT = 0.74 (C) 35 NBR = 0.09 (B) 19 SBL = 0.47 (C) 23 SBTL = 0.47 (C) 22	 WBL = 40 m WBR = 35 m NBT = 75 m NBR = 5 m SBL = 90 m SBTL = 85 m	Overall: 0.61 (D) 37 WBL = 0.62 (D) 51 WBR = 0.31 (B) 12 NBT = 0.70 (E) 58 NBR = 0.20 (F) 107 SBL = 0.55 (C) 24 SBTL = 0.56 (C) 23	 WBL = 50 m WBR = 40 m NBT = 80 m NBR = 30 m SBL = 125 m SBTL = 110 m
Future Total 2027	Overall: 0.59 (C) 27 WBL = 0.6 (D) 51 WBR = 0.33 (B) 13 NBT = 0.76 (C) 34 NBR = 0.1 (B) 20 SBL = 0.5 (C) 25 SBTL = 0.49 (C) 23	 WBL = 40 m WBR = 40 m NBT = 75 m NBR = 5 m SBL = 95 m SBTL = 85 m	Overall: 0.63 (D) 38 WBL = 0.64 (D) 51 WBR = 0.32 (B) 12 NBT = 0.71 (E) 58 NBR = 0.21 (F) 105 SBL = 0.59 (C) 26 SBTL = 0.58 (C) 24	 WBL = 50 m WBR = 40 m NBT = 80 m NBR = 30 m SBL = 140 m SBTL = 120 m

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que
Future Background 2032	Overall: 0.59 (C) 26 WBL = 0.60 (D) 51 WBR = 0.33 (B) 13 NBT = 0.75 (C) 35 NBR = 0.09 (B) 19 SBL = 0.49 (C) 24 SBTL = 0.49 (C) 23	WBL = 40 m WBR = 40 m NBT = 80 m NBR = 5 m SBL = 95 m SBTL = 85 m	Overall: 0.63 (D) 38 WBL = 0.63 (D) 51 WBR = 0.33 (B) 12 NBT = 0.71 (E) 58 NBR = 0.21 (F) 102 SBL = 0.58 (C) 26 SBTL = 0.58 (C) 24	WBL = 50 m WBR = 45 m NBT = 85 m NBR = 35 m SBL = 130 m SBTL = 120 m
Future Total 2032	Overall: 0.61 (C) 27 WBL = 0.61 (D) 51 WBR = 0.34 (B) 14 NBT = 0.76 (C) 34 NBR = 0.11 (B) 20 SBL = 0.52 (C) 26 SBTL = 0.52 (C) 25	WBL = 40 m WBR = 45 m NBT = 75 m NBR = 5 m SBL = 100 m SBTL = 90 m	Overall: 0.65 (D) 39 WBL = 0.64 (D) 51 WBR = 0.34 (B) 12 NBT = 0.72 (E) 58 NBR = 0.23 (F) 99 SBL = 0.61 (C) 27 SBTL = 0.61 (C) 25	WBL = 50 m WBR = 45 m NBT = 85 m NBR = 35 m SBL = 150 m SBTL = 125 m
Future Background 2037	Overall: 0.60 (C) 27 WBL = 0.61 (D) 51 WBR = 0.34 (B) 13 NBT = 0.75 (C) 34 NBR = 0.10 (B) 19 SBL = 0.51 (C) 25 SBTL = 0.51 (C) 24	WBL = 40 m WBR = 45 m NBT = 80 m NBR = 5 m SBL = 100 m SBTL = 90 m	Overall: 0.64 (D) 38 WBL = 0.64 (D) 51 WBR = 0.34 (B) 12 NBT = 0.72 (E) 58 NBR = 0.22 (F) 99 SBL = 0.60 (C) 27 SBTL = 0.60 (C) 25	WBL = 50 m WBR = 45 m NBT = 85 m NBR = 35 m SBL = 145 m SBTL = 125 m
Future Total 2037	Overall: 0.62 (C) 28 WBL = 0.61 (D) 51 WBR = 0.36 (B) 14 NBT = 0.76 (C) 34 NBR = 0.11 (B) 20 SBL = 0.54 (C) 27 SBTL = 0.54 (C) 25	WBL = 45 m WBR = 45 m NBT = 75 m NBR = 5 m SBL = 105 m SBTL = 95 m	Overall: 0.67 (D) 39 WBL = 0.65 (D) 51 WBR = 0.35 (B) 13 NBT = 0.72 (E) 58 NBR = 0.24 (F) 96 SBL = 0.64 (C) 29 SBTL = 0.64 (C) 27	WBL = 55 m WBR = 50 m NBT = 85 m NBR = 35 m SBL = 165 m SBTL = 140 m

Under existing traffic conditions, the overall intersection has a reported v/c ratio of 0.55 LOS C and 0.58 LOS C during the a.m. and p.m. peak hours respectively. The intersection operates without any critical movements during the a.m. and p.m. peak hours.

With the addition of corridor growth and the background development site traffic under the 2027 future background horizon period, the overall reported v/c of the intersection is expected to increase to 0.57 LOS C and 0.62 LOS D during the a.m. and p.m. peak hours, respectively. The intersection continues to operate without any critical movements during the a.m. and p.m. peak hours.

Under the 2027 future total traffic condition, with the addition of site traffic, the overall v/c ratio of the intersection increases slightly to 0.59 LOS C and 0.63 LOS D during the a.m. and p.m. peak hours, respectively. The intersection continues to operate without any critical movements during the a.m. and p.m. peak hours with the proposed site traffic having a minimal impact on the operation of the intersection.

With continued corridor growth and the background development site traffic at the 2032 future background traffic scenario, the overall reported v/c of the intersection is expected to increase to 0.59 LOS C and 0.63 LOS D during the a.m. and p.m. peak hours, respectively, in comparison the 2027 future background condition.

Under the 2032 future total traffic condition, with the addition of site traffic, the intersection continues to operate at a acceptable levels during both peak hours with the overall v/c ratios increasing slightly to 0.61 LOS C and 0.65 LOS D during the a.m. and p.m. peak hours, and with no reported critical movements.

With corridor growth and the background development site traffic under the 2037 future background traffic scenario, the overall reported v/c of the intersection is expected to increase to 0.60 LOS C during the a.m. peak hours and 0.64 LOS D during the p.m. peak hour in comparison to the 2032 future background condition. No critical movements are expected.

Under the 2037 future total traffic condition, with the addition of site traffic, the intersection continues to operate at acceptable levels of service during both peak hours with the overall intersection v/c at 0.62 LOS C and 0.67 LOS D during the a.m. and p.m. peak hours, and again with no reported critical movements.

No geometric improvements were identified at this intersection to accommodate the proposed development.

7.2 Whites Road and Granite Court/Oklahoma Drive

Capacity analysis for this intersection during the weekday a.m. and p.m. peak hours for the existing, future background, and future total traffic conditions are summarized in the following table.

Table 5 Capacity analysis of Whites Road and Granite Court/Oklahoma Drive

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que
Existing 2023	Overall: 0.39 (C) 28 EBL = 0.76 (D) 53 EBT = 0.13 (D) 36 WBL = 0.03 (C) 35 WBT = 0.16 (D) 36 WBR = 0.22 (D) 37 NBL = 0.02 (A) 6 NBT = 0.14 (A) 6 SBL = 0.27 (A) 9 SBT = 0.07 (A) 8 SBR = 0.25 (C) 31	 EBL = 50 m EBT = 15 m WBL = 5 m WBT = 20 m WBR = 15 m NBL = 5 m NBT = 25 m SBL = 35 m SBT = 20 m SBR = 40 m	Overall: 0.66 (C) 26 EBL = 0.70 (C) 24 EBT = 0.08 (B) 14 WBL = 0.02 (B) 16 WBT = 0.07 (B) 16 WBR = 0.13 (B) 17 NBL = 0.03 (C) 21 NBT = 0.17 (C) 23 SBL = 0.56 (C) 29 SBT = 0.26 (B) 20 SBR = 0.12 (D) 51	 EBL = 110 m EBT = 20 m WBL = 5 m WBT = 15 m WBR = 15 m NBL = 5 m NBT = 30 m SBL = 90 m SBT = 40 m SBR = 20 m
Future Background 2027	Overall: 0.40 (C) 30 EBL = 0.76 (D) 53 EBT = 0.14 (D) 35 WBL = 0.03 (C) 34 WBT = 0.16 (D) 35 WBR = 0.23 (D) 36 NBL = 0.02 (A) 6 NBT = 0.15 (A) 7 SBL = 0.29 (B) 11 SBT = 0.08 (A) 10 SBR = 0.26 (D) 38	 EBL = 55 m EBT = 15 m WBL = 5 m WBT = 20 m WBR = 15 m NBL = 5 m NBT = 25 m SBL = 40 m SBT = 20 m SBR = 50 m	Overall: 0.60 (C) 26 EBL = 0.86 (D) 46 EBT = 0.12 (C) 25 WBL = 0.10 (D) 46 WBT = 0.36 (D) 48 WBR = 0.13 (D) 47 NBL = 0.02 (B) 12 NBT = 0.12 (B) 12 SBL = 0.40 (A) 8 SBT = 0.19 (A) 5 SBR = 0.13 (B) 11	 EBL = 105 m EBT = 25 m WBL = 10 m WBT = 25 m WBR = 20 m NBL = 5 m NBT = 25 m SBL = 20 m SBT = 15 m SBR = 5 m

Future Total 2027	Overall: 0.45 (C) 34 EBL = 0.8 (D) 51 EBT = 0.12 (C) 31 WBL = 0.03 (C) 30 WBT = 0.14 (C) 31 WBR = 0.23 (C) 32 NBL = 0.03 (A) 8 NBT = 0.16 (A) 9 SBL = 0.31 (B) 14 SBT = 0.09 (B) 13 SBR = 0.28 (D) 54	 EBL = 65 m EBT = 15 m WBL = 5 m WBT = 20 m WBR = 10 m NBL = 5 m NBT = 30 m SBL = 45 m SBT = 25 m SBR = 60 m	Overall: 0.62 (C) 28 EBL = 0.92 (D) 55 EBT = 0.13 (C) 25 WBL = 0.1 (D) 46 WBT = 0.38 (D) 48 WBR = 0.13 (D) 46 NBL = 0.03 (B) 12 NBT = 0.12 (B) 13 SBL = 0.4 (A) 7 SBT = 0.19 (A) 5 SBR = 0.16 (B) 12	 EBL = 130 m EBT = 25 m WBL = 10 m WBT = 30 m WBR = 20 m NBL = 5 m NBT = 25 m SBL = 20 m SBT = 15 m SBR = 10 m
Future Background 2032	Overall: 0.41 (C) 31 EBL = 0.76 (D) 52 EBT = 0.14 (C) 35 WBL = 0.03 (C) 34 WBT = 0.16 (D) 35 WBR = 0.24 (D) 36 NBL = 0.03 (A) 6 NBT = 0.16 (A) 7 SBL = 0.30 (B) 12 SBT = 0.09 (B) 10 SBR = 0.27 (D) 43	 EBL = 55 m EBT = 15 m WBL = 5 m WBT = 20 m WBR = 15 m NBL = 5 m NBT = 25 m SBL = 45 m SBT = 25 m SBR = 55 m	Overall: 0.61 (C) 26 EBL = 0.87 (D) 47 EBT = 0.13 (C) 25 WBL = 0.10 (D) 46 WBT = 0.36 (D) 48 WBR = 0.13 (D) 47 NBL = 0.03 (B) 12 NBT = 0.13 (B) 13 SBL = 0.42 (A) 7 SBT = 0.20 (A) 5 SBR = 0.13 (B) 10	 EBL = 110 m EBT = 25 m WBL = 10 m WBT = 25 m WBR = 20 m NBL = 5 m NBT = 25 m SBL = 20 m SBT = 15 m SBR = 5 m
Future Total 2032	Overall: 0.46 (D) 35 EBL = 0.8 (D) 51 EBT = 0.13 (C) 31 WBL = 0.02 (C) 30 WBT = 0.14 (C) 31 WBR = 0.24 (C) 32 NBL = 0.03 (A) 8 NBT = 0.17 (A) 9 SBL = 0.32 (B) 15 SBT = 0.1 (B) 14 SBR = 0.28 (E) 58	 EBL = 65 m EBT = 15 m WBL = 5 m WBT = 20 m WBR = 15 m NBL = 5 m NBT = 30 m SBL = 50 m SBT = 30 m SBR = 60 m	Overall: 0.64 (C) 28 EBL = 0.93 (E) 56 EBT = 0.13 (C) 24 WBL = 0.1 (D) 46 WBT = 0.38 (D) 48 WBR = 0.13 (D) 46 NBL = 0.03 (B) 12 NBT = 0.13 (B) 13 SBL = 0.42 (A) 7 SBT = 0.2 (A) 4 SBR = 0.16 (B) 11	 EBL = 125 m EBT = 25 m WBL = 10 m WBT = 25 m WBR = 20 m NBL = 5 m NBT = 25 m SBL = 20 m SBT = 15 m SBR = 10 m
Future Background 2037	Overall: 0.42 (C) 33 EBL = 0.77 (D) 53 EBT = 0.14 (C) 34 WBL = 0.03 (C) 34 WBT = 0.16 (C) 35 WBR = 0.24 (D) 36 NBL = 0.03 (A) 6 NBT = 0.16 (A) 7 SBL = 0.31 (B) 13 SBT = 0.09 (B) 11 SBR = 0.28 (D) 49	 EBL = 55 m EBT = 15 m WBL = 5 m WBT = 20 m WBR = 15 m NBL = 5 m NBT = 25 m SBL = 50 m SBT = 25 m SBR = 60 m	Overall: 0.63 (C) 26 EBL = 0.87 (D) 46 EBT = 0.13 (C) 24 WBL = 0.10 (D) 46 WBT = 0.37 (D) 48 WBR = 0.14 (D) 46 NBL = 0.03 (B) 12 NBT = 0.13 (B) 13 SBL = 0.44 (A) 7 SBT = 0.21 (A) 5 SBR = 0.13 (A) 10	 EBL = 110 m EBT = 25 m WBL = 10 m WBT = 25 m WBR = 20 m NBL = 5 m NBT = 25 m SBL = 25 m SBT = 15 m SBR = 5 m

Future Total 2037	Overall: 0.48 (D) 37 EBL = 0.81 (D) 51 EBT = 0.13 (C) 30 WBL = 0.02 (C) 30 WBT = 0.14 (C) 31 WBR = 0.24 (C) 32 NBL = 0.03 (A) 8 NBT = 0.17 (A) 9 SBL = 0.33 (B) 16 SBT = 0.1 (B) 14 SBR = 0.29 (E) 64	 EBL = 65 m EBT = 15 m WBL = 5 m WBT = 20 m WBR = 10 m NBL = 5 m NBT = 30 m SBL = 55 m SBT = 30 m SBR = 65 m	Overall: 0.65 (C) 28 EBL = 0.93 (E) 56 EBT = 0.13 (C) 24 WBL = 0.1 (D) 46 WBT = 0.38 (D) 48 WBR = 0.14 (D) 46 NBL = 0.03 (B) 12 NBT = 0.13 (B) 13 SBL = 0.44 (A) 6 SBT = 0.21 (A) 4 SBR = 0.16 (B) 10	 EBL = 130 m EBT = 25 m WBL = 10 m WBT = 30 m WBR = 20 m NBL = 10 m NBT = 25 m SBL = 25 m SBT = 15 m SBR = 10 m

Under existing traffic conditions, the overall intersection has a reported v/c ratio of 0.39 LOS C and 0.66 LOS C during the a.m. and p.m. peak hours respectively. The intersection is operating with acceptable levels of delay for all individual movements during both peak hours.

With the addition of corridor growth and the background development site traffic at the 2027 future background horizon scenario, the overall reported v/c of the intersection is expected to increase to 0.40 LOS C during the a.m. peak hour and to 0.60 LOS C during the p.m. peak hour. No critical movements are reported in either peak hour.

Under the 2027 future total traffic condition, with the addition of site traffic, the intersection continues to operate at satisfactory levels with the overall v/c ratio of the intersection increasing to 0.45 LOS C during the a.m. peak hour and to 0.62 LOS C during the p.m. peak hour. The intersection continues to operate without any critical movements.

With continued corridor growth and background development site traffic, the overall reported v/c of the intersection increases to 0.41 LOS C during the a.m. peak hour and to 0.61 LOS C during the p.m. peak hour.

Under the 2032 future total traffic condition, with the addition of site traffic, the intersection continues to operate acceptable v/c ratios and delays during both peak hours with the a.m. peak hour increasing from 0.41 to 0.46 LOS D and the p.m. peak hour from 0.61 to 0.64 LOS C. No critical movements were reported in the analysis for either peak hour.

With corridor growth and the background development site traffic under the 2037 future background traffic scenario, the overall reported v/c of the intersection is expected to increase to 0.42 LOS C during the a.m. peak hour and 0.63 LOS C during the p.m. peak hour in comparison to the 2032 future background condition. No critical movements were reported.

Under the 2037 future total traffic condition, with the addition of site traffic, the intersection continues to operate at acceptable levels of service during both peak hours with the overall intersection v/c at 0.48 LOS D and 0.65 LOS C during the a.m. and p.m. peak hours, and again with no reported critical movements.

The existing westbound left turn 95th percentile queue length is reported at 110 metres during the p.m. peak under existing conditions based on a volume of 387 vehicles. This queue is currently extending beyond the location of the proposed access from the subject site to Granite Court. This is an existing condition and based on the available frontage along Granite Court and sightline issues on Granit Court due to the bridge over the rail line, the driveway cannot be located further west to be located beyond the queue. The subject site is expected to add an additional two-three vehicle lengths to the 95th percentile queue length or 20 metres during p.m. peak hour which is the design condition.

What the software does not account for is courtesy gaps as vehicles travelling on Granit Court approach Whites Road which will provide additional opportunities for vehicles exiting the site to enter the traffic flow on Granite Court.

No geometric improvements were identified at this intersection to accommodate the proposed development.

7.2.1 Intersection Improvements Memo

GHD prepared a memo, dated March 2024, that assessed and recommended improvements to the intersection of Granite Court/Oklahoma Drive and Whites Road to address concerns raised by local residents and businesses with the queuing and delays through this intersection.

The memo circulated to Region staff is provided in **Appendix G** and recommended modifying the signal timing to provide separate phases for the east and west approaches (split phasing) and changing the lane configuration in the eastbound approach to a left-turn and a shared through/right/left-turn lane.

With the revised signal timing plan and modification to the lane configuration, the eastbound queue was reported to reduce from 189 metres under the current lane configuration to 94 metres under the 2037 future total scenario with reductions in overall delays.

The proposed changes to the intersection were reviewed by the Region and considered to be acceptable.

7.3 Granite Court and the Site Access

Capacity analysis at this intersection during the weekday a.m. and p.m. peak hours for the future total traffic conditions are summarized in the following table.

Table 6 Capacity analysis of Granite Court and the Site Access

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que
Future Total 2027	EBTL = 0 () 0 WBTR = 0.28 () 0 SBLR = 0.14 (C) 15	EBTL = 0 m WBTR = 0 m SBLR = 5 m	EBTL = 0 () 0 WBTR = 0.2 () 0 SBLR = 0.12 (C) 17	EBTL = 5 m WBTR = 0 m SBLR = 5 m
Future Total 2032	EBTL = 0 () 0 WBTR = 0.28 () 0 SBLR = 0.15 (C) 15	EBTL = 0 m WBTR = 0 m SBLR = 5 m	EBTL = 0 () 0 WBTR = 0.2 () 0 SBLR = 0.12 (C) 17	EBTL = 5 m WBTR = 0 m SBLR = 5 m
Future Total 2037	EBTL = 0 () 0 WBTR = 0.29 () 0 SBLR = 0.15 (C) 16	EBTL = 0 m WBTR = 0 m SBLR = 5 m	EBTL = 0 () 0 WBTR = 0.21 () 0 SBLR = 0.12 (C) 18	EBTL = 5 m WBTR = 0 m SBLR = 5 m

Under future total conditions, the proposed unsignalized site access on Granite Court is expected to operate with a maximum delay of 16 seconds during the a.m. peak hour for the outbound approach and a maximum delay of 18 seconds during the p.m. peak hour. The 95th percentile queue length for the outbound movement is reported at one vehicle however, due to the eastbound queues on Granite Court at Whites Road, the queues and delays exiting the site may be longer depending on the availability of gaps on Granite Court.

It is suggested that signage be provided on Granite Court ahead of the proposed driveway to advise drivers not to block the driveway.

8. Parking Review

8.1 Existing City of Pickering Zoning By-law

8.1.1 Vehicular Parking

The subject site is governed by the City of Pickering's Zoning By-law 2511, with the minimum parking requirement found in Section 5.21.1. The minimum By-law requirement for the subject site is as follows:

- Apartment dwellings:
    - 1.75 spaces per unit for residents and visitors
- Commercial
    - 5.5 spaces per 1,000 ft^2 of gross leasable area

The minimum parking required for the proposed development is as follow:

- Apartment dwellings:
    - 1.75 parking space per unit x 262 units = 459 spaces
- Commercial
    - 5.5 spaces per 1,000 ft^2 of gross leasable area x 870 ft^2 = 5 spaces

In total, 464 vehicle parking spaces are required under the City's current Zoning By-law for both residents and visitors.

8.2 Parking Provision

The subject site proposes to provide a total of 404 vehicle parking spaces, consisting of 339 resident parking spaces and 65 visitor parking spaces (to be shared between the residential and visitor component), a shortfall of 55 spaces from the current Zoning By-law requirement.

8.2.1 Draft Pickering Zoning By-law

The City of Pickering has published a first draft of the Comprehensive Zoning By-law, dated May 2022, and included update parking requirements. The updated parking space requirements are found in Section 5.2, Table 5.1. of the draft report and requires a minimum of 1.25 resident spaces per unit plus 0.25 visitor spaces per unit for apartment dwellings located outside of the City Centre and 4.5 spaces per 100 m2 of GLFA.

The proposed parking requirement rates will bring the City's parking rates in line with surrounding municipalities including Ajax, Whitby, and Whitchurch-Stouffville, as summarized in the table below.

Table 7 Parking Requirements in Surrounding Municipalities)

Municipality	Resident Requirement (spaces per dwelling unit)	Visitor Requirement (spaces per dwelling unit)	Total Rate (spaces per dwelling unit)	Source
Ajax	1.25	0.25	1.5	Zoning By-law 95-2003, Section 5.10.1 Downtown Central Area Zones and Village Core Mixed Use Zones
Whitby	1.25	0.25	1.5	Zoning By-law 1784, Section 4A, Table 4A(1)
Whitchurch-Stouffville	1.25	0.25	1.5	By-law 2010-001-ZO, Section 3.23.1

8.2.2 2016 Transportation Tomorrow Survey Data

GHD has also reviewed the 2016 TTS data of vehicle ownership per apartment dwelling units in the City of Pickering. The data is summarized in the table below and indicates that the average vehicle ownership within the city is 1.05 vehicles per apartment unit.

Table 8 Pickering Vehicle Ownership TTS Data for Apartments

Vehicles per Household	Number of Households	Total number of vehicles
0 vehicles	675	0
1 vehicle	2555	2555
2 vehicles	829	1658
3 vehicles	32	4309
Total	**4091**	**4309 (1.05 vehicles per household)**

The 2016 TTS data confirms that the proposed residential rate of 1.25 spaces per unit is more in line with more recent demand for parking with the city which for 2016 was surveyed at 1.05 vehicles per apartment unit.

8.3 Parking Assessment

Providing off-street residential parking influences a commuter choice on whether to drive or choose alternate forms of transportation. Providing more parking in general leads to a higher percentage of auto ownership and auto usage as well. Changing travel behaviour is best done when a prospective buyer is looking to purchase a unit and providing the opportunity for a prospective buyer to easily purchase a parking space either through making it affordable, at no additional cost, or having an excess in number of spaces available to purchase can introduce travel behaviour into an area that once established is hard to change.

Accordingly, the subject site proposes to provide parking at a rate that is in line with the draft Pickering Zoning By-Law and supported by the current parking demand trends of residents in the city and considering that reducing parking and vehicle ownership is a crucial component of achieving climate change adaption and environmental protection goals and reducing traffic related air pollutant and greenhouse gas emissions.

The proposed Travel Demand Management (TDM), as outlined in Section 9 of the report including planning and design, walking and cycling, transit, parking and education and promotion to make alternatives more competitive to driving, are expected to reduce the dependency on auto trips and meet the anticipated demand for resident parking and avoid providing an excessive supply of parking for the site.

Additionally, by combining different land uses with the same development, a reduction in parking demand at different times of the day can be achieved as complimentary uses have non-overlapping peak parking demands. This approach is consistent with the idea that the ground floor commercial uses proposed as part of a mixed-use sites will in time be primarily considered ancillary to the local areas as population increases and, as such are intended to service the needs of residents located within or within walking distance to the development and not expected to generate a substantial outside parking demand. If the non-residential uses however where to generate a demand for parking, this can be accommodated within the proposed residential visitor spaces which is appropriate for a mixed-use urban area and consistent with the City's Zoning By-Law.

The parking provision of 404 parking spaces meets the City of Pickering's Comprehensive Zoning By-law as follows:

- 1.25 spaces per unit x 262 units = 328 spaces
- 0.25 spaces per unit x 262 units = 66 spaces
- 4.5 spaces per 100 m^2 of GLFA x 81 m^2 = 4 spaces

In total, under the City of Pickering's Comprehensive By-law, a total of 398 parking spaces would be required. The provision of 404 vehicle parking spaces would meet the requirements of the Comprehensive By-law.

Considering that the site is isolated from the surrounding residential neighbourhoods and available on-street parking, it is unlikely that in the event parking is not available on-site, that it will result in overflow onto local area streets.

9. Travel Demand Management

9.1 Travel Demand Management

Travel Demand Management (TDM) refers to a variety of strategies to reduce congestion, minimize the number of single-occupant vehicles, encourage non-auto modes of travel, and reduce vehicle dependency to create a sustainable transportation system. TDM strategies have multiple benefits including the following:

- Reduced auto-related emissions to improve air quality;
- Decreased traffic congestion to reduce travel time;
- Increased travel options for businesses and commuters;
- Reduced personal transportation costs and energy consumptions; and
- Support Provincial smart growth objectives.

The combined benefits listed above will assist in creating a more active and livable community through improvements to overall active transportation standards for the local businesses and surrounding community.

9.2 Existing TDM Opportunities

9.2.1 Walking

Sidewalks are currently provided throughout the study area along at least one side of all roadways. Signalized pedestrian crosswalks are currently provided on all legs of the intersections of Whites Road at Bayly Street and at Whites Road and Granite Court/Oklahoma Drive and provides access to the transit stops located east of the subject site and the intersection.

9.2.2 Transit

Transit service is currently provided within the study area by Durham Region Transit's (DRT) Route 120 (Whites) with 30-minute headways. The route operates between the Pickering GO and the intersection of Whites Road at Sunbird Trail. The nearest transit stop is located at just east of the intersection of Whites Road and Granite Court/Oklahoma Drive for both directions.

9.3 Recommended TDM Measures

The table below summarizes the recommended TDM strategies for the subject site.

Table 9 Recommended TDM Strategies

TDM Measure	Responsibility	Cost	Note
Hard Measures			
Pedestrian connections	Applicant	Integrated into the overall development cost	Site plan includes a walkway system providing a connection to the municipal sidewalks. Enhanced pedestrian amenities will also be provided on-site, including but

			not limited to benches, landscaping and lighting.
Public Transit Access	Applicant	Integrated into the overall development cost	The subject site is located within walking distance of the transit stops east of Whites Road and Granite Court/Oklahoma Drive
Soft Measures			
Transit incentives (i.e. PRESTO cards)	Applicant	Provide a suggested fare card value of $150.00 per unit.	To be provided with the purchase of each unit.
Information packages (DRT, GO schedules, cycling maps)	Applicant	To be determined.	Distributed at the sales office with Purchase and Sales Agreement
Communication strategy and physical location to deliver PRESTO cards and information packages	Applicant	To be determined.	At 50% occupancy, the applicant is responsible for assisting with distribution of information flyers to residents; for the coordination and for providing a venue for the distribution of Information Packets and PRESTO cards.
Unbundled vehicle parking sales	Applicant	Integrated into the overall development cost	Proposed to unbundle the sales of the parking space and unit to provide residents with the true cost of the parking space.

10. Site Plan Review

The City of Pickering's Standard for accesses is found in Drawing P-605, Medium to high density residential, commercial, and industrial driveway access. The City's standards provide a minimum and maximum access width and radius requirement for two-way residential driveways. Driveways are required to be designed with a minimum width of 6.5 metres and a maximum of 12 metres and the radius is required to be a minimum of 7.5 metres and a maximum of 9 metres.

The proposed site access has a width of 7.3 metres with an inbound and outbound radius of 7.5 metres, meeting the City's requirement.

11. Vehicle Swept Path Analysis

GHD undertook a Vehicle Swept Path Analysis to assess the proposed site plan's ability to accommodate the required turning movements of an emergency vehicle, waste collection vehicle, a Medium Sized Unit (MSU) Truck, and a TAC Passenger Vehicle. The results of the analysis, which are provided in **Appendix F,** illustrate that the site can sufficiently accommodate the aforementioned design vehicles.

12. Sightline Review

Adjacent to the proposed site, Granite Court has a posted speed limit of 40 km/h and with a slight change in the vertical profile of the road due to the crest of a bridge located to the west of the proposed site access location. For the purpose of Stopping Sight Distance requirements a design speed of 50 km/h was used for the assessment on Granite Court based on the 40 km/h posted speed limit.

Per Transportation Association of Canada's Geometric Design Guide for Canadian Roads (TAC GDGCR) Table 2.5.2, the minimum stopping sight-distance for level roadways with a design speed of 50 km/h is 65 metres for level roadways.

Section 9.9 of the TAC GDCR provides intersection sight distances for different scenarios, with the following scenarios used to complete the intersection sight distance analysis:

- Case B1 – Left turn from the minor road
- Case B2 – Right turn from the minor road
- Case F – Left turns from the major road

For the purpose of the assessment, the minor road is assumed to be the site driveway.

A vehicle entering the major road (Granite Court) from the site access is assumed to stop a distance of approximately 4.5 to 5.4 metres to the pavement edge of Granite Court as recommended by TAC. In this stopped position, the driver will be required to look left and right in order to perceive and react to approaching vehicles prior to initiating a turning movement onto the intersecting drive aisle.

The required intersection sight distances are provided in TAC GDGCR Tables 9.9.4, 9.9.6 and 9.9.12 for passenger vehicles turning left from stop, turning right from stop, or turning left from the major road, respectively, and are summarized in the following table. GHD conducted a field study of the available sight distances along Granite Court towards the vertical crest on the road due to the existing bridge. The sightline was measured from a point 4.5 meters back from the edge of the road at the location of the proposed driveway in order for a driver to see an approaching object 1.3 metres in height representing a vehicle. The required intersection sight distances summarized in the table below are based on a 50 km/h design speed along the major road.

Table 10 Intersection Sight Distance Requirement

Case (Design Speed of 50 km/h)	Required Intersection Sight Distance for Passenger Cars (TAC 2017)	Available Intersection Sight Distance (Horizontal)	TAC Reference
B1: Vehicles turning left from stop	105 m	>105 m	Table 9.9.4

B2: Vehicles turning right from stop	95 m	>105 m	Table 9.9.6
F: Left turns from the major road	80 m	>105 m	Table 9.9.12

The available sight distances along Granite Court to the east and the west of the proposed site access meet the minimum required stopping sight distance for a 50 km/h design speed.

The sightline for a vehicle exiting the site and turning left is illustrated in **Figure 16** and includes the location of the new guide rail on Granite Court. Taking into consideration that sightline distance requirements for a left-turn (Case B1) has the greatest required intersection sight distance, if the available sight distance provided meets the minimum requirement for Case B1, the minimum requirement for Case B2 and F are also met.

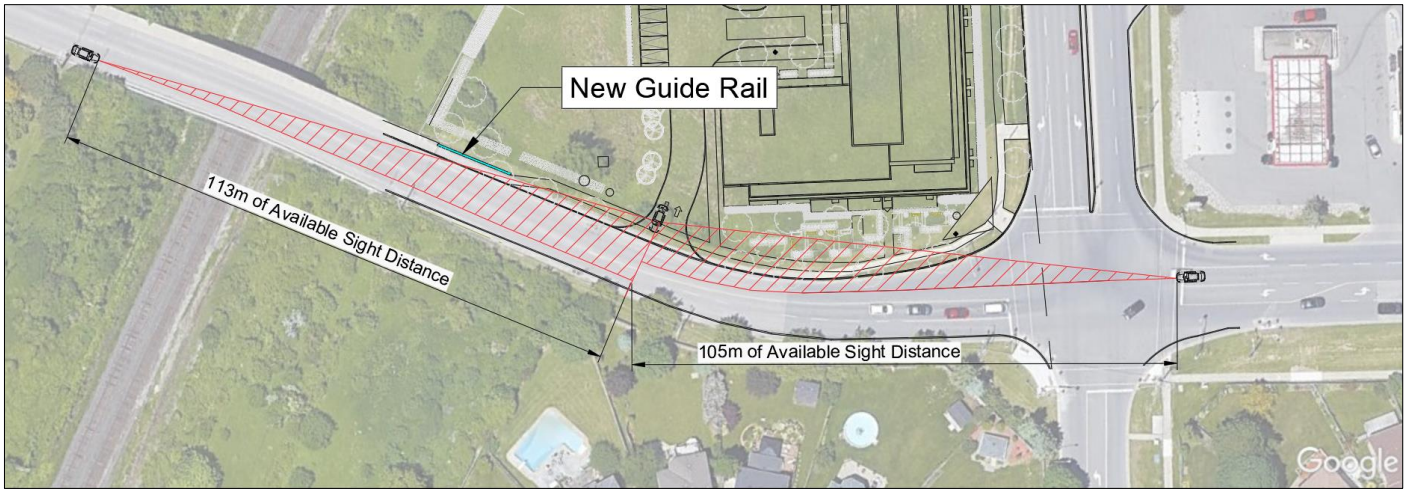

Figure 16 Available Intersection Sight Distance

The results from the field study are provided in **Figure 17, Figure 18**, and **Figure 19**. The study confirms that an approaching object 1.3 metres in height (the centre of the top circle) can be seen at a distance of 105 metres from a vehicle in a stopped position in the driveway (**Figure 17**). The sightline assessment was also completed at a distance of 110 and 115 metres, **Figure 18** and **Figure 19** respectively, and confirms that an oncoming vehicle can also be observed from those distances.

Figure 17 Sightline Assessment Field Observation (105 metres)

Figure 18 Sightline Assessment Field Observation (110 metres)

Figure 19 Sightline Assessment Field Observation (115 metres)

The proposed location of the site driveway provides the required vertical and horizontal sightlines for a 50 km/h design speed and 40 km/h posted speed limit.

13. Conclusion

The site plan, prepared by onespace unlimited inc., consists of a 10-storey high-rise building with a total of 262 dwelling units and 81 m^2 of ground floor commercial space.

Access to the subject site is proposed via a single full-moves driveway onto Granite Court located west of the intersection of Whites Road and Granite Court/Oklahoma Drive.

The proposed new development is expected to generate a total of 78 new two-way trips consisting of 21 inbound and 57 outbound trips during weekday a.m. peak hour and 97 new two-way trips consisting of 59 inbound and 38 outbound trips during the weekday p.m. peak hour.

Under existing, future background, and future total conditions, all study intersections are operating within capacity.

Application of the current City of Pickering's By-Law parking rates to the subject site results in a requirement of 464 vehicle parking spaces, shared between residents and visitors.

The subject site provides a total of 404 parking spaces for vehicles (1.29 spaces per unit for residents, 0.25 spaces per unit for visitors, shared between the residential and non-residential component), a shortfall of 55 parking spaces from the By-law requirement. The proposed rates for the subject site are in line with the City's Draft Comprehensive Zoning By-law rates found in adjacent municipalities.

A series of Transportation Demand Management (TDM) measures are proposed for the site to reduce dependency on single-occupancy vehicle trips by encouraging residents to explore alternative modes of transportation. These measures include:

- Improved pedestrian and cycling connectivity to the municipal networks, to make it easy and safe for people to walk or bike to their destination.
- Bicycle parking for both residents and visitors
- Unbundled vehicle parking
- Transit Incentives through Presto Passes
- Communication strategy and information packages

These measures will not only help reduce traffic congestion and air pollution, but also promote a healthier and more active lifestyle for the residents.

The City of Pickering's Standard for accesses is found in Drawing P-605, Medium to high density residential, commercial, and industrial driveway access and states that the minimum and maximum access width requirement for two-way residential driveways ranges from 6.5 to 12 metres and the radius is required to be between 7.5 and 9 metres. The proposed site access has a width of 7.3 metres with an inbound and outbound radius of 7.5 metres, meeting the City's requirement.

A Vehicle Swept Path Analysis was undertaken to assess the site's ability to accommodate the required turning movements of a an emergency vehicle, waste collection vehicle, an MSU Truck and a Passenger vehicle as per TAC design guidelines and confirmed that the site can sufficiently accommodate the aforementioned design vehicles.

A sightline assessment at the proposed driveway location confirmed that sufficient sightlines are available to satisfy the requirements for a 50 km/h design speed and a 40 km/h posted speed.

Appendices

Appendix A

Terms of Reference and Response to Comments

Raf Andrenacci

From: Zahoor, Nadeem <nzahoor@pickering.ca>
Sent: Wednesday, September 28, 2022 9:17 AM
To: Glyn Reedman (InTouch); Raf Andrenacci
Cc: Will Maria
Subject: RE: 720 Granite Court - Terms of Reference

Hi Raf,

Overall I am good with the proposed terms of reference. I have couple of comments below;

- Please include a sight line review at the proposed access in the TIS.
- For the future background developments, please contact Nilesh Surti, Manager Urban Design. His email address is nsurti@pickering.ca

Thank you
Nadeem

From: Glyn Reedman <Glyn.Reedman@Durham.ca>
Sent: Tuesday, September 27, 2022 3:29 PM
To: Raf Andrenacci <Raf.Andrenacci@ghd.com>; Zahoor, Nadeem <nzahoor@pickering.ca>; Lawrence, Morgan (MTO) <Morgan.Lawrence@ontario.ca>
Cc: Will Maria <William.Maria@ghd.com>
Subject: RE: 720 Granite Court - Terms of Reference

Hi Raf.

Our comments are as follows on your proposed Terms of Reference:

1. The TIS should follow the Region's TIS guidelines. Please advise me if you require a copy of the Region's Traffic Impact Study Guidelines, including the requirements for Synchro analysis (Chapter 9 in the Design Specifications for Traffic Control Devices, Pavement Marking, Signage and Roadside Protection).

2. The most current intersection turning movement counts on the Regional roads (as well as ATR counts and AADT data) can be downloaded from our web site through the interactive traffic counts map. Traffic Signal timings are available for purchase from our Traffic Engineering & Operations Division (traffic@durham.ca 905-666-8116).

3. The City of Pickering will be able to advise on background developments that need to be included in the TIS.

4. As noted, please use the ITE Trip Generation Manual 11th Edition for trip generation rates. Please note that no additional reduction should be made for modal splits for this site, as these are already built into the ITE rates.

5. Please include the intersection of Whites Road and Bayly St in the TIS.

6. The opening year of 2027 with 5 and 10 year horizons are acceptable to the Region.

7. Background annual traffic growth rates should be agreed before they are used in the TIS.

8. Existing conditions for all travel modes should be noted by way of a site visit and any observations noted in the TIS. Observations of existing traffic operations, including queue lengths, should be used to validate the existing conditions Synchro analysis.

9. As noted, please include transit, active transportation, and TDM discussions in the TIS. Recommendations should include infrastructure, network and program improvements to support non-auto travel, as well as a commitment to provide the TDM measures. Responsibilities for initial implementation and on-going operation of TDM measures (as applicable) should be identified.

Regards

Glyn Reedman | Senior Project Coordinator
Works Department
The Regional Municipality of Durham
Glyn.Reedman@durham.ca | 905-668-7711 extension 3476 | durham.ca

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From: Raf Andrenacci <Raf.Andrenacci@ghd.com>
Sent: September 27, 2022 12:50 PM
To: Zahoor, Nadeem <nzahoor@pickering.ca>; Glyn Reedman <Glyn.Reedman@Durham.ca>; Lawrence, Morgan (MTO) <Morgan.Lawrence@ontario.ca>
Cc: Will Maria <William.Maria@ghd.com>
Subject: Re: 720 Granite Court - Terms of Reference

Good afternoon,

I would like to follow up on this Terms of Reference that was sent out on September 9th, 2022.

Thanks,
Raf

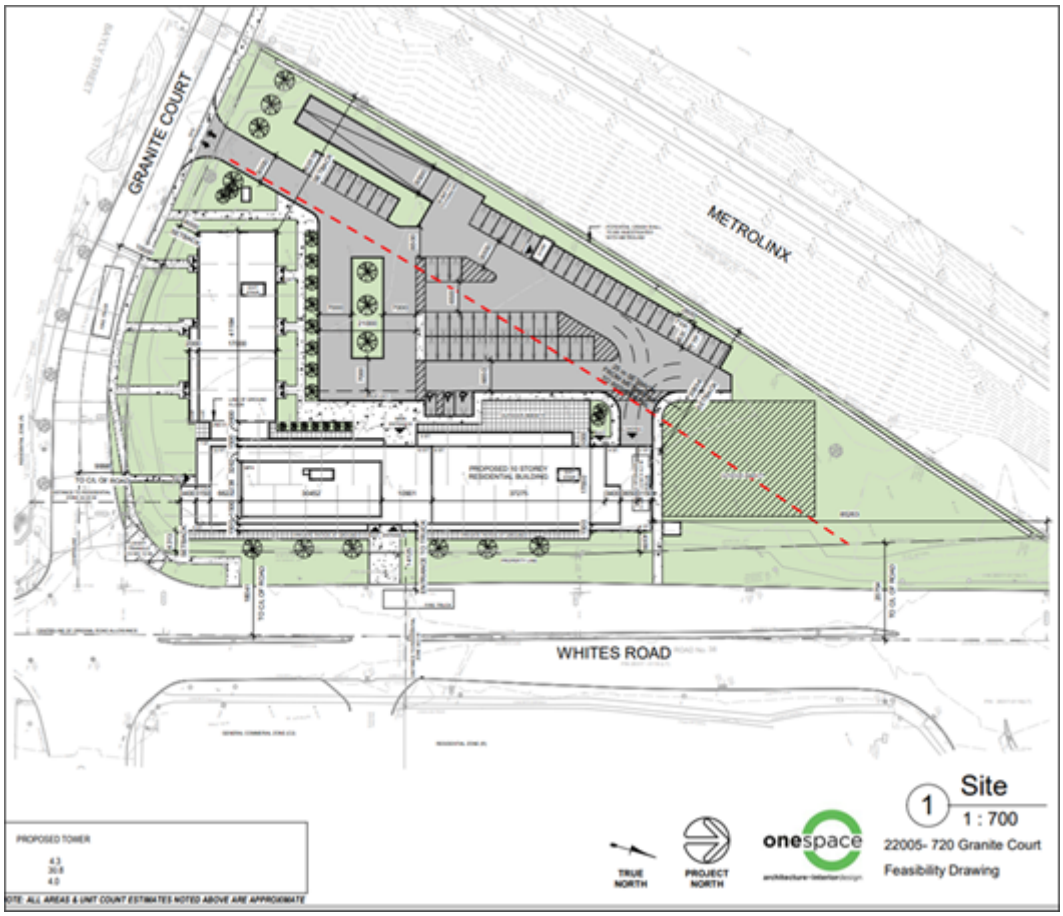
From: Raf Andrenacci <Raf.Andrenacci@ghd.com>
Sent: Friday, September 9, 2022 2:43 PM
To: Zahoor, Nadeem <nzahoor@pickering.ca>; Glyn Reedman (InTouch) <glyn.reedman@durham.ca>; Lawrence, Morgan (MTO) <Morgan.Lawrence@ontario.ca>
Cc: Will Maria <William.Maria@ghd.com>
Subject: 720 Granite Court - Terms of Reference

Hello,

GHD Inc. has been retained to prepare a Transportation Impact Study for a proposed residential development located on lands municipally known as 720 Granite Court in the City of Pickering.

The subject site will consist of a 10-storey residential building that fronts Whites Road and stepping down to a 5-storey building fronting onto Granite Court. A total of 247 dwelling units are proposed, which includes 11 townhouse units.

Access to the subject site is proposed via a full moves driveway along Granite Court



In order to properly scope this project, we ask that the City review and provide comments on the following scope and confirm if there are any additional items required as part of the study.

Study intersections

- Whites Road and Granite Court/Oklahoma Drive
- Granite Court and the site access

Traffic Data

Updated traffic counts at the existing study intersections will be undertaken during the a.m. and p.m. peak hours.

Study Peak Hours

Weekday a.m. and p.m. peak hours

Study Horizon Year

2022 (existing), 2027 (build-out), 2032 (5-years post build-out), and 2037 (10-years post build-out), consistent with MTO TIS Guidelines.

Background Growth Rate

GHD will consult with City and Region staff to determine the growth rates to be used along study area roads

Background Development Traffic

Future background traffic volumes will include other developments (under construction or planned). GHD has identified the site at 755 Oklahoma Drive that would generate additional traffic along the study intersections that has a Traffic Impact Study available. City to confirm if there are any additional developments to include and where the corresponding Traffic Impact Studies can be found

Trip Generation

Will be completed using rates published by the ITE Trip Generation 11th Edition, LUC 221 (multifamily housing – mid-rise) for the mid-rise component and LUC 215 (single-family attached housing) for the townhouse component

The directional distribution of traffic approaching and departing the site will be determined based on TTS 2016 data, existing local patterns and first principles.

The analysis will identify the transportation system requirements and other measures required to ensure the acceptable operation of the study intersections, including auxiliary turning lanes and other transportation infrastructure improvements.

Modal splits to be confirmed with City staff.

TAC, MTO, Region, and City guidelines will be reviewed in order to complete an access management.

Review for the site access for corner clearance, driveway spacing, auxiliary lanes, corner radii, and clear throat distance.

Existing TDM opportunities will be identified and future TDM opportunities will be recommended for the site.

The parking supply will be reviewed in accordance with the City's Zoning By-law

If the above scope is acceptable to the MTO, Region, and City, it will form the basis of our scope of work.

Thank you,
Raf

100 Milverton Drive, Suite 404
Mississauga, ON L5R 4H1
Canada
ghd.com

13 September 2024

Adam Layton, MCIP, RPP
Associate Principal
Goldberg Group

Re: 720 Granite Court – Transportation Comments Responses

INTRODUCTION

GHD Limited is pleased to provide the following responses to comments provided by Region of Durham, City of Pickering and member of the public based on the first submission Traffic Impact Study prepared by GHD for the proposed residential development located at 720 Granite Court in the City of Pickering.

This letter presents the Region and City's comments and GHD's respective responses.

Response to Region Comments

Comment #3

Region: The guide rail shown does not comply with current requirements. When the guide rail is rebuilt it will be higher which may affect sightlines at the proposed access. This scenario should be considered in the report.

GHD Response: The existing guide rail will be removed and replaced with a new crash attenuator system at the parapet wall. The grade of the subject site will be raised to match the grade at Granite Court which will eliminate the need for the same length of guide rail as is currently provided. The new guide rail will not impact sightlines from the site access as illustrated in Figure 16 of the revised Traffic Impact Study.

Comment #4

Region: Please note the that the planned Multi-Use Path along Whites Road as a short-term infill project (2022-2029) from Bayly to Petticoat Creek Conservation Area should have been mentioned.

GHD Response: Noted. Report has been updated to mention the MUP.

Response to Region Comments – Waste Operations

Comment #8

Region: As per the Guidelines for Municipal Waste Collection service on Private Property found in Schedule "P" of the Regional Waste Bylaw 46-2011 roads must be 6.5m in width and a 13m turn radius provided. For multi-residential collection, overhead clearance must be met. No underground or indoor collection is provided. At the collection point, a concrete pad to accommodate the length of the collection vehicle, should be installed. The pad should have sufficient strength to handle the weight of a waste vehicle during execution of collection.

All roadways must to enable the waste vehicle to move in a forward motion without reversing as per municipal waste collection guidelines. Clear access along the route must remain clear and "no parking" signs should be erected prior to start of service.

GHD Response: The swept path assessment was completed based on the Region's Waste Collection requirements.

Response to Region Comments – Works Department Traffic Operations Centre

Region:

Whites Rd and Granite Crt.

- The signal operates under acceptable LOS during AM and PM Peaks. It does utilize a higher cycle length so it can be coordinated with the signals to the north. This does increase delay for east/west vehicles; however, it is the best way to operate the signal within the network.
- Due to the minimum time required for pedestrian crossings, we are unable to shorten the cycle length and keep it coordinated on a half cycle strategy that would reduce side street delay.
- Activating the eastbound left advance in AM Peak under existing conditions may improve the LOS for eastbound vehicles, but there will be an increase in delay for westbound vehicles.
- With future volumes, the eastbound left advance will be active during the AM and PM peaks, which will minimize eastbound queue lengths.
- The eastbound left advance arrow is already in place and active during the PM peak.
- Based on the Synchro analysis for future conditions, the recommended eastbound left storage length is 105m based on the 50th percentile queue length.

GHD Response: Noted, no longer applicable. Based on the supplemental intersection assessment prepared by GHD recommending a split phase.

Region:

Whites Rd and Granite Crt.

- Whites Rd and Bayly St. It is not advised to build a west leg access for the following reasons:
- The introduction of west leg access will increase delay at the intersection.
- The east leg would need to be converted to a shared through/right or shared through/left.
    - Making the existing right turn lane a shared through/right would reduce the capacity of that lane significantly. We would not be able to maintain the right turn arrow overlap with the southbound left advance phase. Given the high volume of the westbound right turn movement, it is not advisable to do this. Alternatively making the left a shared through/left would not be ideal but would operationally work better given the EB/WB volumes.
- The addition of the west leg would lead to increased delay and queueing for southbound traffic.
    - The AM southbound left queue would extend beyond the intersection to the north, blocking the 401 ramps.
    - Southbound queues spill back through the 401 ramps during the PM peak period today, which would be made significantly worse should a west leg be introduced at this intersection.
- The introduction of a west leg access would reduce southbound through capacity because of southbound right turning movements in the curb lane and introduce additional conflict movements at the intersection where collisions are notably high already, approximately 60 collisions in 10 years.

GHD Response: Noted.

Response to City Comments – General Comments

Comment #6

City: Show the removal of existing sidewalk, guard rail and their limits on the plan. Proof that confirms shortening the guardrail will not cause any safety concerns for vehicular traffic will be required for review.

GHD Response: The removal of the existing guide rail has been shown on the site plan and will be replaced with a new crash attenuator system at the parapet wall. The grade of the subject site will be raised to match the grade at Granite Court which will eliminate the need for the same length of guide rail as is currently provided. The sightline assessment completed in Figure 16 of the revised Traffic Impact Study confirms that the new guide rail will not impact sightlines from the site access.

Response to City Comments – Capital Projects - Traffic

Comment #2

City: Confirm if a dedicated right turn lane is required on Granite Court for the proposed development.

GHD Response: Based on the projected site generated traffic volumes, a dedicated right-turn lane has not been recommended on Granite Court to accommodate the proposed development.

Comment #3

City: Traffic Report Section 3.2 – As per the Region of Durham Cycling Plan 2021, an in boulevard multi-use-path will be constructed in the future. Update the report as required.

GHD Response: Noted. Report has been updated to mention the MUP.

Comment #4

City: Traffic Report Table 5 – The table shows some of the existing 95th% queues are less than the future total traffic queues. Confirm if the existing SBL 95th% queue is 90 m while SBL queue for 2027 and 2032 is 20 m.

GHD Response: The signal timings were optimized to mitigate delays, resulting in the reduction in the southbound left-turn movement identified by City staff. It should be noted that this analysis has been superseded by the proposed signal changes to the Whites Road and Granite Court intersection which introduces a split signal phase and dual eastbound left turn lanes from Granite Court to Whites Road to improve overall intersection capacity and reduce queueing and delays on the eastbound approach on Granite Court.

Comment #5

City: A proposed pavement markings and signage plan is required at the site plan stage.

GHD Response: A pavement marking and signage plan will be prepared at the site plan stage.

Additional Comments Listed under Traffic And Safety

Public Comments (#7)

During the processing of this application, and at the open house and statutory public meetings, area residents, businesses, and members of the Planning & Development Committee expressed concerns with the existing traffic in the area, and the increased traffic that will result from this proposed development which include:

a) concerned about increased traffic on neighbouring streets, Highway 401 ramps, and public parks, in a neighbourhood that is already congested during rush hour and summer months;
b) concerned about the lack of proposed road improvements for Whites Road and Granite Court to accommodate increased traffic, such as road widenings and additional traffic lanes;
c) concerned about the number of large trucks that travel along Whites Road and Granite Court, to access Highway 401, and how the proposed development may impact this;
d) concerned about the ability of residents to exit the West Shore and Rosebank neighbourhoods during an emergency, or the ability for emergency services to access these neighbourhoods,

considering that there are only two existing roads that provide access to and from the neighbourhoods;

e) concerned for the number of children who use the signalized intersections to walk to and from school, and how additional traffic on the road will be dangerous for pedestrians; and concerned with the safety of the proposed vehicular access from Granite Court, as this road is already congested and is frequently travelled on by large trucks.

f) concerned with the safety of the proposed vehicular access from Granite Court, as this road is already congested and is frequently travelled on by large trucks.

GHD Responses:

a) The traffic impact study confirmed that the proposed development will generate a manageable amount of traffic, with 76 new two-way trips during the weekday a.m. peak hour and 91 trips during the p.m. peak hour. The study concluded that under existing, future background, and future total conditions, all intersections, including those providing access to Highway 401, will operate within acceptable capacity.

b) According to the traffic impact study, the capacity analysis at key intersections, including Whites Road and Granite Court/Oklahoma Drive, show that all intersections will operate within capacity through 2037, even with background growth and site-generated traffic. No additional road widenings or traffic lane additions were recommended to accommodate traffic from the development, only changes to the signal timing plan for the intersection of Whites Road and Granite Court.

c) The study acknowledges the presence of large trucks on these roads, however, the traffic analysis shows that all study intersections, including those frequently used by trucks, will operate within capacity even with the additional traffic from the proposed development.

d) The assessment and review of emergency access for residents of West Shore and Roseback neighbourhoods is outside of the scope of this Traffic Study. However, traffic operations, even with the new development, will remain manageable during peak periods. As a result, emergency access should not be significantly impacted. For more specific concerns related to emergency planning, the City's Community Emergency Management Plans should be consulted.

e) The report highlights existing pedestrian infrastructure, including sidewalks and signalized pedestrian crossings at key intersections. Signalized crossings at Whites Road and Bayly Street, and at Whites Road and Granite Court/Oklahoma Drive, ensure safe pedestrian access. The site access from Granite Court has been assessed and meets the city's requirements for sightlines, design and capacity. Despite existing traffic volumes and truck traffic, the traffic study shows that the access proposed site access will operate safely and with manageable delays.

f) The study includes a detailed sightline and turning movement analysis for the proposed driveway onto Granite Court. It concludes that the design meets the city's requirements for safe vehicle access, even considering the existing truck traffic on Granite Court.

Public Comments #2

Objection – Traffic and Safety

6. concerned about increased traffic on neighbouring streets, Highway 401 ramps, and public parks, in a neighbourhood that is already congested during rush hour and summer months;
7. concerned about the proximity of traffic lights at the intersections of Whites Road and Granite Court, and Whites Road and Bayly Street, as it regularly causes backups during rush hour, which will be further exacerbated by increased traffic as a result of the proposed development;
8. stated that when there is an accident on Highway 401, many vehicles travel through the neighbourhood to avoid traffic on the highway, which creates a lot of traffic congestion on the neighbourhood streets, which would be further exacerbated by traffic from the proposed development;
9. concerned about the lack of proposed road improvements for Whites Road and Granite Court to accommodate increased traffic, such as road widenings and additional traffic lanes;

10. questioned if the submitted traffic impact study analyzed safety for pedestrians, specifically related to sight lines at signalized intersections;
11. concerned for the number of children who use the signalized intersections to walk to and from school, and how additional traffic on the road will be dangerous for pedestrians;
12. questioned when the submitted traffic impact study was completed, and if there was a significant difference in the data collected pre- and post-COVID;
13. concerned about the number of large trucks that travel along Whites Road and Granite Court, to access Highway 401, and how this may be impacted by the proposed development;
14. concerned about the ability of residents to exit the West Shore and Rosebank neighbourhoods during an emergency, or the ability for emergency services to access these neighbourhoods, considering that there are only two existing roads that provide access to and from the neighbourhoods;
15. concerned with the data provided in the submitted traffic study, as it is not an accurate reflection of the traffic conditions in the neighbourhood;
16. concerned with the safety of the proposed vehicular access from Granite Court, as this road is already congested and is frequently travelled on by large trucks;
17. concerned with the current speed limit of 40 kilometres/hour on Granite Court, as many vehicles travel above the posted speed limit;
18. concerned that the City will install a three-way stop along Granite Court, at the proposed vehicular access for the site, which will create additional congestion along Granite Court;
19. questioned if future proposed developments within the surrounding area have been considered in the drafting of the submitted traffic impact study;
20. concerned about the location of the proposed private outdoor amenity space in proximity to Whites Road, which may be unsafe for children;
21. concerned about the number of large constructions vehicles that would be travelling to and from the site during construction, and how this would affect traffic and safety;
22. concerned that the submitted traffic study does not take into account the impacts of other proposed development within the surrounding area, particularly the proposed development at Kingston Road and Rougemount Drive; and
23. questioned if there is an evacuation plan in place for the West Shore and Rosebank neighbourhoods, if an evacuation is necessary for the nuclear station.

GHD Responses:

6. The traffic study evaluated the signalized intersections and found that both will operate within capacity even with the additional traffic from the proposed development. The delays and queuing for both intersections remains at acceptable levels confirming that congestion and vehicle queuing will not be significantly worsened by the proposed development.

7. The traffic study evaluated the signalized intersections and found that both will operate within capacity even with the additional traffic from the proposed development. The delays and queuing for both intersections remains at acceptable levels confirming that congestion and vehicle queuing will not be significantly worsened by the proposed development.
8. While the study does not directly address accident spillover from Highway 401 during infrequent events, it concludes that the local network, including Whites Road and Granite Court, can accommodate the additional traffic generated by the proposed development without significant impacts to the study intersections under typical conditions.
9. The traffic study concludes that no road widenings or additional traffic lanes are necessary as the intersections and streets are projected to operate within acceptable limits including traffic generated by the proposed development.
10. The traffic study includes a sightline review of the proposed site access on Granite Court, which confirms that the proposed access points and intersections provide sufficient sight distances, ensuring the safety of pedestrians and vehicles. Pedestrian sightline at signalized intersections was not considered in the traffic study as the proposed development does not recommended changes to the existing geometry of the intersections which have been designed to regional standards. Therefore, pedestrian sightlines are not impacted by the subject site.

11. Pedestrian safety, including for children, was a priority when developing the Site Plan. Signalized crossings are provided at key intersections to provide safe crossing of the roads, and the proposed development will extend the pedestrian sidewalk along the frontage of Granite Court to improve safety.
12. The traffic data used in the analysis was collected in November 2022 and was approved by City and Region staff for use in the study. GHD collected another set of volumes in September 2023 which confirmed the volumes from 2022 where consistent with post COVID conditions.
13. The study recognizes that Whites Road and Granite Court are used by trucks accessing Highway 401. The analysis shows that despite truck traffic, the intersections will continue to operate within capacity, and the addition of development-related traffic will not significantly impact truck movements.
14. Although not specifically addressed, the traffic study concludes that the proposed development will not cause significant congestion at the study intersection, implying that emergency access would not be impeded during an emergency call. Furthermore, the City's Community Emergency Management Plan provides a structured management process for key City staff and external officials, who make up the Municipal Emergency Control Group (MECG). It outlines how the MECG, the Emergency Operations Centre, and the Emergency Site Management Team will operate during community emergencies or major crises, ensuring effective response.
15. As previously noted, the traffic data used in the analysis was collected in November 2022 and was approved by City and Region staff for use in the study. GHD collected another set of volumes in September 2023 which confirmed the volumes from 2022 where consistent with post COVID conditions.
16. The study includes a detailed sightline and turning movement analysis for the proposed driveway onto Granite Court. It concludes that the design meets the city's requirements for safe vehicle access, even considering the existing truck traffic on Granite Court.
17. The study uses a design speed of 50 km/h for safety assessments, which is higher than the posted speed limit, ensuring that the proposed access is safe even if some vehicles exceed the speed limit.
18. The traffic study concluded that the proposed site access will operate with acceptable conditions with stop control only on the site access. No stop control along Granite Court has been recommended.
19. The traffic study considered all future developments in the area identified by City staff, including three background developments. The analysis used future traffic volumes that consider these developments and concluded that the intersections will continue to operate within capacity.
20. The traffic study does not address the placement of amenity spaces, but City planning staff would ensure the amenity spaces are safe for residents, particularly children, in line with city regulations for proximity to roads.
21. The traffic study does not directly address construction traffic, but standard practice during construction would involve the preparation of traffic management plans to minimize disruption on the adjacent road. The City and Region will require these plans as part of the construction permit process.
22. The traffic study considered all future developments in the area identified by City staff, including some along Kingston Road. The analysis used future traffic volumes that consider these developments and concluded that the intersections will continue to operate within capacity.
23. The traffic study does not address evacuation plans, but the City's Community Emergency Management Plan provides a structured management process for key City staff and external officials, who make up the Municipal Emergency Control Group (MECG). It outlines how the MECG, the Emergency Operations Centre, and the Emergency Site Management Team will operate during community emergencies or major crises, ensuring effective response. This public concern can be addressed at a municipal level and is beyond the scope of the traffic study.

Appendix B

Traffic Data

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #22-378 - GHD

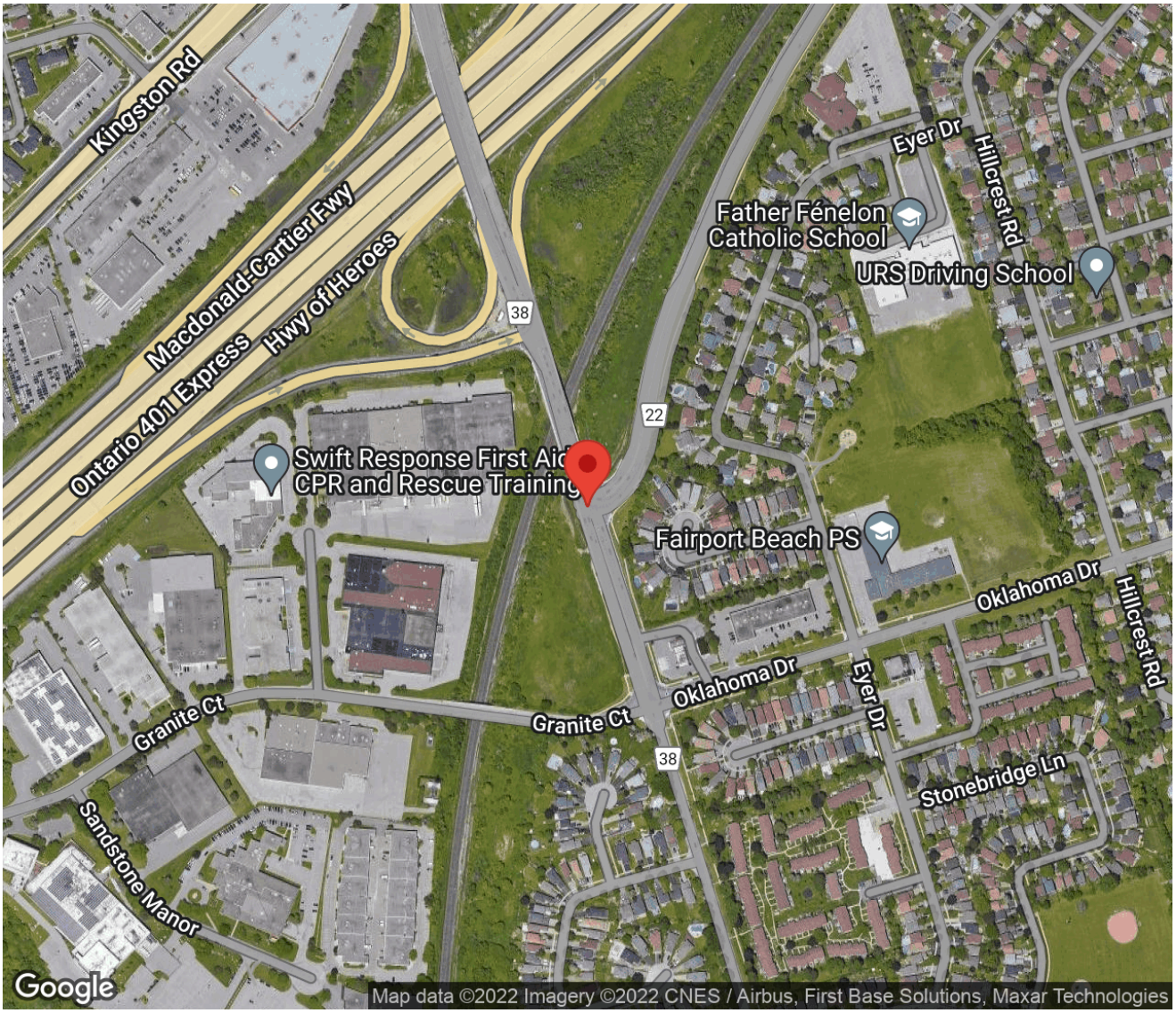
Intersection Count Report

Intersection:	Whites Rd & Bayly St
Municipality:	Pickering
Count Date:	Tuesday, Nov 01, 2022
Site Code:	2237800001
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-09:00, 16:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Whites Rd & Bayly St
Site Code:	2237800001
Municipality:	Pickering
Count Date:	Nov 01, 2022



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Whites Rd & Bayly St
Site Code:	2237800001
Municipality:	Pickering
Count Date:	Nov 01, 2022

Whites Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	272	385	0	0	657	0	1	370	43	0	414	0	1071
08:00 - 09:00	349	388	1	0	738	0	3	512	83	0	598	0	1336
BREAK													
16:00 - 17:00	689	470	0	0	1159	0	0	503	178	0	681	0	1840
17:00 - 18:00	676	426	1	0	1103	0	0	410	132	0	542	3	1645
GRAND TOTAL	**1986**	**1669**	**2**	**0**	**3657**	**0**	**4**	**1795**	**436**	**0**	**2235**	**3**	**5892**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Whites Rd & Bayly St
Site Code:	2237800001
Municipality:	Pickering
Count Date:	Nov 01, 2022

Bayly St - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	73	10	175	0	258	8	0	0	5	0	5	0	263
08:00 - 09:00	83	0	263	0	346	6	0	0	2	0	2	0	348
BREAK													
16:00 - 17:00	131	0	317	0	448	18	0	0	3	0	3	0	451
17:00 - 18:00	148	1	250	0	399	5	0	0	1	0	1	0	400
GRAND TOTAL	**435**	**11**	**1005**	**0**	**1451**	**37**	**0**	**0**	**11**	**0**	**11**	**0**	**1462**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Bayly St
Site Code: 2237800001
Municipality: Pickering
Count Date: Nov 01, 2022

North Approach - Whites Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	53	61	0	0	114	0	2	0	0	2	0	0	0	0	0	0
07:15	50	71	0	0	121	1	1	0	0	2	0	0	0	0	0	0
07:30	50	61	0	0	111	4	8	0	0	12	0	0	0	0	0	0
07:45	110	178	0	0	288	4	3	0	0	7	0	0	0	0	0	0
08:00	82	89	0	0	171	1	3	0	0	4	0	0	0	0	0	0
08:15	68	109	0	0	177	2	2	0	0	4	0	0	0	0	0	0
08:30	89	92	1	0	182	4	4	0	0	8	0	0	0	0	0	0
08:45	98	84	0	0	182	5	5	0	0	10	0	0	0	0	0	0
SUBTOTAL	600	745	1	0	1346	21	28	0	0	49	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Bayly St
Site Code: 2237800001
Municipality: Pickering
Count Date: Nov 01, 2022

North Approach - Whites Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	172	120	0	0	292	3	2	0	0	5	0	0	0	0	0	0
16:15	158	110	0	0	268	4	5	0	0	9	0	0	0	0	0	0
16:30	169	125	0	0	294	1	2	0	0	3	0	0	0	0	0	0
16:45	180	106	0	0	286	2	0	0	0	2	0	0	0	0	0	0
17:00	151	107	0	0	258	5	3	0	0	8	0	0	0	0	0	0
17:15	190	99	1	0	290	3	2	0	0	5	0	0	0	0	0	0
17:30	161	105	0	0	266	0	4	0	0	4	0	0	0	0	0	0
17:45	164	103	0	0	267	2	3	0	0	5	0	0	0	0	0	0
SUBTOTAL	1345	875	1	0	2221	20	21	0	0	41	0	0	0	0	0	0
GRAND TOTAL	**1945**	**1620**	**2**	**0**	**3567**	**41**	**49**	**0**	**0**	**90**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Bayly St
Site Code: 2237800001
Municipality: Pickering
Count Date: Nov 01, 2022

South Approach - Whites Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	0	73	14	0	87	0	5	0	0	5	0	0	0	0	0	0
07:15	0	60	8	0	68	0	1	0	0	1	0	0	0	0	0	0
07:30	0	97	6	0	103	0	3	0	0	3	0	0	0	0	0	0
07:45	1	126	14	0	141	0	5	1	0	6	0	0	0	0	0	0
08:00	1	137	13	0	151	0	8	0	0	8	0	0	0	0	0	0
08:15	1	116	12	0	129	0	4	0	0	4	0	0	0	0	0	0
08:30	1	112	26	0	139	0	3	0	0	3	0	0	0	0	0	0
08:45	0	123	30	0	153	0	9	2	0	11	0	0	0	0	0	0
SUBTOTAL	4	844	123	0	971	0	38	3	0	41	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Bayly St
Site Code: 2237800001
Municipality: Pickering
Count Date: Nov 01, 2022

South Approach - Whites Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	0	137	52	0	189	0	6	2	0	8	0	0	0	0	0	0
16:15	0	106	23	0	129	0	3	1	0	4	0	0	0	0	0	0
16:30	0	136	53	0	189	0	2	2	0	4	0	0	0	0	0	0
16:45	0	110	44	0	154	0	3	1	0	4	0	0	0	0	0	0
17:00	0	138	45	0	183	0	2	1	0	3	0	0	0	0	0	1
17:15	0	97	28	0	125	0	0	0	0	0	0	0	0	0	0	1
17:30	0	94	28	0	122	0	2	1	0	3	0	0	0	0	0	0
17:45	0	75	29	0	104	0	2	0	0	2	0	0	0	0	0	1
SUBTOTAL	0	893	302	0	1195	0	20	8	0	28	0	0	0	0	0	3
GRAND TOTAL	4	1737	425	0	2166	0	58	11	0	69	0	0	0	0	0	3

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Bayly St
Site Code: 2237800001
Municipality: Pickering
Count Date: Nov 01, 2022

East Approach - Bayly St

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	14	1	43	0	58	1	0	4	0	5	0	0	0	0	0	3
07:15	17	6	30	0	53	0	0	2	0	2	0	0	0	0	0	0
07:30	12	0	39	0	51	1	0	0	0	1	0	0	0	0	0	0
07:45	27	3	53	0	83	1	0	4	0	5	0	0	0	0	0	5
08:00	21	0	84	0	105	1	0	1	0	2	0	0	0	0	0	2
08:15	25	0	57	0	82	3	0	1	0	4	0	0	0	0	0	1
08:30	20	0	57	0	77	1	0	5	0	6	0	0	0	0	0	2
08:45	11	0	55	0	66	1	0	3	0	4	0	0	0	0	0	1
SUBTOTAL	147	10	418	0	575	9	0	20	0	29	0	0	0	0	0	14

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Bayly St
Site Code: 2237800001
Municipality: Pickering
Count Date: Nov 01, 2022

East Approach - Bayly St

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	31	0	79	0	110	0	0	0	0	0	0	0	0	0	0	4
16:15	37	0	77	0	114	1	0	3	0	4	0	0	0	0	0	5
16:30	28	0	71	0	99	1	0	0	0	1	0	0	0	0	0	8
16:45	33	0	87	0	120	0	0	0	0	0	0	0	0	0	0	1
17:00	36	0	72	0	108	0	0	0	0	0	0	0	0	0	0	1
17:15	44	0	73	0	117	0	0	3	0	3	0	0	0	0	0	1
17:30	35	1	53	0	89	0	0	0	0	0	0	0	0	0	0	1
17:45	33	0	49	0	82	0	0	0	0	0	0	0	0	0	0	2
SUBTOTAL	277	1	561	0	839	2	0	6	0	8	0	0	0	0	0	23
GRAND TOTAL	424	11	979	0	1414	11	0	26	0	37	0	0	0	0	0	37

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Bayly St
Site Code: 2237800001
Municipality: Pickering
Count Date: Nov 01, 2022

West Approach - Bayly St

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0
08:00	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	3	0	3	0	0	4	0	4	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Bayly St
Site Code: 2237800001
Municipality: Pickering
Count Date: Nov 01, 2022

West Approach - Bayly St

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	3	0	3	0	0	1	0	1	0	0	0	0	0	0
GRAND TOTAL	0	0	6	0	6	0	0	5	0	5	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	07:00:00	From:	07:45:00
To:	09:00:00	To:	08:45:00

Intersection: Whites Rd & Bayly St
Site Code: 2237800001
Count Date: Nov 01, 2022

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Whites Rd runs N/S

North Approach

	Out	In	Total
Cars	818	742	1560
Trucks	23	31	54
Bicycles	0	0	0
	841	**773**	**1614**

Whites Rd

Bicycles	0	0	0	0
Trucks	0	12	11	0
Cars	1	468	349	0
Totals	**1**	**480**	**360**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	347	414	761
Trucks	17	12	29
Bicycles	0	0	0
	364	**426**	**790**

Bayly St

Bicycles	Trucks	Cars	Totals	
0	0	0	**0**	
0	0	0	**0**	
0	0	0	**0**	
0	4	1	**5**	

Peds: 0

Peds: 10

Bayly St

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	262	251	11	0
	3	3	0	0
	99	93	6	0

Peds: 0

West Approach

	Out	In	Total
Cars	1	8	9
Trucks	4	0	4
Bicycles	0	0	0
	5	**8**	**13**

Whites Rd

Totals	**4**	**511**	**66**	**0**
Cars	4	491	65	0
Trucks	0	20	1	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	560	562	1122
Trucks	21	22	43
Bicycles	0	0	0
	581	**584**	**1165**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection:	Whites Rd & Bayly St
Site Code:	2237800001
Count Date:	Nov 01, 2022
Period:	07:00 - 09:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach Whites Rd						South Approach Whites Rd						East Approach Bayly St						West Approach Bayly St						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
07:45	114	181	0	0	0	295	1	131	15	0	0	147	28	3	57	0	5	88	0	0	3	0	0	3	533
08:00	83	92	0	0	0	175	1	145	13	0	0	159	22	0	85	0	2	107	0	0	2	0	0	2	443
08:15	70	111	0	0	0	181	1	120	12	0	0	133	28	0	58	0	1	86	0	0	0	0	0	0	400
08:30	93	96	1	0	0	190	1	115	26	0	0	142	21	0	62	0	2	83	0	0	0	0	0	0	415
Grand Total	**360**	**480**	**1**	**0**	**0**	**841**	**4**	**511**	**66**	**0**	**0**	**581**	**99**	**3**	**262**	**0**	**10**	**364**	**0**	**0**	**5**	**0**	**0**	**5**	**1791**
Approach %	42.8	57.1	0.1	0		-	0.7	88	11.4	0		-	27.2	0.8	72	0		-	0	0	100	0		-	
Totals %	20.1	26.8	0.1	0		47	0.2	28.5	3.7	0		32.4	5.5	0.2	14.6	0		20.3	0	0	0.3	0		0.3	
PHF	**0.79**	**0.66**	**0.25**	**0**		**0.71**	**1**	**0.88**	**0.63**	**0**		**0.91**	**0.88**	**0.25**	**0.77**	**0**		**0.85**	**0**	**0**	**0.42**	**0**		**0.42**	**0.84**
Cars	349	468	1	0		818	4	491	65	0		560	93	3	251	0		347	0	0	1	0		1	1726
% Cars	96.9	97.5	100	0		97.3	100	96.1	98.5	0		96.4	93.9	100	95.8	0		95.3	0	0	20	0		20	96.4
Trucks	11	12	0	0		23	0	20	1	0		21	6	0	11	0		17	0	0	4	0		4	65
% Trucks	3.1	2.5	0	0		2.7	0	3.9	1.5	0		3.6	6.1	0	4.2	0		4.7	0	0	80	0		80	3.6
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					10	-					0	-	10
% Peds					0	-					0	-					100	-					0	-	

Peak Hour Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

Intersection: Whites Rd & Bayly St
Site Code: 2237800001
Count Date: Nov 01, 2022

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Whites Rd runs N/S

North Approach

	Out	In	Total
Cars	1140	803	1943
Trucks	19	17	36
Bicycles	0	0	0
	1159	**820**	**1979**

Whites Rd

Bicycles	0	0	0	0
Trucks	0	9	10	0
Cars	0	461	679	0
Totals	**0**	**470**	**689**	**0**

East Approach

	Out	In	Total
Cars	443	851	1294
Trucks	5	16	21
Bicycles	0	0	0
	448	**867**	**1315**

Bayly St

Bicycles	Trucks	Cars	Totals	
0	0	0	**0**	
0	0	0	**0**	
0	0	0	**0**	
0	0	3	**3**	

Peds: 0

Peds: 0

Peds: 18

Peds: 0

Bayly St

Totals	Cars	Trucks	Bicycles	
0	0	0	0	
317	314	3	0	
0	0	0	0	
131	129	2	0	

West Approach

	Out	In	Total
Cars	3	0	3
Trucks	0	0	0
Bicycles	0	0	0
	3	**0**	**3**

Whites Rd

Totals	**0**	**503**	**178**	**0**
Cars	0	489	172	0
Trucks	0	14	6	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	661	593	1254
Trucks	20	11	31
Bicycles	0	0	0
	681	**604**	**1285**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Whites Rd & Bayly St
Site Code: 2237800001
Count Date: Nov 01, 2022
Period: 16:00 - 18:00

Peak Hour Data (16:00 - 17:00)

Start Time	North Approach Whites Rd						South Approach Whites Rd						East Approach Bayly St						West Approach Bayly St						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:00	175	122	0	0	0	297	0	143	54	0	0	197	31	0	79	0	4	110	0	0	0	0	0	0	604
16:15	162	115	0	0	0	277	0	109	24	0	0	133	38	0	80	0	5	118	0	0	0	0	0	0	528
16:30	170	127	0	0	0	297	0	138	55	0	0	193	29	0	71	0	8	100	0	0	1	0	0	1	591
16:45	182	106	0	0	0	288	0	113	45	0	0	158	33	0	87	0	1	120	0	0	2	0	0	2	568
Grand Total	**689**	**470**	**0**	**0**	**0**	**1159**	**0**	**503**	**178**	**0**	**0**	**681**	**131**	**0**	**317**	**0**	**18**	**448**	**0**	**0**	**3**	**0**	**0**	**3**	**2291**
Approach %	59.4	40.6	0	0		-	0	73.9	26.1	0		-	29.2	0	70.8	0		-	0	0	100	0		-	
Totals %	30.1	20.5	0	0		50.6	0	22	7.8	0		29.7	5.7	0	13.8	0		19.6	0	0	0.1	0		0.1	
PHF	**0.95**	**0.93**	**0**	**0**		**0.98**	**0**	**0.88**	**0.81**	**0**		**0.86**	**0.86**	**0**	**0.91**	**0**		**0.93**	**0**	**0**	**0.38**	**0**		**0.38**	**0.95**
Cars	679	461	0	0		1140	0	489	172	0		661	129	0	314	0		443	0	0	3	0		3	2247
% Cars	98.5	98.1	0	0		98.4	0	97.2	96.6	0		97.1	98.5	0	99.1	0		98.9	0	0	100	0		100	98.1
Trucks	10	9	0	0		19	0	14	6	0		20	2	0	3	0		5	0	0	0	0		0	44
% Trucks	1.5	1.9	0	0		1.6	0	2.8	3.4	0		2.9	1.5	0	0.9	0		1.1	0	0	0	0		0	1.9
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					18	-					0	-	18
% Peds					0	-					0	-					100	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #22-378 - GHD

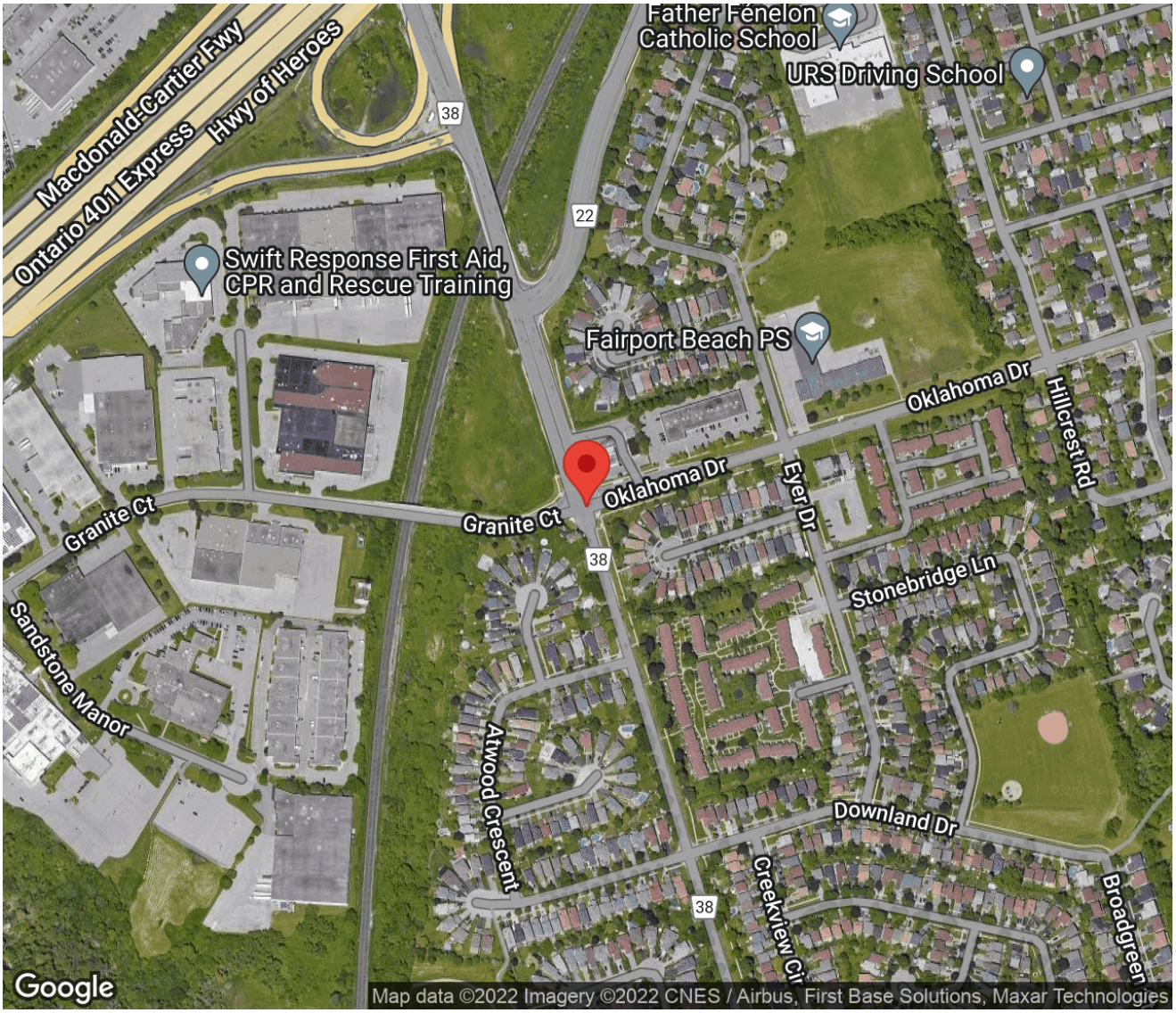
Intersection Count Report

Intersection:	Whites Rd & Granite Court-Oklahoma Dr
Municipality:	Pickering
Count Date:	Tuesday, Nov 01, 2022
Site Code:	2237800002
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-09:00, 16:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Whites Rd & Granite Court-Oklahoma Dr
Site Code:	2237800002
Municipality:	Pickering
Count Date:	Nov 01, 2022



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Whites Rd & Granite Court-Oklahoma Dr
Site Code:	2237800002
Municipality:	Pickering
Count Date:	Nov 01, 2022

Whites Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	123	43	296	0	462	7	4	107	11	0	122	4	584
08:00 - 09:00	135	69	269	0	473	4	16	132	26	0	174	1	647
BREAK													
16:00 - 17:00	251	172	177	0	600	7	15	102	13	0	130	4	730
17:00 - 18:00	259	163	150	0	572	3	14	109	11	0	134	7	706
GRAND TOTAL	**768**	**447**	**892**	**0**	**2107**	**21**	**49**	**450**	**61**	**0**	**560**	**16**	**2667**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Whites Rd & Granite Court-Oklahoma Dr
Site Code: 2237800002
Municipality: Pickering
Count Date: Nov 01, 2022

Oklahoma Dr - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	1	34	201	0	236	1	107	41	4	0	152	2	388
08:00 - 09:00	14	37	282	0	333	5	175	39	7	0	221	0	554
BREAK													
16:00 - 17:00	10	55	186	0	251	4	387	68	11	0	466	3	717
17:00 - 18:00	11	33	166	0	210	2	263	56	18	0	337	3	547
GRAND TOTAL	**36**	**159**	**835**	**0**	**1030**	**12**	**932**	**204**	**40**	**0**	**1176**	**8**	**2206**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Granite Court-Oklahoma Dr
Site Code: 2237800002
Municipality: Pickering
Count Date: Nov 01, 2022

North Approach - Whites Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	8	12	56	0	76	0	1	2	0	3	0	0	0	0	0	2
07:15	10	6	72	0	88	1	0	0	0	1	0	0	0	0	0	3
07:30	20	6	51	0	77	7	2	3	0	12	0	0	0	0	0	2
07:45	76	14	111	0	201	1	2	1	0	4	0	0	0	0	0	0
08:00	24	16	68	0	108	1	1	3	0	5	0	0	0	0	0	2
08:15	39	17	80	0	136	1	1	1	0	3	0	0	0	0	0	1
08:30	32	13	64	0	109	4	2	1	0	7	0	0	0	0	0	0
08:45	33	19	47	0	99	1	0	5	0	6	0	0	0	0	0	1
SUBTOTAL	242	103	549	0	894	16	9	16	0	41	0	0	0	0	0	11

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Granite Court-Oklahoma Dr
Site Code: 2237800002
Municipality: Pickering
Count Date: Nov 01, 2022

North Approach - Whites Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	60	43	44	0	147	0	1	1	0	2	0	0	0	0	0	2
16:15	53	49	48	0	150	2	1	3	0	6	0	0	0	0	0	0
16:30	69	43	43	0	155	0	0	3	0	3	0	0	0	0	0	4
16:45	67	35	35	0	137	0	0	0	0	0	0	0	0	0	0	1
17:00	70	42	36	0	148	2	0	1	0	3	0	0	0	0	0	2
17:15	71	36	34	0	141	0	1	2	0	3	0	0	0	0	0	1
17:30	56	48	31	0	135	1	0	3	0	4	0	0	0	0	0	0
17:45	59	35	41	0	135	0	1	2	0	3	0	0	0	0	0	0
SUBTOTAL	505	331	312	0	1148	5	4	15	0	24	0	0	0	0	0	10
GRAND TOTAL	**747**	**434**	**861**	**0**	**2042**	**21**	**13**	**31**	**0**	**65**	**0**	**0**	**0**	**0**	**0**	**21**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Granite Court-Oklahoma Dr
Site Code: 2237800002
Municipality: Pickering
Count Date: Nov 01, 2022

South Approach - Whites Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	0	21	0	0	21	0	2	0	0	2	0	0	0	0	0	0
07:15	1	27	3	0	31	0	0	0	0	0	0	0	0	0	0	1
07:30	0	27	2	0	29	0	0	0	0	0	0	0	0	0	0	2
07:45	2	30	6	0	38	1	0	0	0	1	0	0	0	0	0	1
08:00	3	34	5	0	42	0	0	0	0	0	0	0	0	0	0	0
08:15	7	34	4	0	45	0	1	0	0	1	0	0	0	0	0	1
08:30	3	25	9	0	37	0	0	0	0	0	0	0	0	0	0	0
08:45	2	37	8	0	47	1	1	0	0	2	0	0	0	0	0	0
SUBTOTAL	18	235	37	0	290	2	4	0	0	6	0	0	0	0	0	5

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Granite Court-Oklahoma Dr
Site Code: 2237800002
Municipality: Pickering
Count Date: Nov 01, 2022

South Approach - Whites Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	1	24	3	0	28	0	1	0	0	1	1	0	0	0	1	1
16:15	5	23	4	0	32	0	1	0	0	1	0	0	0	0	0	1
16:30	6	26	3	0	35	0	0	0	0	0	0	0	0	0	0	2
16:45	2	27	3	0	32	0	0	0	0	0	0	0	0	0	0	0
17:00	2	25	3	0	30	0	0	0	0	0	0	0	0	0	0	5
17:15	5	25	3	0	33	0	0	0	0	0	0	0	0	0	0	0
17:30	4	25	1	0	30	0	0	1	0	1	1	0	0	0	1	0
17:45	2	33	3	0	38	0	1	0	0	1	0	0	0	0	0	2
SUBTOTAL	27	208	23	0	258	0	3	1	0	4	2	0	0	0	2	11
GRAND TOTAL	45	443	60	0	548	2	7	1	0	10	2	0	0	0	2	16

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Granite Court-Oklahoma Dr
Site Code: 2237800002
Municipality: Pickering
Count Date: Nov 01, 2022

East Approach - Oklahoma Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	0	2	32	0	34	0	1	2	0	3	0	0	0	0	0	0
07:15	0	5	42	0	47	0	0	0	0	0	0	0	0	0	0	0
07:30	0	3	53	0	56	0	0	2	0	2	0	0	0	0	0	0
07:45	1	23	68	0	92	0	0	2	0	2	0	0	0	0	0	1
08:00	2	11	90	0	103	0	0	1	0	1	0	0	0	0	0	1
08:15	2	7	55	0	64	0	0	2	0	2	0	0	0	0	0	1
08:30	2	11	66	0	79	0	0	2	0	2	0	0	0	0	0	2
08:45	7	8	63	0	78	1	0	3	0	4	0	0	0	0	0	1
SUBTOTAL	14	70	469	0	553	1	1	14	0	16	0	0	0	0	0	6

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Granite Court-Oklahoma Dr
Site Code: 2237800002
Municipality: Pickering
Count Date: Nov 01, 2022

East Approach - Oklahoma Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	1	18	46	0	65	0	0	2	0	2	0	0	0	0	0	3
16:15	2	12	44	0	58	1	0	0	0	1	0	0	0	0	0	1
16:30	2	16	42	0	60	0	0	1	0	1	0	0	0	0	0	0
16:45	4	9	50	0	63	0	0	1	0	1	0	0	0	0	0	0
17:00	2	9	45	0	56	0	0	1	0	1	0	0	0	0	0	1
17:15	5	13	46	0	64	0	0	0	0	0	0	0	0	0	0	0
17:30	1	3	37	0	41	0	0	1	0	1	0	0	0	0	0	0
17:45	3	8	35	0	46	0	0	1	0	1	0	0	0	0	0	1
SUBTOTAL	20	88	345	0	453	1	0	7	0	8	0	0	0	0	0	6
GRAND TOTAL	**34**	**158**	**814**	**0**	**1006**	**2**	**1**	**21**	**0**	**24**	**0**	**0**	**0**	**0**	**0**	**12**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Granite Court-Oklahoma Dr
Site Code: 2237800002
Municipality: Pickering
Count Date: Nov 01, 2022

West Approach - Granite Court

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	24	1	0	0	25	2	0	0	0	2	0	0	0	0	0	0
07:15	17	2	1	0	20	0	1	0	0	1	0	0	0	0	0	0
07:30	23	16	1	0	40	3	0	0	0	3	0	0	0	0	0	1
07:45	36	21	1	0	58	2	0	1	0	3	0	0	0	0	0	1
08:00	25	6	0	0	31	6	0	0	0	6	0	0	0	0	0	0
08:15	41	6	4	0	51	2	0	0	0	2	0	0	0	0	0	0
08:30	45	7	2	0	54	1	0	0	0	1	0	0	0	0	0	0
08:45	48	19	1	0	68	7	1	0	0	8	0	0	0	0	0	0
SUBTOTAL	259	78	10	0	347	23	2	1	0	26	0	0	0	0	0	2

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Whites Rd & Granite Court-Oklahoma Dr
Site Code: 2237800002
Municipality: Pickering
Count Date: Nov 01, 2022

West Approach - Granite Court

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	116	19	3	0	138	5	0	0	0	5	0	0	0	0	0	1
16:15	70	17	1	0	88	3	0	0	0	3	0	0	0	0	0	0
16:30	111	17	3	0	131	3	0	0	0	3	0	0	0	0	0	2
16:45	76	15	4	0	95	3	0	0	0	3	0	0	0	0	0	0
17:00	118	24	4	0	146	2	0	0	0	2	0	1	0	0	1	1
17:15	50	11	4	0	65	0	0	0	0	0	0	0	0	0	0	0
17:30	54	13	6	0	73	2	0	0	0	2	0	0	0	0	0	2
17:45	37	7	4	0	48	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	632	123	29	0	784	18	0	0	0	18	0	1	0	0	1	6
GRAND TOTAL	**891**	**201**	**39**	**0**	**1131**	**41**	**2**	**1**	**0**	**44**	**0**	**1**	**0**	**0**	**1**	**8**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	07:00:00	From:	07:45:00
To:	09:00:00	To:	08:45:00

Intersection: Whites Rd & Granite Court-Oklahoma Dr
Site Code: 2237800002
Count Date: Nov 01, 2022

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Whites Rd runs N/S

North Approach

	Out	In	Total
Cars	554	549	1103
Trucks	19	19	38
Bicycles	0	0	0
	573	**568**	**1141**

Whites Rd

Bicycles	0	0	0	0
Trucks	6	6	7	0
Cars	323	60	171	0
Totals	**329**	**66**	**178**	**0**

Peds: 3

East Approach

	Out	In	Total
Cars	338	235	573
Trucks	7	7	14
Bicycles	0	0	0
	345	**242**	**587**

Granite Court

Bicycles	Trucks	Cars	Totals	
0	0	0	**0**	
0	11	147	**158**	
0	0	40	**40**	
0	1	7	**8**	

Peds: 1

Peds: 5

Oklahoma Dr

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	286	279	7	0
	52	52	0	0
	7	7	0	0

Peds: 2

West Approach

	Out	In	Total
Cars	194	390	584
Trucks	12	7	19
Bicycles	0	0	0
	206	**397**	**603**

Totals	**16**	**124**	**24**	**0**
Cars	15	123	24	0
Trucks	1	1	0	0
Bicycles	0	0	0	0

Whites Rd

South Approach

	Out	In	Total
Cars	162	74	236
Trucks	2	7	9
Bicycles	0	0	0
	164	**81**	**245**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Whites Rd & Granite Court-Oklahoma Dr
Site Code: 2237800002
Count Date: Nov 01, 2022
Period: 07:00 - 09:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach Whites Rd						South Approach Whites Rd						East Approach Oklahoma Dr						West Approach Granite Court						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
07:45	77	16	112	0	0	205	3	30	6	0	1	39	1	23	70	0	1	94	38	21	2	0	1	61	399
08:00	25	17	71	0	2	113	3	34	5	0	0	42	2	11	91	0	1	104	31	6	0	0	0	37	296
08:15	40	18	81	0	1	139	7	35	4	0	1	46	2	7	57	0	1	66	43	6	4	0	0	53	304
08:30	36	15	65	0	0	116	3	25	9	0	0	37	2	11	68	0	2	81	46	7	2	0	0	55	289
Grand Total	**178**	**66**	**329**	**0**	**3**	**573**	**16**	**124**	**24**	**0**	**2**	**164**	**7**	**52**	**286**	**0**	**5**	**345**	**158**	**40**	**8**	**0**	**1**	**206**	**1288**
Approach %	31.1	11.5	57.4	0		-	9.8	75.6	14.6	0		-	2	15.1	82.9	0		-	76.7	19.4	3.9	0		-	
Totals %	13.8	5.1	25.5	0		44.5	1.2	9.6	1.9	0		12.7	0.5	4	22.2	0		26.8	12.3	3.1	0.6	0		16	
PHF	**0.58**	**0.92**	**0.73**	**0**		**0.7**	**0.57**	**0.89**	**0.67**	**0**		**0.89**	**0.88**	**0.57**	**0.79**	**0**		**0.83**	**0.86**	**0.48**	**0.5**	**0**		**0.84**	**0.81**
Cars	171	60	323	0		554	15	123	24	0		162	7	52	279	0		338	147	40	7	0		194	1248
% Cars	96.1	90.9	98.2	0		96.7	93.8	99.2	100	0		98.8	100	100	97.6	0		98	93	100	87.5	0		94.2	96.9
Trucks	7	6	6	0		19	1	1	0	0		2	0	0	7	0		7	11	0	1	0		12	40
% Trucks	3.9	9.1	1.8	0		3.3	6.3	0.8	0	0		1.2	0	0	2.4	0		2	7	0	12.5	0		5.8	3.1
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					3	-					2	-					5	-					1	-	11
% Peds					27.3	-					18.2	-					45.5	-					9.1	-	

Peak Hour Diagram

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Specified Period		One Hour Peak	
From:	16:00:00	From:	16:00:00
To:	18:00:00	To:	17:00:00

Intersection: Whites Rd & Granite Court-Oklahoma Dr
Site Code: 2237800002
Count Date: Nov 01, 2022

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Whites Rd runs N/S

North Approach

	Out	In	Total
Cars	589	655	1244
Trucks	11	20	31
Bicycles	0	0	0
	600	**675**	**1275**

Whites Rd

Bicycles	0	0	0	0
Trucks	7	2	2	0
Cars	170	170	249	0
Totals	**177**	**172**	**251**	**0**

East Approach

	Out	In	Total
Cars	246	330	576
Trucks	5	2	7
Bicycles	0	0	0
	251	**332**	**583**

Peds: 7

Granite Court

Bicycles	Trucks	Cars	Totals	
0	0	0	**0**	U-turn
0	14	373	**387**	Through
0	0	68	**68**	Right
0	0	11	**11**	Left

Peds: 3

Peds: 4

Oklahoma Dr

	Totals	Cars	Trucks	Bicycles
U-turn	**0**	0	0	0
Through	**186**	182	4	0
Left	**55**	55	0	0
Right	**10**	9	1	0

Peds: 4

West Approach

	Out	In	Total
Cars	452	239	691
Trucks	14	7	21
Bicycles	0	1	1
	466	**247**	**713**

Whites Rd

Totals	**15**	**102**	**13**	**0**
Cars	14	100	13	0
Trucks	0	2	0	0
Bicycles	1	0	0	0

South Approach

	Out	In	Total
Cars	127	190	317
Trucks	2	3	5
Bicycles	1	0	1
	130	**193**	**323**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Whites Rd & Granite Court-Oklahoma Dr
Site Code: 2237800002
Count Date: Nov 01, 2022
Period: 16:00 - 18:00

Peak Hour Data (16:00 - 17:00)

Start Time	North Approach Whites Rd						South Approach Whites Rd						East Approach Oklahoma Dr						West Approach Granite Court						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:00	60	44	45	0	2	149	2	25	3	0	1	30	1	18	48	0	3	67	121	19	3	0	1	143	389
16:15	55	50	51	0	0	156	5	24	4	0	1	33	3	12	44	0	1	59	73	17	1	0	0	91	339
16:30	69	43	46	0	4	158	6	26	3	0	2	35	2	16	43	0	0	61	114	17	3	0	2	134	388
16:45	67	35	35	0	1	137	2	27	3	0	0	32	4	9	51	0	0	64	79	15	4	0	0	98	331
Grand Total	**251**	**172**	**177**	**0**	**7**	**600**	**15**	**102**	**13**	**0**	**4**	**130**	**10**	**55**	**186**	**0**	**4**	**251**	**387**	**68**	**11**	**0**	**3**	**466**	**1447**
Approach %	41.8	28.7	29.5	0		-	11.5	78.5	10	0		-	4	21.9	74.1	0		-	83	14.6	2.4	0		-	
Totals %	17.3	11.9	12.2	0		41.5	1	7	0.9	0		9	0.7	3.8	12.9	0		17.3	26.7	4.7	0.8	0		32.2	
PHF	**0.91**	**0.86**	**0.87**	**0**		**0.95**	**0.63**	**0.94**	**0.81**	**0**		**0.93**	**0.63**	**0.76**	**0.91**	**0**		**0.94**	**0.8**	**0.89**	**0.69**	**0**		**0.81**	**0.93**
Cars	249	170	170	0		589	14	100	13	0		127	9	55	182	0		246	373	68	11	0		452	1414
% Cars	99.2	98.8	96	0		98.2	93.3	98	100	0		97.7	90	100	97.8	0		98	96.4	100	100	0		97	97.7
Trucks	2	2	7	0		11	0	2	0	0		2	1	0	4	0		5	14	0	0	0		14	32
% Trucks	0.8	1.2	4	0		1.8	0	2	0	0		1.5	10	0	2.2	0		2	3.6	0	0	0		3	2.2
Bicycles	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	0	0	0	0		0	1
% Bicycles	0	0	0	0		0	6.7	0	0	0		0.8	0	0	0	0		0	0	0	0	0		0	0.1
Peds					7	-					4	-					4	-					3	-	18
% Peds					38.9	-					22.2	-					22.2	-					16.7	-	

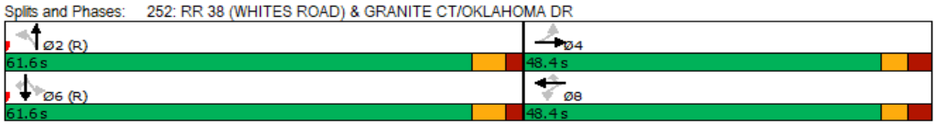
INTERSECTION SIGNAL TIMING REPORT

Location	Whites Rd. (RR 38) and Oklahoma Dr./Granite Ct.				
Date	Januart 27, 2023	**C&E No.**	41544125	**Prepared by**	M.A
Prepared for	GHD				

AM Peak 06:15-09:15

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	None	C-Max	None
Maximum Split (s)	61.6	48.4	61.6	48.4
Maximum Split (%)	56.0%	44.0%	56.0%	44.0%
Minimum Split (s)	32	36	32	36
Yellow Time (s)	4.2	3.3	4.2	3.3
All-Red Time (s)	2.1	2.9	2.1	2.9
Minimum Initial (s)	20	8	20	8
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	18	22	18	22
Intersection Summary				
Cycle Length			110	
Control Type			Actuated-Coordinated	
Natural Cycle			70	
Offset: 83.6 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green				

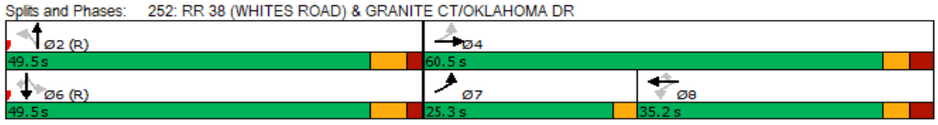
Splits and Phases: 252: RR 38 (WHITES ROAD) & GRANITE CT/OKLAHOMA DR



PM Peak 14:30-19:00

Phase Number	2	4	6	7	8
Movement	NBTL	EBTL	SBTL	EBL	WBTL
Lead/Lag				Lead	Lag
Lead-Lag Optimize				Yes	Yes
Recall Mode	C-Max	None	C-Max	None	None
Maximum Split (s)	49.5	60.5	49.5	25.3	35.2
Maximum Split (%)	45.0%	55.0%	45.0%	23.0%	32.0%
Minimum Split (s)	32	36	32	8	36
Yellow Time (s)	4.2	3.3	4.2	3	3.3
All-Red Time (s)	2.1	2.9	2.1	0	2.9
Minimum Initial (s)	20	8	20	5	8
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)	7	7	7		7
Flash Dont Walk (s)	18	22	18		22
Intersection Summary					
Cycle Length			110		
Control Type			Actuated-Coordinated		
Natural Cycle			80		
Offset: 40.7 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green					

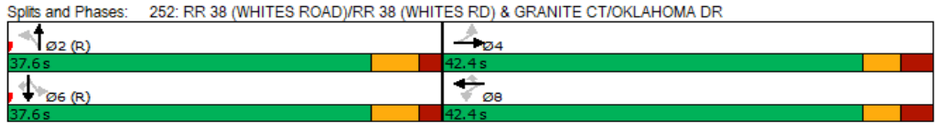
Splits and Phases: 252: RR 38 (WHITES ROAD) & GRANITE CT/OKLAHOMA DR



Weekend Peak 08:00 - 21:00

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	None	C-Max	None
Maximum Split (s)	37.6	42.4	37.6	42.4
Maximum Split (%)	47.0%	53.0%	47.0%	53.0%
Minimum Split (s)	32	36	32	36
Yellow Time (s)	4.2	3.3	4.2	3.3
All-Red Time (s)	2.1	2.9	2.1	2.9
Minimum Initial (s)	20	8	20	8
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	18	22	18	22
Intersection Summary				
Cycle Length			80	
Control Type			Actuated-Coordinated	
Natural Cycle			70	
Offset: 41.6 (52%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green				

Splits and Phases: 252: RR 38 (WHITES ROAD)/RR 38 (WHITES RD) & GRANITE CT/OKLAHOMA DR



**Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.*

INTERSECTION SIGNAL TIMING REPORT

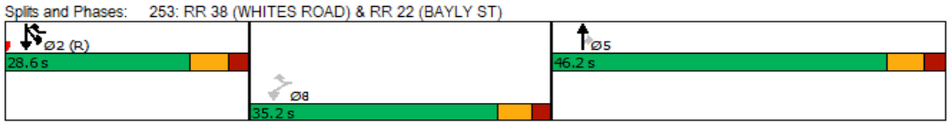
Location	Whites Rd. (RR38) & Bayly St. (RR22)				
Date	2023-01-27	**C&E No.**	41544125	**Prepared by**	M.A
Prepared for	GHD				

AM Peak 06:15-09:15

Phase Number	2	5	8
Movement	SBTL	NBT	WBL
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	C-Max	None	None
Maximum Split (s)	28.6	46.2	35.2
Maximum Split (%)	26.0%	42.0%	32.0%
Minimum Split (s)	27	39	32
Yellow Time (s)	4.4	4.4	4.2
All-Red Time (s)	2.6	2.6	2.2
Minimum Initial (s)	20	20	8
Vehicle Extension (s)	3	3	3
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)	5	7	7
Flash Dont Walk (s)	5	25	18

Intersection Summary	
Cycle Length	110
Control Type	Actuated-Coordinated
Natural Cycle	100
Offset: 24.2 (22%), Referenced to phase 2:SBTL, Start of Green	

Splits and Phases: 253: RR 38 (WHITES ROAD) & RR 22 (BAYLY ST)

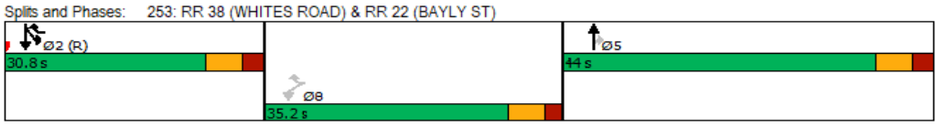


PM Peak 14:30-19:00

Phase Number	2	5	8
Movement	SBTL	NBT	WBL
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	C-Max	None	None
Maximum Split (s)	30.8	44	35.2
Maximum Split (%)	28.0%	40.0%	32.0%
Minimum Split (s)	27	39	32
Yellow Time (s)	4.4	4.4	4.2
All-Red Time (s)	2.6	2.6	2.2
Minimum Initial (s)	20	20	8
Vehicle Extension (s)	3	3	3
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)	5	7	7
Flash Dont Walk (s)	5	25	18

Intersection Summary	
Cycle Length	110
Control Type	Actuated-Coordinated
Natural Cycle	110
Offset: 33 (30%), Referenced to phase 2:SBTL, Start of Green	

Splits and Phases: 253: RR 38 (WHITES ROAD) & RR 22 (BAYLY ST)

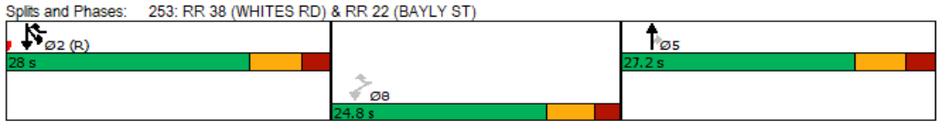


Weekend Peak 08:00-21:00

Phase Number	2	5	8
Movement	SBTL	NBT	WBL
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	C-Max	None	None
Maximum Split (s)	28	27.2	24.8
Maximum Split (%)	35.0%	34.0%	31.0%
Minimum Split (s)	27	39	32
Yellow Time (s)	4.4	4.4	4.2
All-Red Time (s)	2.6	2.6	2.2
Minimum Initial (s)	20	20	8
Vehicle Extension (s)	3	3	3
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)	5	7	7
Flash Dont Walk (s)	5	25	18

Intersection Summary	
Cycle Length	80
Control Type	Actuated-Coordinated
Natural Cycle	110
Offset: 37.6 (47%), Referenced to phase 2:SBTL, Start of Green	

Splits and Phases: 253: RR 38 (WHITES RD) & RR 22 (BAYLY ST)



**Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.*

Appendix C

Background Developments

9.4 SITE TRAFFIC VOLUMES

Site traffic was developed for two scenarios: an intensification study condition and a proposed condition.

The intensification study condition is based on the increase in density within this Whites Precinct that is recommended in the *Kingston Road Corridor and Specialty Retailing Node Intensification Study.* It is our understanding that the proposed intensification would yield approximately 7,622 residents and 2,536 jobs, or approximately 2,077 residential units and 7,933 m^2 GFA of retail space on-site.

The as proposed trip generation forecast is associated with the planned uses on the Site in accordance with the current site plan.

The comparison of these two rates provides an indication of the relative change between the proposed and currently permitted uses on the Site.

9.4.1 Intensification Study Site Traffic Generation

The intensification study generation for the Site was calculated based upon the current residential and retail trip generated rates used for the proposed development.

TABLE 23 INTENSIFICATION STUDY SITE VEHICLE TRAFFIC

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Residential	115	430	545	375	255	630
Retail	80	80	160	110	110	220
Total	**195**	**510**	**705**	**485**	**365**	**850**

Notes:
1. All trips rounded to the nearest 5.

The intensification study condition is anticipated to generate approximately 705 and 850 two-way trips during the weekday morning and afternoon peak hours, respectively.

9.4.2 As Proposed Site Traffic Generation

Multi-modal travel forecasts were generated for the proposed development in **Section 8.0**. The resultant vehicular site traffic is summarized in **Table 24**.

TABLE 24 PROPOSED SITE VEHICLE TRAFFIC

	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Residential	160	600	760	520	355	875
Office	60	10	70	5	50	55
Retail	25	25	50	35	35	70
Total	**245**	**635**	**880**	**560**	**440**	**1,000**

Notes:
1. All trips rounded to the nearest 5.

The Site is forecasted to generate a total of 880 and 1,000 two-way vehicle trips during the weekday morning and afternoon peak hours, respectively. Note these trips will include trips made to / from the proposed parking and pick-up / drop-off facilities.

9.4.3 Intensification Study Condition to Proposed Condition Comparison

A comparison of the intensification study condition to the proposed condition trip generation of the Site is provided in **Table 25**.

TABLE 25 "AS-OF-RIGHT" TRIP GENERATION COMPARISON

	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
As-Of-Right	195	510	705	485	365	850
As Proposed	245	635	880	560	440	1,000
Total	**50**	**125**	**175**	**75**	**75**	**150**

Notes:
1. All trips rounded to the nearest 5.

The results demonstrate that the proposed development plan would generate additional two-way trips during the weekday morning and afternoon peak hours than the intensification study condition. The new development plan would generate approximately 175 and 150 additional two-way trips during the weekday morning and afternoon peak hours, respectively. This indicates that the development plan would have a slightly greater traffic impact than the intensification study condition.

9.4.4 Overall Site Traffic Generation

The resultant vehicle trip generation for the overall proposed development is summarized in **Table 26**.

Based on the foregoing, the Site is anticipated to generate in the order of 800 and 705 two-way net-new vehicle trips during the weekday morning and afternoon peak hours, respectively.

TABLE 26 PROPOSED SITE VEHICLE TRAFFIC

	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Existing Site Traffic[1]	55	25	80	145	150	295
Forecast Site Traffic						
New Residential-Related Site Traffic (2,884 units)	160	600	760	520	355	875
New Office-Related Site Traffic (4,448 m^2)	60	10	70	5	50	55
New Retail-Related Site Traffic (2,232 m^2)	25	25	50	35	35	70
Total New Site Traffic	245	635	880	560	440	1,000
Forecast Net New Site Traffic						
Forecast Net-New Site Traffic	**190**	**610**	**800**	**415**	**290**	**705**

Notes:
1. Based upon traffic counts conducted at existing site access driveways by Spectrum Data on behalf of BA Group on March 26, 2019.
2. All trips rounded to the nearest 5.

9.4.5 Site Traffic Distribution and Assignment

Residential Use

The trip distribution pattern for the residential use was established based upon a review of 2016 Transportation Tomorrow Survey (TTS) for home-based trips to / from the surrounding area during the weekday morning and afternoon peak periods. General direction of approach and routing is summarized in **Table 27**.

Office Use

The trip distribution patter for the office use was established based upon a review of 2016 Transportation Tomorrow Survey (TTS) for work-based trips to / from the surrounding area during the weekday morning and afternoon peak periods. General direction of approach and routing is summarized in **Table 27**.

Retail Use

As previously discussed, given the size and ancillary nature of the proposed retail, it is expected to primarily serve the residents internal and external to the Site. As such, the majority of travel to / from the retail is expected to be pass-by trips.

The trip distribution pattern for the retail component of the Site was established based upon a review of existing area traffic patterns during the weekday morning and afternoon peak periods. The proposed directional distribution of site related traffic considers the orientation and configuration of the area street system, local access characteristics and movement restrictions.

The directional distribution of vehicle trips made to and from the Site has been based upon a review of information obtained from the 2016 Transportation Tomorrow Survey (TTS).

TABLE 27 SITE TRAFFIC ASSIGNMENT

To / From	Orientation to / from Site	Inbound	Outbound
Residential Traffic Distribution			
Whites Road	North	5%	5%
Whites Road	South	0%	0%
Highway 401	East	0%	15%
Highway 401	West	40%	50%
Kingston Road	East	35%	5%
Kingston Road	West	30%	20%
Bayly Street	East	0%	5%
	Total	**100%**	**100%**
Office Traffic Distribution			
Whites Road	North	10%	10%
Whites Road	South	0%	0%
Highway 401	East	0%	45%
Highway 401	West	15%	20%
Kingston Road	East	60%	10%
Kingston Road	West	10%	10%
Bayly Street	East	5%	5%
	Total	**100%**	**100%**

Notes:

1. Residential (home-based trips) and office (work-related trips) trip distribution is based on 2016 TTS data for vehicle trips to and from 2006 TTS traffic zones 10476-1049 and 1051 during the morning and afternoon peak hours.

The net-new site traffic assignment of the proposed development for the weekday morning and afternoon peak hours is shown in **Figure 25**.

9.5 FUTURE TOTAL TRAFFIC VOLUMES

Future total traffic volumes, which is the sum of background traffic volumes and forecast net-new site traffic volumes, are illustrated in **Figure 26** through **Figure 28**.

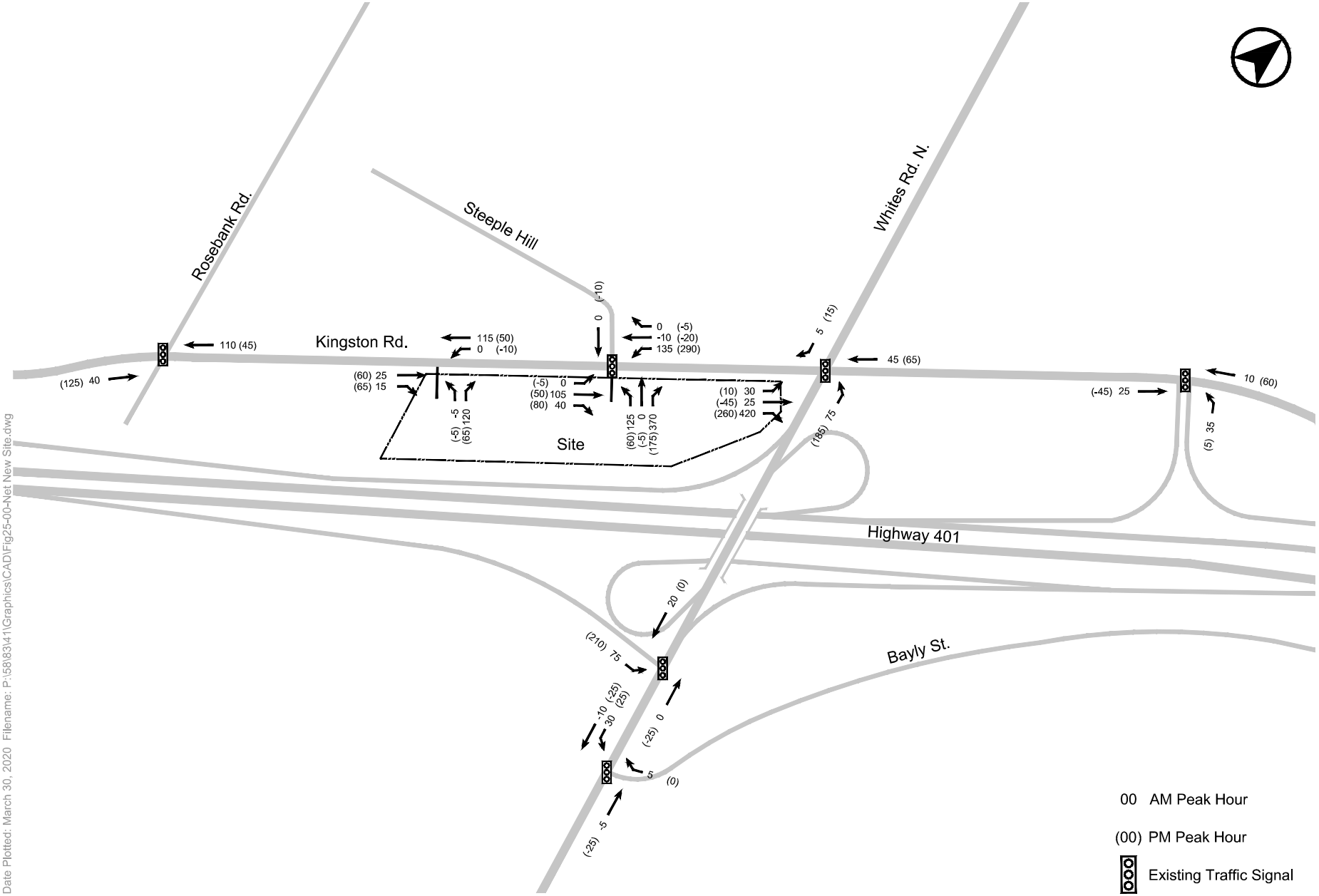
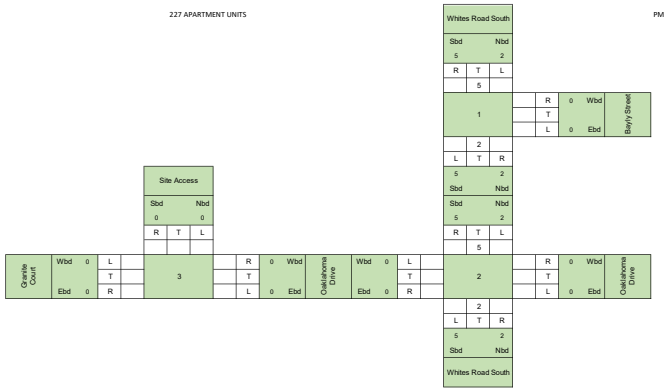


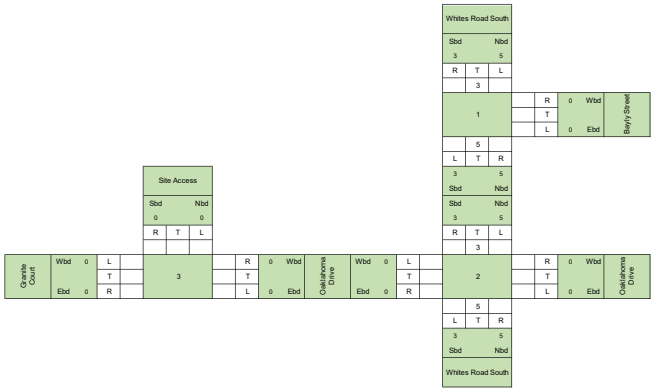
FIGURE 25 FORECAST NET-NEW SITE TRAFFIC VOLUMES

AM

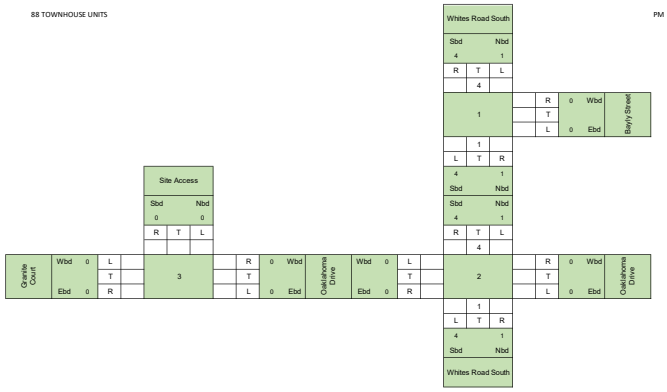
227 APARTMENT UNITS



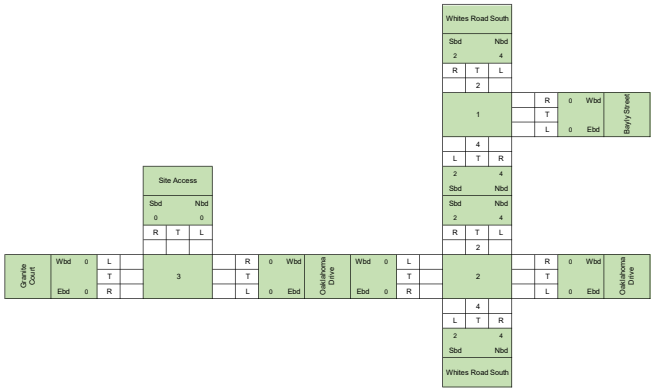
PM



AM 88 TOWNHOUSE UNITS



PM



Appendix D

Transportation Tomorrow Survey 2016

AM Inbound

Thu Mar 02 2023 09:03:43 GMT-0500 (Eastern Standard Time) - Run Time: 2606ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd_orig
Column: 2006 GTA zone of destination - gta06_dest

RowG:
ColG:(1046,1047,1048,1049)
TblG:

Filters:
Start time of trip - start_time In 600-900
and
Trip purpose of destination - purp_dest In H,

Trip 2016
Table:

,1
PD 1 of Toronto,52
PD 4 of Toronto,31
PD 13 of Toronto,26
Pickering,268
Ajax,20
Whitby,52
Whitchurch-Stouffville,30

AM Outbound

Thu Mar 02 2023 09:09:23 GMT-0500 (Eastern Standard Time) - Run Time: 2626ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd_dest
Column: 2006 GTA zone of origin - gta06_orig

RowG:
ColG:(1046,1047,1048,1049)
TblG:

Filters:
Start time of trip - start_time In 600-900
and
Trip purpose of origin - purp_orig In H,

Trip 2016
Table:

,1	N	E		N Trips	E Trips
PD 1 of Toronto	1091	1		1091	0
PD 2 of Toronto	24	1		24	0
PD 3 of Toronto	100	1		100	0
PD 4 of Toronto	125	1		125	0
PD 5 of Toronto	236	1		236	0
PD 6 of Toronto	108	1		108	0
PD 8 of Toronto	42	1		42	0
PD 10 of Toron	48	1		48	0
PD 11 of Toron	52	1		52	0
PD 12 of Toron	161	1		161	0
PD 13 of Toron	551	1		551	0
PD 15 of Toron	230	0.5	0.5	115	115
PD 16 of Toron	252	0.5	0.5	126	126
Uxbridge	7	1		7	0
Scugog	69	1		69	0
Pickering	1919	1		1919	0
Ajax	517	1		517	0
Whitby	131	1		131	0
Oshawa	224	1		224	0
Clarington	50	1		50	0
Richmond Hill	46	1		46	0
Whitchurch-Sto	30	0.5	0.5	15	15
Markham	336	1		336	0
King	54	1		54	0
Vaughan	55	1		55	0
Mississauga	105	1		105	0
Cambridge	19	1		19	0
Barrie	15	1		15	0
Peterborough	31	1		31	0
Hastings	29	1		29	0
Sum	**6657**			**6401**	**256**
				96%	4%

PM Inbound

Thu Mar 02 2023 09:07:44 GMT-0500 (Eastern Standard Time) - Run Time: 2363ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd_orig
Column: 2006 GTA zone of destination - gta06_dest

RowG:
ColG:(1046,1047,1048,1049)
TblG:

Filters:
Start time of trip - start_time In 1600-1900
and
Trip purpose of destination - purp_dest In H,

Trip 2016
Table:

,1
PD 1 of Toronto,890
PD 2 of Toronto,24
PD 3 of Toronto,62
PD 4 of Toronto,40
PD 5 of Toronto,215
PD 6 of Toronto,66
PD 10 of Toronto,32
PD 11 of Toronto,66
PD 12 of Toronto,107
PD 13 of Toronto,622
PD 15 of Toronto,304
PD 16 of Toronto,182
Pickering,968
Ajax,300
Whitby,81
Oshawa,256
Clarington,71
Richmond Hill,34
Markham,158
Vaughan,149
Mississauga,76
Hamilton,16
Cambridge,19
Barrie,22
Peterborough,19

PM Outbound

Thu Mar 02 2023 09:09:01 GMT-0500 (Eastern Standard Time) - Run Time: 2355ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd_dest
Column: 2006 GTA zone of origin - gta06_orig

RowG:
ColG:(1046,1047,1048,1049)
TblG:

Filters:
Start time of trip - start_time In 1600-1900
and
Trip purpose of origin - purp_orig In H,

Trip 2016
Table:

,1
PD 1 of Toronto,61
PD 4 of Toronto,24
PD 5 of Toronto,28
PD 6 of Toronto,13
PD 11 of Toronto,22
PD 13 of Toronto,222
PD 14 of Toronto,82
PD 15 of Toronto,66
PD 16 of Toronto,73
Pickering,799
Ajax,105
Whitby,51
Oshawa,40
Markham,27
Mississauga,28

Appendix E

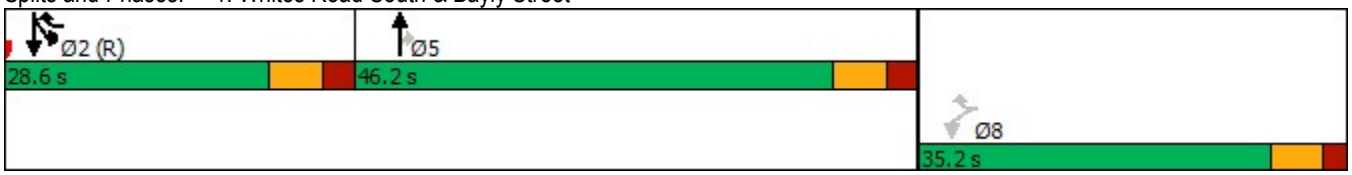
Synchro Outputs

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	99	262	511	66	360	480
Future Volume (vph)	99	262	511	66	360	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		30.0	70.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	0.992
Satd. Flow (prot)	1722	1570	3510	1601	1612	3367
Flt Permitted	0.950				0.950	0.992
Satd. Flow (perm)	1722	1570	3510	1601	1612	3367
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		114		62		
Link Speed (k/h)	60		60			60
Link Distance (m)	376.4		200.0			221.2
Travel Time (s)	22.6		12.0			13.3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	4%	4%	2%	3%	3%
Adj. Flow (vph)	118	312	608	79	429	571
Shared Lane Traffic (%)					24%	
Lane Group Flow (vph)	118	312	608	79	326	674
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	8	8		5		
Detector Phase	8	2	5	5	2	2
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	27.0	39.0	39.0	27.0	27.0
Total Split (s)	35.2	28.6	46.2	46.2	28.6	28.6
Total Split (%)	32.0%	26.0%	42.0%	42.0%	26.0%	26.0%
Maximum Green (s)	28.8	21.6	39.2	39.2	21.6	21.6
Yellow Time (s)	4.2	4.4	4.4	4.4	4.4	4.4
All-Red Time (s)	2.2	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max
Walk Time (s)	7.0	5.0	7.0	7.0	5.0	5.0
Flash Dont Walk (s)	18.0	5.0	25.0	25.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	12.9	70.1	25.9	25.9	50.8	50.8
Actuated g/C Ratio	0.12	0.64	0.24	0.24	0.46	0.46
v/c Ratio	0.59	0.30	0.74	0.19	0.44	0.43
Control Delay	57.1	6.9	36.7	7.1	24.5	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.1	6.9	36.7	7.1	24.5	22.6
LOS	E	A	D	A	C	C
Approach Delay	20.7		33.3			23.2
Approach LOS	C		C			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 24.2 (22%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 26.0		Intersection LOS: C	
Intersection Capacity Utilization 55.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Whites Road South & Bayly Street

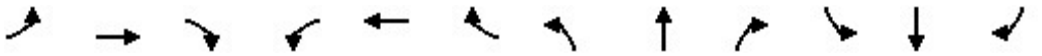


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	118	312	608	79	326	674
v/c Ratio	0.59	0.30	0.74	0.19	0.44	0.43
Control Delay	57.1	6.9	36.7	7.1	24.5	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.1	6.9	36.7	7.1	24.5	22.6
Queue Length 50th (m)	24.4	16.0	65.0	0.0	50.1	51.6
Queue Length 95th (m)	37.7	31.2	71.2	5.0	84.6	75.1
Internal Link Dist (m)	352.4		176.0			197.2
Turn Bay Length (m)				30.0	70.0	
Base Capacity (vph)	450	1041	1250	610	744	1555
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.30	0.49	0.13	0.44	0.43

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	99	262	511	66	360	480
Future Volume (vph)	99	262	511	66	360	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.99
Satd. Flow (prot)	1722	1570	3510	1601	1612	3369
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.99
Satd. Flow (perm)	1722	1570	3510	1601	1612	3369
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	118	312	608	79	429	571
RTOR Reduction (vph)	0	48	0	47	0	0
Lane Group Flow (vph)	118	264	608	32	326	674
Heavy Vehicles (%)	6%	4%	4%	2%	3%	3%
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2
Permitted Phases	8	8		5		
Actuated Green, G (s)	12.9	63.7	25.9	25.9	50.8	50.8
Effective Green, g (s)	12.9	63.7	25.9	25.9	50.8	50.8
Actuated g/C Ratio	0.12	0.58	0.24	0.24	0.46	0.46
Clearance Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	201	909	826	376	744	1555
v/s Ratio Prot		0.13	c0.17		c0.20	0.20
v/s Ratio Perm	c0.07	0.03		0.02		
v/c Ratio	0.59	0.29	0.74	0.08	0.44	0.43
Uniform Delay, d1	46.0	11.7	38.9	32.8	20.0	19.9
Progression Factor	1.00	1.00	0.81	0.57	1.00	1.00
Incremental Delay, d2	4.3	0.2	3.3	0.1	1.9	0.9
Delay (s)	50.4	11.9	34.9	18.7	21.8	20.8
Level of Service	D	B	C	B	C	C
Approach Delay (s)	22.4		33.0			21.1
Approach LOS	C		C			C

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

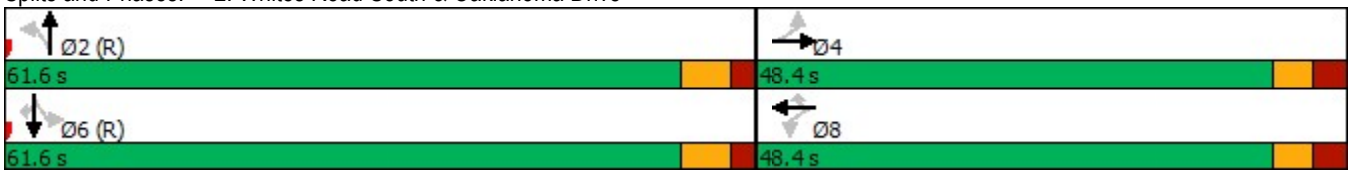


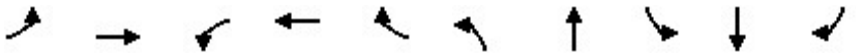
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	40	8	7	52	286	16	124	24	178	66	329
Future Volume (vph)	158	40	8	7	52	286	16	124	24	178	66	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	15.0		15.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	40.0			10.0			40.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975				0.850		0.975				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1833	0	1825	1921	1601	1722	1858	0	1755	1762	1601
Flt Permitted	0.715			0.719			0.704			0.642		
Satd. Flow (perm)	1248	1833	0	1381	1921	1601	1276	1858	0	1186	1762	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				353		13				406
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		78.3			208.1			259.8			200.0	
Travel Time (s)		5.6			15.0			15.6			12.0	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	7%	0%	13%	0%	0%	2%	6%	1%	0%	4%	9%	2%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	195	49	10	9	64	353	20	153	30	220	81	406
Shared Lane Traffic (%)												
Lane Group Flow (vph)	195	59	0	9	64	353	20	183	0	220	81	406
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	36.0	36.0		36.0	36.0	36.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	48.4	48.4		48.4	48.4	48.4	61.6	61.6		61.6	61.6	61.6
Total Split (%)	44.0%	44.0%		44.0%	44.0%	44.0%	56.0%	56.0%		56.0%	56.0%	56.0%
Maximum Green (s)	42.2	42.2		42.2	42.2	42.2	55.3	55.3		55.3	55.3	55.3
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	2.9	2.9		2.9	2.9	2.9	2.1	2.1		2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	22.0	22.0		22.0	22.0	22.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	22.8	22.8		22.8	22.8	22.8	74.7	74.7		74.7	74.7	74.7
Actuated g/C Ratio	0.21	0.21		0.21	0.21	0.21	0.68	0.68		0.68	0.68	0.68
v/c Ratio	0.75	0.15		0.03	0.16	0.58	0.02	0.14		0.27	0.07	0.33
Control Delay	58.1	28.5		30.6	33.9	7.4	7.9	7.2		11.1	10.4	5.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	58.1	28.5		30.6	33.9	7.4	7.9	7.2		11.1	10.4	5.0
LOS	E	C		C	C	A	A	A		B	B	A
Approach Delay		51.2			11.9			7.3			7.5	
Approach LOS		D			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 83.6 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 15.6		Intersection LOS: B	
Intersection Capacity Utilization 50.0%		ICU Level of Service A	
Analysis Period (min) 15			

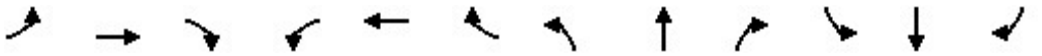
Splits and Phases: 2: Whites Road South & Oaklahoma Drive





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	195	59	9	64	353	20	183	220	81	406
v/c Ratio	0.75	0.15	0.03	0.16	0.58	0.02	0.14	0.27	0.07	0.33
Control Delay	58.1	28.5	30.6	33.9	7.4	7.9	7.2	11.1	10.4	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.1	28.5	30.6	33.9	7.4	7.9	7.2	11.1	10.4	5.0
Queue Length 50th (m)	39.6	8.6	1.6	11.3	0.0	1.3	11.6	11.3	4.2	0.9
Queue Length 95th (m)	50.9	15.4	4.7	18.3	12.1	4.3	22.2	35.5	16.1	38.0
Internal Link Dist (m)		54.3		184.1			235.8		176.0	
Turn Bay Length (m)	20.0		15.0		15.0	20.0		20.0		
Base Capacity (vph)	478	709	529	736	831	866	1265	805	1195	1217
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.08	0.02	0.09	0.42	0.02	0.14	0.27	0.07	0.33

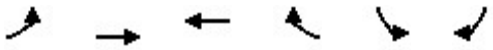
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	40	8	7	52	286	16	124	24	178	66	329
Future Volume (vph)	158	40	8	7	52	286	16	124	24	178	66	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1658	1832		1825	1921	1601	1722	1858		1755	1762	1601
Flt Permitted	0.72	1.00		0.72	1.00	1.00	0.70	1.00		0.64	1.00	1.00
Satd. Flow (perm)	1248	1832		1380	1921	1601	1277	1858		1186	1762	1601
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	195	49	10	9	64	353	20	153	30	220	81	406
RTOR Reduction (vph)	0	8	0	0	0	280	0	4	0	0	0	130
Lane Group Flow (vph)	195	51	0	9	64	73	20	179	0	220	81	276
Heavy Vehicles (%)	7%	0%	13%	0%	0%	2%	6%	1%	0%	4%	9%	2%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	22.8	22.8		22.8	22.8	22.8	74.7	74.7		74.7	74.7	74.7
Effective Green, g (s)	22.8	22.8		22.8	22.8	22.8	74.7	74.7		74.7	74.7	74.7
Actuated g/C Ratio	0.21	0.21		0.21	0.21	0.21	0.68	0.68		0.68	0.68	0.68
Clearance Time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	258	379		286	398	331	867	1261		805	1196	1087
v/s Ratio Prot		0.03			0.03			0.10			0.05	
v/s Ratio Perm	c0.16			0.01		0.05	0.02			c0.19		0.17
v/c Ratio	0.76	0.13		0.03	0.16	0.22	0.02	0.14		0.27	0.07	0.25
Uniform Delay, d1	41.0	35.6		34.8	35.8	36.2	5.8	6.3		7.0	5.9	6.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.22	1.38	4.44
Incremental Delay, d2	11.9	0.2		0.0	0.2	0.3	0.0	0.2		0.8	0.1	0.5
Delay (s)	52.9	35.7		34.8	35.9	36.6	5.8	6.5		9.3	8.3	30.9
Level of Service	D	D		C	D	D	A	A		A	A	C
Approach Delay (s)		48.9			36.4			6.4			21.6	
Approach LOS		D			D			A			C	

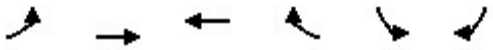
Intersection Summary			
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	206	397	0	0	0
Future Volume (vph)	0	206	397	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1883	1883	0	1883	0
Flt Permitted						
Satd. Flow (perm)	0	1883	1883	0	1883	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		466.2	78.3		125.8	
Travel Time (s)		33.6	5.6		9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	224	432	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	224	432	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.2%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	206	397	0	0	0
Future Volume (Veh/h)	0	206	397	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	224	432	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			78			
pX, platoon unblocked	0.98				0.98	0.98
vC, conflicting volume	432				656	432
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	415				642	415
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1126				431	627

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	224	432	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1126	1700	1700
Volume to Capacity	0.00	0.25	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		24.2%	ICU Level of Service A
Analysis Period (min)		15	

Network Totals

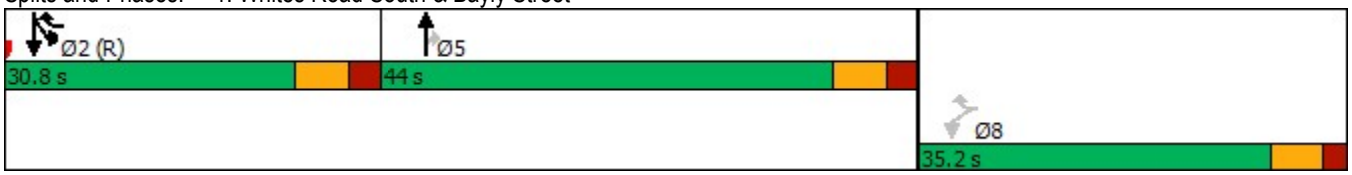
Number of Intersections	3
Total Delay (hr)	18
Stops (#)	1630
Average Speed (km/hr	25
Total Travel Time (hr)	33
Distance Traveled (km)	809
Fuel Consumed (l)	173
Fuel Economy (km/l)	4.7
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	66
Performance Index	23.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	131	317	503	178	689	470
Future Volume (vph)	131	317	503	178	689	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		30.0	70.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	0.981
Satd. Flow (prot)	1789	1617	3544	1585	1628	3363
Flt Permitted	0.950				0.950	0.981
Satd. Flow (perm)	1789	1617	3544	1585	1628	3363
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		137		164		
Link Speed (k/h)	60		60			60
Link Distance (m)	376.4		200.0			221.2
Travel Time (s)	22.6		12.0			13.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	3%	3%	2%	2%
Adj. Flow (vph)	138	334	529	187	725	495
Shared Lane Traffic (%)					45%	
Lane Group Flow (vph)	138	334	529	187	399	821
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	8	8		5		
Detector Phase	8	2	5	5	2	2
Switch Phase						
Minimum Initial (s)	8.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	27.0	39.0	39.0	27.0	27.0
Total Split (s)	35.2	30.8	44.0	44.0	30.8	30.8
Total Split (%)	32.0%	28.0%	40.0%	40.0%	28.0%	28.0%
Maximum Green (s)	28.8	23.8	37.0	37.0	23.8	23.8
Yellow Time (s)	4.2	4.4	4.4	4.4	4.4	4.4
All-Red Time (s)	2.2	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max
Walk Time (s)	7.0	5.0	7.0	7.0	5.0	5.0
Flash Dont Walk (s)	18.0	5.0	25.0	25.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	13.8	72.2	23.8	23.8	52.0	52.0
Actuated g/C Ratio	0.13	0.66	0.22	0.22	0.47	0.47
v/c Ratio	0.61	0.30	0.69	0.40	0.52	0.52
Control Delay	56.7	5.8	57.3	25.4	25.3	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.7	5.8	57.3	25.4	25.3	23.2
LOS	E	A	E	C	C	C
Approach Delay	20.7		48.9			23.9
Approach LOS	C		D			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 33 (30%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 30.7		Intersection LOS: C	
Intersection Capacity Utilization 62.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Whites Road South & Bayly Street



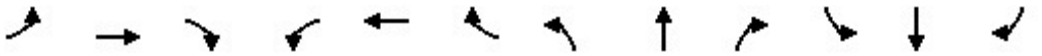
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	138	334	529	187	399	821
v/c Ratio	0.61	0.30	0.69	0.40	0.52	0.52
Control Delay	56.7	5.8	57.3	25.4	25.3	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.7	5.8	57.3	25.4	25.3	23.2
Queue Length 50th (m)	28.5	15.0	61.2	15.9	63.5	65.2
Queue Length 95th (m)	45.9	32.6	m74.6	m28.1	113.9	101.3
Internal Link Dist (m)	352.4		176.0			197.2
Turn Bay Length (m)				30.0	70.0	
Base Capacity (vph)	468	1108	1192	641	769	1589
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.30	0.44	0.29	0.52	0.52

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	131	317	503	178	689	470
Future Volume (vph)	131	317	503	178	689	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.98
Satd. Flow (prot)	1789	1617	3544	1585	1628	3361
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.98
Satd. Flow (perm)	1789	1617	3544	1585	1628	3361
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	138	334	529	187	725	495
RTOR Reduction (vph)	0	55	0	129	0	0
Lane Group Flow (vph)	138	279	529	58	399	821
Heavy Vehicles (%)	2%	1%	3%	3%	2%	2%
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2
Permitted Phases	8	8		5		
Actuated Green, G (s)	13.8	65.8	23.8	23.8	52.0	52.0
Effective Green, g (s)	13.8	65.8	23.8	23.8	52.0	52.0
Actuated g/C Ratio	0.13	0.60	0.22	0.22	0.47	0.47
Clearance Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	224	967	766	342	769	1588
v/s Ratio Prot		0.14	c0.15		c0.25	0.24
v/s Ratio Perm	c0.08	0.04		0.04		
v/c Ratio	0.62	0.29	0.69	0.17	0.52	0.52
Uniform Delay, d1	45.6	10.7	39.7	35.1	20.3	20.2
Progression Factor	1.00	1.00	1.35	3.16	1.00	1.00
Incremental Delay, d2	5.0	0.2	2.2	0.2	2.5	1.2
Delay (s)	50.6	10.9	55.8	110.9	22.8	21.4
Level of Service	D	B	E	F	C	C
Approach Delay (s)	22.5		70.2			21.9
Approach LOS	C		E			C

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

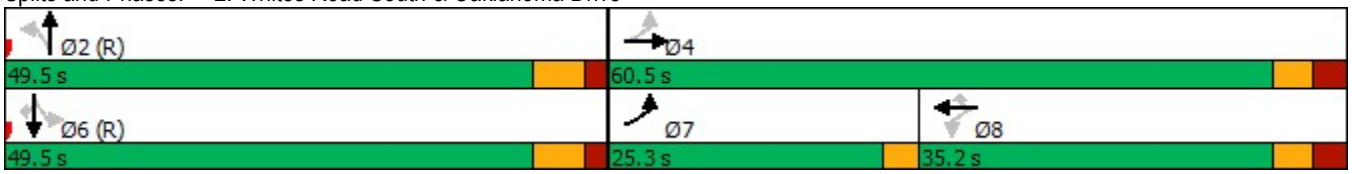


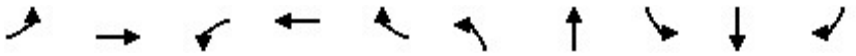
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	387	68	11	10	55	186	15	102	13	251	172	177
Future Volume (vph)	387	68	11	10	55	186	15	102	13	251	172	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	15.0		15.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	40.0			10.0			40.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979				0.850		0.983				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1706	1881	0	1659	1921	1601	1825	1856	0	1807	1902	1570
Flt Permitted	0.549			0.702			0.641			0.677		
Satd. Flow (perm)	986	1881	0	1226	1921	1601	1231	1856	0	1288	1902	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				200		7				190
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		78.3			208.1			259.8			200.0	
Travel Time (s)		5.6			15.0			15.6			12.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	0%	0%	10%	0%	2%	0%	2%	0%	1%	1%	4%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	416	73	12	11	59	200	16	110	14	270	185	190
Shared Lane Traffic (%)												
Lane Group Flow (vph)	416	85	0	11	59	200	16	124	0	270	185	190
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	20.0	20.0		20.0	20.0	20.0
Minimum Split (s)	9.5	36.0		36.0	36.0	36.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	25.3	60.5		35.2	35.2	35.2	49.5	49.5		49.5	49.5	49.5
Total Split (%)	23.0%	55.0%		32.0%	32.0%	32.0%	45.0%	45.0%		45.0%	45.0%	45.0%
Maximum Green (s)	22.3	54.3		29.0	29.0	29.0	43.2	43.2		43.2	43.2	43.2
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	0.0	2.9		2.9	2.9	2.9	2.1	2.1		2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		22.0		22.0	22.0	22.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	38.2	35.0		9.7	9.7	9.7	62.5	62.5		62.5	62.5	62.5
Actuated g/C Ratio	0.35	0.32		0.09	0.09	0.09	0.57	0.57		0.57	0.57	0.57
v/c Ratio	0.85	0.14		0.10	0.35	0.62	0.02	0.12		0.37	0.17	0.20
Control Delay	49.0	23.3		46.9	52.3	15.4	11.4	11.2		9.2	5.9	2.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	49.0	23.3		46.9	52.3	15.4	11.4	11.2		9.2	5.9	2.5
LOS	D	C		D	D	B	B	B		A	A	A
Approach Delay		44.6			24.7			11.2			6.3	
Approach LOS		D			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 40.7 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Whites Road South & Oaklahoma Drive

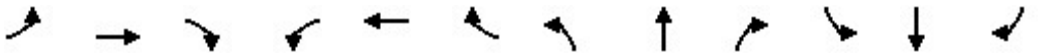




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	416	85	11	59	200	16	124	270	185	190
v/c Ratio	0.85	0.14	0.10	0.35	0.62	0.02	0.12	0.37	0.17	0.20
Control Delay	49.0	23.3	46.9	52.3	15.4	11.4	11.2	9.2	5.9	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	23.3	46.9	52.3	15.4	11.4	11.2	9.2	5.9	2.5
Queue Length 50th (m)	77.5	11.4	2.2	12.2	0.0	1.4	10.7	30.4	10.1	1.9
Queue Length 95th (m)	#113.1	21.5	7.5	24.0	20.4	4.9	21.3	19.9	14.5	5.7
Internal Link Dist (m)		54.3		184.1			235.8		176.0	
Turn Bay Length (m)	20.0		15.0		15.0	20.0		20.0		
Base Capacity (vph)	488	934	323	506	569	699	1057	732	1081	974
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.09	0.03	0.12	0.35	0.02	0.12	0.37	0.17	0.20

Intersection Summary

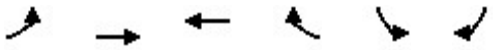
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	387	68	11	10	55	186	15	102	13	251	172	177
Future Volume (vph)	387	68	11	10	55	186	15	102	13	251	172	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1706	1880		1659	1921	1601	1825	1856		1807	1902	1570
Flt Permitted	0.55	1.00		0.70	1.00	1.00	0.64	1.00		0.68	1.00	1.00
Satd. Flow (perm)	985	1880		1226	1921	1601	1231	1856		1289	1902	1570
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	416	73	12	11	59	200	16	110	14	270	185	190
RTOR Reduction (vph)	0	8	0	0	0	182	0	3	0	0	0	82
Lane Group Flow (vph)	416	78	0	11	59	18	16	121	0	270	185	108
Heavy Vehicles (%)	4%	0%	0%	10%	0%	2%	0%	2%	0%	1%	1%	4%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	35.0	35.0		9.7	9.7	9.7	62.5	62.5		62.5	62.5	62.5
Effective Green, g (s)	35.0	35.0		9.7	9.7	9.7	62.5	62.5		62.5	62.5	62.5
Actuated g/C Ratio	0.32	0.32		0.09	0.09	0.09	0.57	0.57		0.57	0.57	0.57
Clearance Time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	459	598		108	169	141	699	1054		732	1080	892
v/s Ratio Prot	c0.18	0.04			0.03			0.07			0.10	
v/s Ratio Perm	c0.10			0.01		0.01	0.01			c0.21		0.07
v/c Ratio	0.91	0.13		0.10	0.35	0.13	0.02	0.11		0.37	0.17	0.12
Uniform Delay, d1	34.1	26.7		46.1	47.2	46.2	10.4	11.0		13.0	11.4	11.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.57	0.47	1.13
Incremental Delay, d2	21.2	0.1		0.4	1.3	0.4	0.1	0.2		1.3	0.3	0.3
Delay (s)	55.3	26.8		46.6	48.4	46.6	10.5	11.2		8.7	5.6	12.7
Level of Service	E	C		D	D	D	B	B		A	A	B
Approach Delay (s)		50.5			47.0			11.1			9.0	
Approach LOS		D			D			B			A	

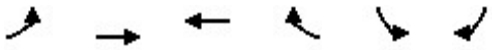
Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	466	247	0	0	0
Future Volume (vph)	0	466	247	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1883	1883	0	1883	0
Flt Permitted						
Satd. Flow (perm)	0	1883	1883	0	1883	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		466.2	78.3		125.8	
Travel Time (s)		33.6	5.6		9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	507	268	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	507	268	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	466	247	0	0	0
Future Volume (Veh/h)	0	466	247	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	507	268	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			78			
pX, platoon unblocked	0.98				0.98	0.98
vC, conflicting volume	268				775	268
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	239				758	239
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1297				366	782

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	507	268	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1297	1700	1700
Volume to Capacity	0.00	0.16	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Network Totals

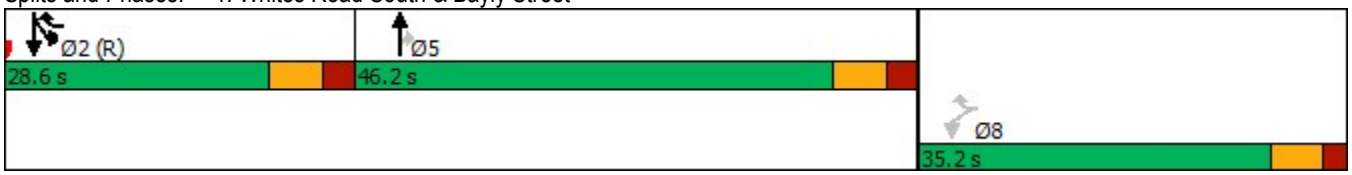
Number of Intersections	3
Total Delay (hr)	28
Stops (#)	2346
Average Speed (km/hr	22
Total Travel Time (hr)	47
Distance Traveled (km)	1040
Fuel Consumed (l)	243
Fuel Economy (km/l)	4.3
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	47
Performance Index	35.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	103	272	534	68	374	508
Future Volume (vph)	103	272	534	68	374	508
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		30.0	70.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	0.993
Satd. Flow (prot)	1722	1570	3510	1601	1612	3371
Flt Permitted	0.950				0.950	0.993
Satd. Flow (perm)	1722	1570	3510	1601	1612	3371
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		102		61		
Link Speed (k/h)	60		60			60
Link Distance (m)	376.4		200.0			221.2
Travel Time (s)	22.6		12.0			13.3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	4%	4%	2%	3%	3%
Adj. Flow (vph)	123	324	636	81	445	605
Shared Lane Traffic (%)					24%	
Lane Group Flow (vph)	123	324	636	81	338	712
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	8	8		5		
Detector Phase	8	2	5	5	2	2
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	27.0	39.0	39.0	27.0	27.0
Total Split (s)	35.2	28.6	46.2	46.2	28.6	28.6
Total Split (%)	32.0%	26.0%	42.0%	42.0%	26.0%	26.0%
Maximum Green (s)	28.8	21.6	39.2	39.2	21.6	21.6
Yellow Time (s)	4.2	4.4	4.4	4.4	4.4	4.4
All-Red Time (s)	2.2	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max
Walk Time (s)	7.0	5.0	7.0	7.0	5.0	5.0
Flash Dont Walk (s)	18.0	5.0	25.0	25.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	13.2	69.2	26.8	26.8	49.6	49.6
Actuated g/C Ratio	0.12	0.63	0.24	0.24	0.45	0.45
v/c Ratio	0.60	0.32	0.75	0.19	0.46	0.47
Control Delay	57.2	7.9	36.5	7.5	25.9	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	7.9	36.5	7.5	25.9	24.0
LOS	E	A	D	A	C	C
Approach Delay	21.4		33.2			24.6
Approach LOS	C		C			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 24.2 (22%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 26.8		Intersection LOS: C	
Intersection Capacity Utilization 56.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Whites Road South & Bayly Street

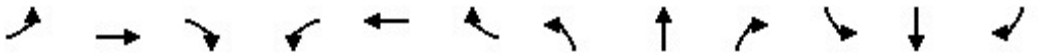


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	123	324	636	81	338	712
v/c Ratio	0.60	0.32	0.75	0.19	0.46	0.47
Control Delay	57.2	7.9	36.5	7.5	25.9	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	7.9	36.5	7.5	25.9	24.0
Queue Length 50th (m)	25.4	19.2	66.0	0.0	54.2	57.3
Queue Length 95th (m)	38.9	35.3	74.4	5.5	89.6	81.5
Internal Link Dist (m)	352.4		176.0			197.2
Turn Bay Length (m)				30.0	70.0	
Base Capacity (vph)	450	1026	1250	609	727	1521
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.32	0.51	0.13	0.46	0.47

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	103	272	534	68	374	508
Future Volume (vph)	103	272	534	68	374	508
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.99
Satd. Flow (prot)	1722	1570	3510	1601	1612	3369
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.99
Satd. Flow (perm)	1722	1570	3510	1601	1612	3369
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	123	324	636	81	445	605
RTOR Reduction (vph)	0	44	0	46	0	0
Lane Group Flow (vph)	123	280	636	35	338	712
Heavy Vehicles (%)	6%	4%	4%	2%	3%	3%
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2
Permitted Phases	8	8		5		
Actuated Green, G (s)	13.2	62.8	26.8	26.8	49.6	49.6
Effective Green, g (s)	13.2	62.8	26.8	26.8	49.6	49.6
Actuated g/C Ratio	0.12	0.57	0.24	0.24	0.45	0.45
Clearance Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	206	896	855	390	726	1519
v/s Ratio Prot		0.14	c0.18		0.21	c0.21
v/s Ratio Perm	c0.07	0.04		0.02		
v/c Ratio	0.60	0.31	0.74	0.09	0.47	0.47
Uniform Delay, d1	45.9	12.3	38.4	32.2	21.0	21.0
Progression Factor	1.00	1.00	0.81	0.59	1.00	1.00
Incremental Delay, d2	4.6	0.2	3.3	0.1	2.1	1.0
Delay (s)	50.5	12.5	34.7	19.2	23.1	22.1
Level of Service	D	B	C	B	C	C
Approach Delay (s)	23.0		32.9			22.4
Approach LOS	C		C			C

Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

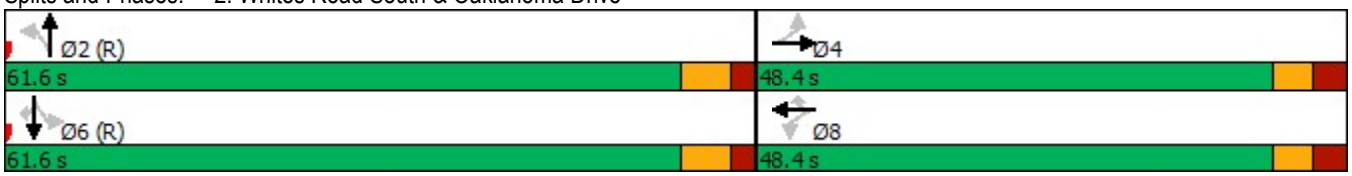


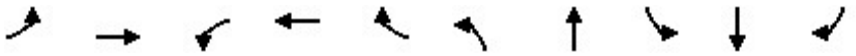
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	41	8	7	54	297	16	132	24	185	77	342
Future Volume (vph)	164	41	8	7	54	297	16	132	24	185	77	342
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	15.0		15.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	40.0			10.0			40.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975				0.850		0.977				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1834	0	1825	1921	1601	1722	1861	0	1755	1762	1601
Flt Permitted	0.713			0.717			0.695			0.636		
Satd. Flow (perm)	1244	1834	0	1377	1921	1601	1260	1861	0	1175	1762	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				367		12				422
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		78.3			208.1			259.8			200.0	
Travel Time (s)		5.6			15.0			15.6			12.0	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	7%	0%	13%	0%	0%	2%	6%	1%	0%	4%	9%	2%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	202	51	10	9	67	367	20	163	30	228	95	422
Shared Lane Traffic (%)												
Lane Group Flow (vph)	202	61	0	9	67	367	20	193	0	228	95	422
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	36.0	36.0		36.0	36.0	36.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	48.4	48.4		48.4	48.4	48.4	61.6	61.6		61.6	61.6	61.6
Total Split (%)	44.0%	44.0%		44.0%	44.0%	44.0%	56.0%	56.0%		56.0%	56.0%	56.0%
Maximum Green (s)	42.2	42.2		42.2	42.2	42.2	55.3	55.3		55.3	55.3	55.3
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	2.9	2.9		2.9	2.9	2.9	2.1	2.1		2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	22.0	22.0		22.0	22.0	22.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	23.5	23.5		23.5	23.5	23.5	74.0	74.0		74.0	74.0	74.0
Actuated g/C Ratio	0.21	0.21		0.21	0.21	0.21	0.67	0.67		0.67	0.67	0.67
v/c Ratio	0.76	0.15		0.03	0.16	0.58	0.02	0.15		0.29	0.08	0.35
Control Delay	57.7	28.1		30.0	33.4	7.2	8.2	7.6		12.8	11.8	5.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	57.7	28.1		30.0	33.4	7.2	8.2	7.6		12.8	11.8	5.9
LOS	E	C		C	C	A	A	A		B	B	A
Approach Delay		50.9			11.7			7.7			8.8	
Approach LOS		D			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 83.6 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 16.1		Intersection LOS: B	
Intersection Capacity Utilization 51.5%		ICU Level of Service A	
Analysis Period (min) 15			

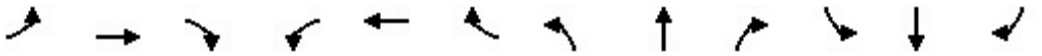
Splits and Phases: 2: Whites Road South & Oaklahoma Drive





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	202	61	9	67	367	20	193	228	95	422
v/c Ratio	0.76	0.15	0.03	0.16	0.58	0.02	0.15	0.29	0.08	0.35
Control Delay	57.7	28.1	30.0	33.4	7.2	8.2	7.6	12.8	11.8	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.7	28.1	30.0	33.4	7.2	8.2	7.6	12.8	11.8	5.9
Queue Length 50th (m)	41.0	8.9	1.5	11.8	0.0	1.3	12.8	11.7	4.8	0.8
Queue Length 95th (m)	52.2	15.7	4.6	18.7	12.0	4.3	24.0	40.3	20.1	47.4
Internal Link Dist (m)		54.3		184.1			235.8		176.0	
Turn Bay Length (m)	20.0		15.0		15.0	20.0		20.0		
Base Capacity (vph)	477	709	528	736	840	847	1255	790	1184	1214
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.09	0.02	0.09	0.44	0.02	0.15	0.29	0.08	0.35

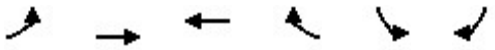
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	41	8	7	54	297	16	132	24	185	77	342
Future Volume (vph)	164	41	8	7	54	297	16	132	24	185	77	342
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1658	1835		1825	1921	1601	1722	1861		1755	1762	1601
Flt Permitted	0.71	1.00		0.72	1.00	1.00	0.70	1.00		0.64	1.00	1.00
Satd. Flow (perm)	1245	1835		1378	1921	1601	1260	1861		1175	1762	1601
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	202	51	10	9	67	367	20	163	30	228	95	422
RTOR Reduction (vph)	0	8	0	0	0	289	0	4	0	0	0	138
Lane Group Flow (vph)	202	53	0	9	67	78	20	189	0	228	95	284
Heavy Vehicles (%)	7%	0%	13%	0%	0%	2%	6%	1%	0%	4%	9%	2%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	23.5	23.5		23.5	23.5	23.5	74.0	74.0		74.0	74.0	74.0
Effective Green, g (s)	23.5	23.5		23.5	23.5	23.5	74.0	74.0		74.0	74.0	74.0
Actuated g/C Ratio	0.21	0.21		0.21	0.21	0.21	0.67	0.67		0.67	0.67	0.67
Clearance Time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	265	392		294	410	342	847	1251		790	1185	1077
v/s Ratio Prot		0.03			0.03			0.10			0.05	
v/s Ratio Perm	c0.16			0.01		0.05	0.02			c0.19		0.18
v/c Ratio	0.76	0.14		0.03	0.16	0.23	0.02	0.15		0.29	0.08	0.26
Uniform Delay, d1	40.6	35.0		34.2	35.2	35.8	6.0	6.6		7.3	6.2	7.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.35	1.51	5.22
Incremental Delay, d2	12.2	0.2		0.0	0.2	0.3	0.1	0.3		0.8	0.1	0.6
Delay (s)	52.8	35.2		34.3	35.4	36.1	6.0	6.8		10.7	9.5	38.0
Level of Service	D	D		C	D	D	A	A		B	A	D
Approach Delay (s)		48.7			36.0			6.7			26.0	
Approach LOS		D			D			A			C	

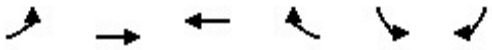
Intersection Summary			
HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	214	413	0	0	0
Future Volume (vph)	0	214	413	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1883	1883	0	1883	0
Flt Permitted						
Satd. Flow (perm)	0	1883	1883	0	1883	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		466.2	78.3		125.8	
Travel Time (s)		33.6	5.6		9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	233	449	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	233	449	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.1%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	214	413	0	0	0
Future Volume (Veh/h)	0	214	413	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	233	449	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			78			
pX, platoon unblocked	0.98				0.98	0.98
vC, conflicting volume	449				682	449
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	431				668	431
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1109				416	614

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	233	449	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1109	1700	1700
Volume to Capacity	0.00	0.26	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

Network Totals

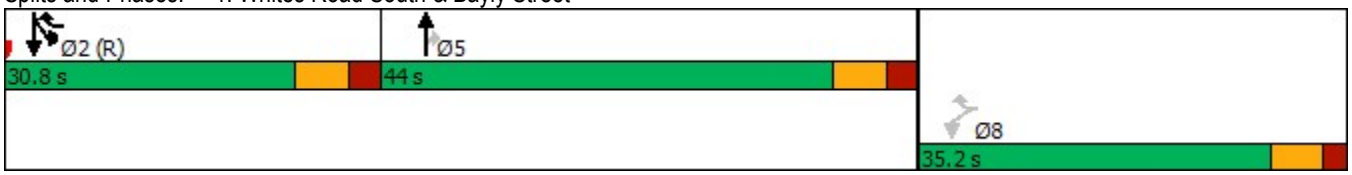
Number of Intersections	3
Total Delay (hr)	20
Stops (#)	1753
Average Speed (km/hr	24
Total Travel Time (hr)	35
Distance Traveled (km)	845
Fuel Consumed (l)	184
Fuel Economy (km/l)	4.6
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	68
Performance Index	24.7

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	136	329	532	185	716	494
Future Volume (vph)	136	329	532	185	716	494
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		30.0	70.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	0.981
Satd. Flow (prot)	1789	1617	3544	1585	1628	3363
Flt Permitted	0.950				0.950	0.981
Satd. Flow (perm)	1789	1617	3544	1585	1628	3363
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		121		161		
Link Speed (k/h)	60		60			60
Link Distance (m)	376.4		200.0			221.2
Travel Time (s)	22.6		12.0			13.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	3%	3%	2%	2%
Adj. Flow (vph)	143	346	560	195	754	520
Shared Lane Traffic (%)					45%	
Lane Group Flow (vph)	143	346	560	195	415	859
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	8	8		5		
Detector Phase	8	2	5	5	2	2
Switch Phase						
Minimum Initial (s)	8.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	27.0	39.0	39.0	27.0	27.0
Total Split (s)	35.2	30.8	44.0	44.0	30.8	30.8
Total Split (%)	32.0%	28.0%	40.0%	40.0%	28.0%	28.0%
Maximum Green (s)	28.8	23.8	37.0	37.0	23.8	23.8
Yellow Time (s)	4.2	4.4	4.4	4.4	4.4	4.4
All-Red Time (s)	2.2	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max
Walk Time (s)	7.0	5.0	7.0	7.0	5.0	5.0
Flash Dont Walk (s)	18.0	5.0	25.0	25.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	14.1	71.1	24.9	24.9	50.6	50.6
Actuated g/C Ratio	0.13	0.65	0.23	0.23	0.46	0.46
v/c Ratio	0.62	0.32	0.70	0.40	0.55	0.56
Control Delay	56.8	6.8	58.8	27.0	27.3	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	6.8	58.8	27.0	27.3	24.9
LOS	E	A	E	C	C	C
Approach Delay	21.4		50.6			25.7
Approach LOS	C		D			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 33 (30%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 32.3		Intersection LOS: C	
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Whites Road South & Bayly Street



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	143	346	560	195	415	859
v/c Ratio	0.62	0.32	0.70	0.40	0.55	0.56
Control Delay	56.8	6.8	58.8	27.0	27.3	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	6.8	58.8	27.0	27.3	24.9
Queue Length 50th (m)	29.5	18.0	64.7	17.0	68.5	70.9
Queue Length 95th (m)	47.1	38.5	m80.9	m30.3	124.0	110.9
Internal Link Dist (m)	352.4		176.0			197.2
Turn Bay Length (m)				30.0	70.0	
Base Capacity (vph)	468	1088	1192	639	748	1547
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.32	0.47	0.31	0.55	0.56

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	136	329	532	185	716	494
Future Volume (vph)	136	329	532	185	716	494
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.98
Satd. Flow (prot)	1789	1617	3544	1585	1628	3362
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.98
Satd. Flow (perm)	1789	1617	3544	1585	1628	3362
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	143	346	560	195	754	520
RTOR Reduction (vph)	0	50	0	125	0	0
Lane Group Flow (vph)	143	296	560	70	415	859
Heavy Vehicles (%)	2%	1%	3%	3%	2%	2%
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2
Permitted Phases	8	8		5		
Actuated Green, G (s)	14.1	64.7	24.9	24.9	50.6	50.6
Effective Green, g (s)	14.1	64.7	24.9	24.9	50.6	50.6
Actuated g/C Ratio	0.13	0.59	0.23	0.23	0.46	0.46
Clearance Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	229	951	802	358	748	1546
v/s Ratio Prot		0.14	c0.16		0.25	c0.26
v/s Ratio Perm	c0.08	0.04		0.04		
v/c Ratio	0.62	0.31	0.70	0.20	0.55	0.56
Uniform Delay, d1	45.4	11.4	39.1	34.5	21.5	21.5
Progression Factor	1.00	1.00	1.41	3.09	1.00	1.00
Incremental Delay, d2	5.2	0.2	2.2	0.2	3.0	1.4
Delay (s)	50.7	11.6	57.5	106.6	24.5	23.0
Level of Service	D	B	E	F	C	C
Approach Delay (s)	23.0		70.2			23.5
Approach LOS	C		E			C

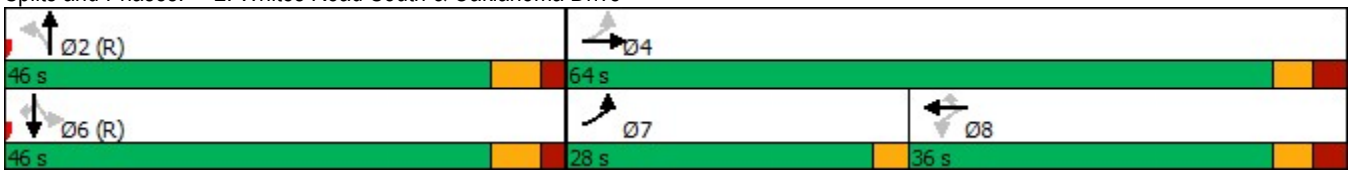
Intersection Summary			
HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

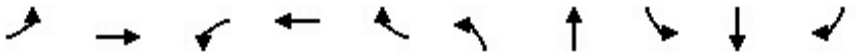
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	402	70	11	10	57	193	15	106	13	261	183	184
Future Volume (vph)	402	70	11	10	57	193	15	106	13	261	183	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	15.0		15.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	40.0			10.0			40.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979				0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1706	1881	0	1659	1921	1601	1825	1857	0	1807	1902	1570
Flt Permitted	0.549			0.701			0.634			0.675		
Satd. Flow (perm)	986	1881	0	1224	1921	1601	1218	1857	0	1284	1902	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				208		6				198
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		78.3			208.1			259.8			200.0	
Travel Time (s)		5.6			15.0			15.6			12.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	0%	0%	10%	0%	2%	0%	2%	0%	1%	1%	4%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	432	75	12	11	61	208	16	114	14	281	197	198
Shared Lane Traffic (%)												
Lane Group Flow (vph)	432	87	0	11	61	208	16	128	0	281	197	198
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	20.0	20.0		20.0	20.0	20.0
Minimum Split (s)	9.5	36.0		36.0	36.0	36.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	28.0	64.0		36.0	36.0	36.0	46.0	46.0		46.0	46.0	46.0
Total Split (%)	25.5%	58.2%		32.7%	32.7%	32.7%	41.8%	41.8%		41.8%	41.8%	41.8%
Maximum Green (s)	25.0	57.8		29.8	29.8	29.8	39.7	39.7		39.7	39.7	39.7
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	0.0	2.9		2.9	2.9	2.9	2.1	2.1		2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		22.0		22.0	22.0	22.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	40.9	37.7		9.8	9.8	9.8	59.8	59.8		59.8	59.8	59.8
Actuated g/C Ratio	0.37	0.34		0.09	0.09	0.09	0.54	0.54		0.54	0.54	0.54
v/c Ratio	0.82	0.13		0.10	0.36	0.63	0.02	0.13		0.40	0.19	0.21
Control Delay	42.7	21.7		46.7	52.4	15.3	12.7	12.6		7.9	5.1	2.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	42.7	21.7		46.7	52.4	15.3	12.7	12.6		7.9	5.1	2.2
LOS	D	C		D	D	B	B	B		A	A	A
Approach Delay		39.2			24.6			12.6			5.4	
Approach LOS		D			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 40.7 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 20.2		Intersection LOS: C	
Intersection Capacity Utilization 64.6%		ICU Level of Service C	
Analysis Period (min) 15			

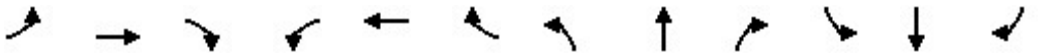
Splits and Phases: 2: Whites Road South & Oaklahoma Drive





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	432	87	11	61	208	16	128	281	197	198
v/c Ratio	0.82	0.13	0.10	0.36	0.63	0.02	0.13	0.40	0.19	0.21
Control Delay	42.7	21.7	46.7	52.4	15.3	12.7	12.6	7.9	5.1	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	21.7	46.7	52.4	15.3	12.7	12.6	7.9	5.1	2.2
Queue Length 50th (m)	78.1	11.2	2.2	12.7	0.0	1.5	12.0	21.6	10.1	2.1
Queue Length 95th (m)	105.4	21.0	7.5	24.6	20.9	5.2	23.4	20.4	15.2	5.7
Internal Link Dist (m)		54.3		184.1			235.8		176.0	
Turn Bay Length (m)	20.0		15.0		15.0	20.0		20.0		
Base Capacity (vph)	530	993	331	520	585	662	1012	698	1034	944
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.09	0.03	0.12	0.36	0.02	0.13	0.40	0.19	0.21

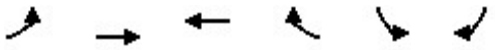
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	402	70	11	10	57	193	15	106	13	261	183	184
Future Volume (vph)	402	70	11	10	57	193	15	106	13	261	183	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1706	1881		1659	1921	1601	1825	1857		1807	1902	1570
Flt Permitted	0.55	1.00		0.70	1.00	1.00	0.63	1.00		0.67	1.00	1.00
Satd. Flow (perm)	986	1881		1223	1921	1601	1218	1857		1284	1902	1570
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	432	75	12	11	61	208	16	114	14	281	197	198
RTOR Reduction (vph)	0	7	0	0	0	189	0	3	0	0	0	90
Lane Group Flow (vph)	432	80	0	11	61	19	16	125	0	281	197	108
Heavy Vehicles (%)	4%	0%	0%	10%	0%	2%	0%	2%	0%	1%	1%	4%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	37.7	37.7		9.8	9.8	9.8	59.8	59.8		59.8	59.8	59.8
Effective Green, g (s)	37.7	37.7		9.8	9.8	9.8	59.8	59.8		59.8	59.8	59.8
Actuated g/C Ratio	0.34	0.34		0.09	0.09	0.09	0.54	0.54		0.54	0.54	0.54
Clearance Time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	500	644		108	171	142	662	1009		698	1033	853
v/s Ratio Prot	c0.20	0.04			0.03			0.07			0.10	
v/s Ratio Perm	c0.10			0.01		0.01	0.01			c0.22		0.07
v/c Ratio	0.86	0.12		0.10	0.36	0.13	0.02	0.12		0.40	0.19	0.13
Uniform Delay, d1	31.9	24.8		46.1	47.1	46.2	11.6	12.3		14.7	12.8	12.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.41	0.36	0.86
Incremental Delay, d2	14.4	0.1		0.4	1.3	0.4	0.1	0.3		1.5	0.4	0.3
Delay (s)	46.3	24.9		46.5	48.4	46.6	11.7	12.5		7.5	4.9	10.9
Level of Service	D	C		D	D	D	B	B		A	A	B
Approach Delay (s)		42.7			47.0			12.4			7.8	
Approach LOS		D			D			B			A	

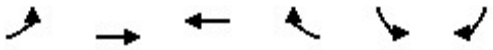
Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	484	257	0	0	0
Future Volume (vph)	0	484	257	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1883	1883	0	1883	0
Flt Permitted						
Satd. Flow (perm)	0	1883	1883	0	1883	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		466.2	78.3		125.8	
Travel Time (s)		33.6	5.6		9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	526	279	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	526	279	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	484	257	0	0	0
Future Volume (Veh/h)	0	484	257	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	526	279	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			78			
pX, platoon unblocked	0.98				0.98	0.98
vC, conflicting volume	279				805	279
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	248				788	248
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1285				351	771

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	526	279	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1285	1700	1700
Volume to Capacity	0.00	0.16	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		

Network Totals

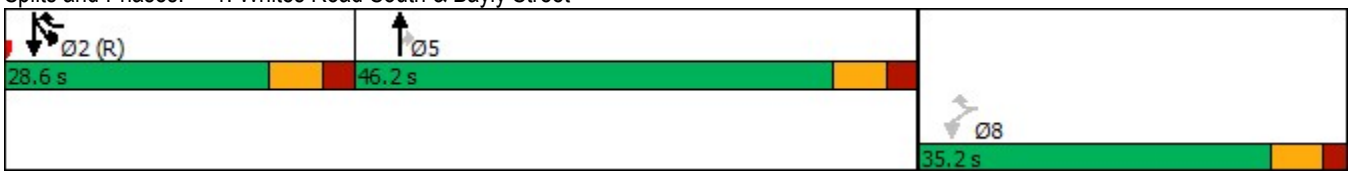
Number of Intersections	3
Total Delay (hr)	30
Stops (#)	2452
Average Speed (km/hr	22
Total Travel Time (hr)	49
Distance Traveled (km)	1084
Fuel Consumed (l)	254
Fuel Economy (km/l)	4.3
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	48
Performance Index	36.8

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	106	272	573	74	374	521
Future Volume (vph)	106	272	573	74	374	521
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		30.0	70.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	0.993
Satd. Flow (prot)	1722	1570	3510	1601	1612	3371
Flt Permitted	0.950				0.950	0.993
Satd. Flow (perm)	1722	1570	3510	1601	1612	3371
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		86		62		
Link Speed (k/h)	60		60			60
Link Distance (m)	376.4		200.0			221.2
Travel Time (s)	22.6		12.0			13.3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	4%	4%	2%	3%	3%
Adj. Flow (vph)	126	324	682	88	445	620
Shared Lane Traffic (%)					22%	
Lane Group Flow (vph)	126	324	682	88	347	718
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	8	8		5		
Detector Phase	8	2	5	5	2	2
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	27.0	39.0	39.0	27.0	27.0
Total Split (s)	35.2	28.6	46.2	46.2	28.6	28.6
Total Split (%)	32.0%	26.0%	42.0%	42.0%	26.0%	26.0%
Maximum Green (s)	28.8	21.6	39.2	39.2	21.6	21.6
Yellow Time (s)	4.2	4.4	4.4	4.4	4.4	4.4
All-Red Time (s)	2.2	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max
Walk Time (s)	7.0	5.0	7.0	7.0	5.0	5.0
Flash Dont Walk (s)	18.0	5.0	25.0	25.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	13.4	67.7	28.3	28.3	47.9	47.9
Actuated g/C Ratio	0.12	0.62	0.26	0.26	0.44	0.44
v/c Ratio	0.60	0.32	0.76	0.19	0.49	0.49
Control Delay	57.2	9.1	35.8	7.8	28.0	25.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	9.1	35.8	7.8	28.0	25.6
LOS	E	A	D	A	C	C
Approach Delay	22.6		32.6			26.4
Approach LOS	C		C			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 24.2 (22%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 27.7		Intersection LOS: C	
Intersection Capacity Utilization 56.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Whites Road South & Bayly Street



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	126	324	682	88	347	718
v/c Ratio	0.60	0.32	0.76	0.19	0.49	0.49
Control Delay	57.2	9.1	35.8	7.8	28.0	25.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	9.1	35.8	7.8	28.0	25.6
Queue Length 50th (m)	26.0	21.8	71.8	0.0	57.8	59.6
Queue Length 95th (m)	39.6	39.5	71.8	5.4	95.6	85.4
Internal Link Dist (m)	352.4		176.0			197.2
Turn Bay Length (m)				30.0	70.0	
Base Capacity (vph)	450	999	1250	610	702	1469
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.32	0.55	0.14	0.49	0.49

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	106	272	573	74	374	521
Future Volume (vph)	106	272	573	74	374	521
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.99
Satd. Flow (prot)	1722	1570	3510	1601	1612	3372
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.99
Satd. Flow (perm)	1722	1570	3510	1601	1612	3372
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	126	324	682	88	445	620
RTOR Reduction (vph)	0	38	0	46	0	0
Lane Group Flow (vph)	126	286	682	42	347	718
Heavy Vehicles (%)	6%	4%	4%	2%	3%	3%
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2
Permitted Phases	8	8		5		
Actuated Green, G (s)	13.4	61.3	28.3	28.3	47.9	47.9
Effective Green, g (s)	13.4	61.3	28.3	28.3	47.9	47.9
Actuated g/C Ratio	0.12	0.56	0.26	0.26	0.44	0.44
Clearance Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	209	874	903	411	701	1468
v/s Ratio Prot		0.14	c0.19		c0.22	0.21
v/s Ratio Perm	c0.07	0.04		0.03		
v/c Ratio	0.60	0.33	0.76	0.10	0.50	0.49
Uniform Delay, d1	45.8	13.2	37.7	31.2	22.3	22.3
Progression Factor	1.00	1.00	0.82	0.62	1.00	1.00
Incremental Delay, d2	4.8	0.2	3.4	0.1	2.5	1.2
Delay (s)	50.6	13.4	34.2	19.5	24.8	23.4
Level of Service	D	B	C	B	C	C
Approach Delay (s)	23.8		32.5			23.9
Approach LOS	C		C			C

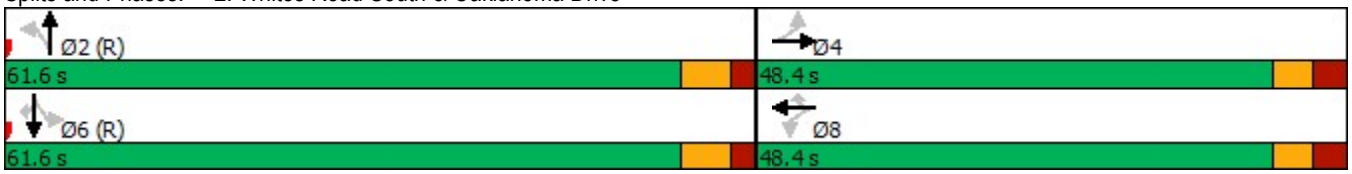
Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

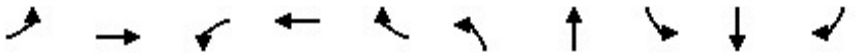
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	44	11	7	55	297	17	132	24	185	77	359
Future Volume (vph)	210	44	11	7	55	297	17	132	24	185	77	359
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		15.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	30.0			10.0			40.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.969				0.850		0.977				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1813	0	1825	1921	1601	1722	1861	0	1755	1762	1601
Flt Permitted	0.713			0.713			0.695			0.636		
Satd. Flow (perm)	1244	1813	0	1370	1921	1601	1260	1861	0	1175	1762	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				367		12				443
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		199.5			208.1			259.8			200.0	
Travel Time (s)		14.4			15.0			15.6			12.0	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	7%	0%	13%	0%	0%	2%	6%	1%	0%	4%	9%	2%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	259	54	14	9	68	367	21	163	30	228	95	443
Shared Lane Traffic (%)												
Lane Group Flow (vph)	259	68	0	9	68	367	21	193	0	228	95	443
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	36.0	36.0		36.0	36.0	36.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	48.4	48.4		48.4	48.4	48.4	61.6	61.6		61.6	61.6	61.6
Total Split (%)	44.0%	44.0%		44.0%	44.0%	44.0%	56.0%	56.0%		56.0%	56.0%	56.0%
Maximum Green (s)	42.2	42.2		42.2	42.2	42.2	55.3	55.3		55.3	55.3	55.3
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	2.9	2.9		2.9	2.9	2.9	2.1	2.1		2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	22.0	22.0		22.0	22.0	22.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	28.7	28.7		28.7	28.7	28.7	68.8	68.8		68.8	68.8	68.8
Actuated g/C Ratio	0.26	0.26		0.26	0.26	0.26	0.63	0.63		0.63	0.63	0.63
v/c Ratio	0.80	0.14		0.03	0.14	0.53	0.03	0.17		0.31	0.09	0.38
Control Delay	55.2	23.1		25.7	28.9	5.8	10.6	9.9		17.0	15.8	8.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	55.2	23.1		25.7	28.9	5.8	10.6	9.9		17.0	15.8	8.0
LOS	E	C		C	C	A	B	A		B	B	A
Approach Delay		48.6			9.7			10.0			11.6	
Approach LOS		D			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 83.6 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 17.8		Intersection LOS: B	
Intersection Capacity Utilization 54.0%		ICU Level of Service A	
Analysis Period (min) 15			

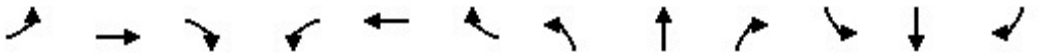
Splits and Phases: 2: Whites Road South & Oaklahoma Drive





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	259	68	9	68	367	21	193	228	95	443
v/c Ratio	0.80	0.14	0.03	0.14	0.53	0.03	0.17	0.31	0.09	0.38
Control Delay	55.2	23.1	25.7	28.9	5.8	10.6	9.9	17.0	15.8	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	23.1	25.7	28.9	5.8	10.6	9.9	17.0	15.8	8.0
Queue Length 50th (m)	52.0	8.9	1.4	11.2	0.0	1.6	14.9	11.8	4.9	2.4
Queue Length 95th (m)	61.9	15.1	4.2	17.2	10.9	5.3	27.9	45.0	22.5	57.2
Internal Link Dist (m)		175.5		184.1			235.8		176.0	
Turn Bay Length (m)	30.0		15.0		15.0	20.0		20.0		
Base Capacity (vph)	477	704	525	736	840	788	1168	734	1102	1167
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.10	0.02	0.09	0.44	0.03	0.17	0.31	0.09	0.38

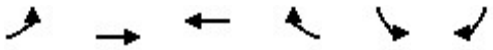
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	44	11	7	55	297	17	132	24	185	77	359
Future Volume (vph)	210	44	11	7	55	297	17	132	24	185	77	359
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1658	1813		1825	1921	1601	1722	1861		1755	1762	1601
Flt Permitted	0.71	1.00		0.71	1.00	1.00	0.70	1.00		0.64	1.00	1.00
Satd. Flow (perm)	1244	1813		1369	1921	1601	1260	1861		1175	1762	1601
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	259	54	14	9	68	367	21	163	30	228	95	443
RTOR Reduction (vph)	0	10	0	0	0	271	0	4	0	0	0	166
Lane Group Flow (vph)	259	58	0	9	68	96	21	189	0	228	95	277
Heavy Vehicles (%)	7%	0%	13%	0%	0%	2%	6%	1%	0%	4%	9%	2%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	28.7	28.7		28.7	28.7	28.7	68.8	68.8		68.8	68.8	68.8
Effective Green, g (s)	28.7	28.7		28.7	28.7	28.7	68.8	68.8		68.8	68.8	68.8
Actuated g/C Ratio	0.26	0.26		0.26	0.26	0.26	0.63	0.63		0.63	0.63	0.63
Clearance Time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	324	473		357	501	417	788	1163		734	1102	1001
v/s Ratio Prot		0.03			0.04			0.10			0.05	
v/s Ratio Perm	c0.21			0.01		0.06	0.02			c0.19		0.17
v/c Ratio	0.80	0.12		0.03	0.14	0.23	0.03	0.16		0.31	0.09	0.28
Uniform Delay, d1	38.0	31.0		30.2	31.1	32.0	7.8	8.6		9.6	8.2	9.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.37	1.56	5.66
Incremental Delay, d2	12.9	0.1		0.0	0.1	0.3	0.1	0.3		1.0	0.1	0.6
Delay (s)	50.9	31.1		30.3	31.3	32.2	7.9	8.9		14.2	12.8	53.5
Level of Service	D	C		C	C	C	A	A		B	B	D
Approach Delay (s)		46.8			32.1			8.8			36.7	
Approach LOS		D			C			A			D	

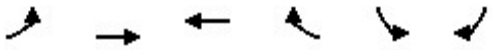
Intersection Summary			
HCM 2000 Control Delay	34.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	214	413	18	50	5
Future Volume (vph)	2	214	413	18	50	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994		0.989	
Flt Protected					0.956	
Satd. Flow (prot)	0	1883	1872	0	1781	0
Flt Permitted					0.956	
Satd. Flow (perm)	0	1883	1872	0	1781	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		466.2	199.5		125.8	
Travel Time (s)		33.6	14.4		9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	233	449	20	54	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	235	469	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	214	413	18	50	5
Future Volume (Veh/h)	2	214	413	18	50	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	233	449	20	54	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			200			
pX, platoon unblocked						
vC, conflicting volume	469				696	459
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	469				696	459
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				87	99
cM capacity (veh/h)	1093				407	602

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	235	469	59
Volume Left	2	0	54
Volume Right	0	20	5
cSH	1093	1700	418
Volume to Capacity	0.00	0.28	0.14
Queue Length 95th (m)	0.0	0.0	3.7
Control Delay (s)	0.1	0.0	15.0
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	15.0
Approach LOS			C

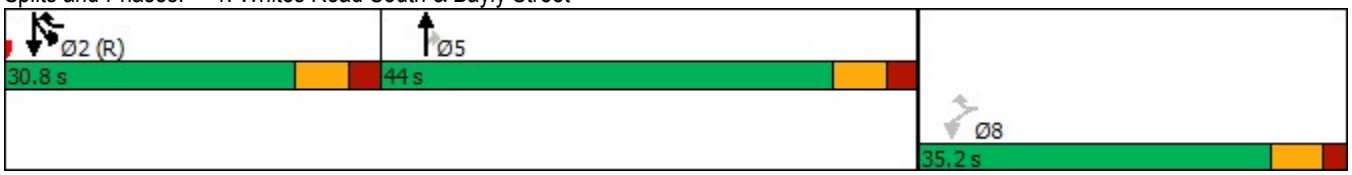
Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	32.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	145	329	553	192	716	532
Future Volume (vph)	145	329	553	192	716	532
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		30.0	70.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	0.982
Satd. Flow (prot)	1789	1617	3544	1585	1628	3366
Flt Permitted	0.950				0.950	0.982
Satd. Flow (perm)	1789	1617	3544	1585	1628	3366
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		111		161		
Link Speed (k/h)	60		60			60
Link Distance (m)	376.4		200.0			221.2
Travel Time (s)	22.6		12.0			13.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	3%	3%	2%	2%
Adj. Flow (vph)	153	346	582	202	754	560
Shared Lane Traffic (%)					43%	
Lane Group Flow (vph)	153	346	582	202	430	884
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	8	8		5		
Detector Phase	8	2	5	5	2	2
Switch Phase						
Minimum Initial (s)	8.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	27.0	39.0	39.0	27.0	27.0
Total Split (s)	35.2	30.8	44.0	44.0	30.8	30.8
Total Split (%)	32.0%	28.0%	40.0%	40.0%	28.0%	28.0%
Maximum Green (s)	28.8	23.8	37.0	37.0	23.8	23.8
Yellow Time (s)	4.2	4.4	4.4	4.4	4.4	4.4
All-Red Time (s)	2.2	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max
Walk Time (s)	7.0	5.0	7.0	7.0	5.0	5.0
Flash Dont Walk (s)	18.0	5.0	25.0	25.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	14.7	70.6	25.4	25.4	49.4	49.4
Actuated g/C Ratio	0.13	0.64	0.23	0.23	0.45	0.45
v/c Ratio	0.64	0.32	0.71	0.41	0.59	0.58
Control Delay	56.7	7.3	59.0	28.0	29.2	26.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.7	7.3	59.0	28.0	29.2	26.4
LOS	E	A	E	C	C	C
Approach Delay	22.5		51.0			27.3
Approach LOS	C		D			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 33 (30%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 33.5		Intersection LOS: C	
Intersection Capacity Utilization 65.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Whites Road South & Bayly Street



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	153	346	582	202	430	884
v/c Ratio	0.64	0.32	0.71	0.41	0.59	0.58
Control Delay	56.7	7.3	59.0	28.0	29.2	26.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.7	7.3	59.0	28.0	29.2	26.4
Queue Length 50th (m)	31.5	19.3	67.4	18.7	73.6	75.5
Queue Length 95th (m)	49.5	40.6	m80.8	m30.9	#136.5	117.6
Internal Link Dist (m)	352.4		176.0			197.2
Turn Bay Length (m)				30.0	70.0	
Base Capacity (vph)	468	1077	1192	639	731	1512
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.32	0.49	0.32	0.59	0.58

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	145	329	553	192	716	532
Future Volume (vph)	145	329	553	192	716	532
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.98
Satd. Flow (prot)	1789	1617	3544	1585	1628	3366
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.98
Satd. Flow (perm)	1789	1617	3544	1585	1628	3366
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	153	346	582	202	754	560
RTOR Reduction (vph)	0	46	0	124	0	0
Lane Group Flow (vph)	153	300	582	78	430	884
Heavy Vehicles (%)	2%	1%	3%	3%	2%	2%
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2
Permitted Phases	8	8		5		
Actuated Green, G (s)	14.7	64.2	25.4	25.4	49.5	49.5
Effective Green, g (s)	14.7	64.2	25.4	25.4	49.5	49.5
Actuated g/C Ratio	0.13	0.58	0.23	0.23	0.45	0.45
Clearance Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	239	943	818	365	732	1514
v/s Ratio Prot		0.14	c0.16		c0.26	0.26
v/s Ratio Perm	c0.09	0.04		0.05		
v/c Ratio	0.64	0.32	0.71	0.21	0.59	0.58
Uniform Delay, d1	45.1	11.7	38.9	34.2	22.6	22.6
Progression Factor	1.00	1.00	1.43	3.06	1.00	1.00
Incremental Delay, d2	5.7	0.2	2.3	0.2	3.4	1.7
Delay (s)	50.9	11.9	58.0	105.0	26.1	24.2
Level of Service	D	B	E	F	C	C
Approach Delay (s)	23.9		70.1			24.8
Approach LOS	C		E			C

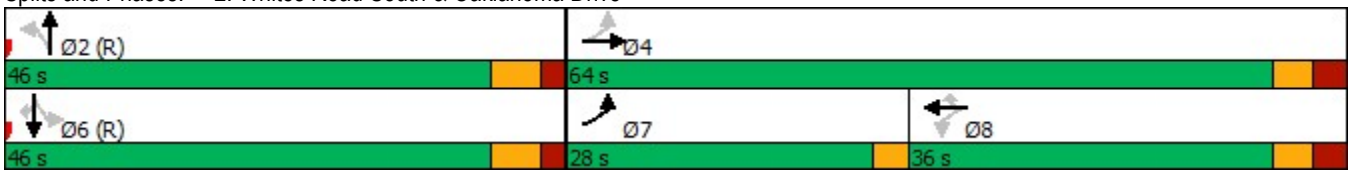
Intersection Summary			
HCM 2000 Control Delay	38.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

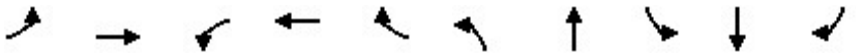
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	431	74	13	10	60	193	18	106	13	261	183	231
Future Volume (vph)	431	74	13	10	60	193	18	106	13	261	183	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		15.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	30.0			10.0			40.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.978				0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1706	1879	0	1659	1921	1601	1825	1857	0	1807	1902	1570
Flt Permitted	0.548			0.696			0.634			0.675		
Satd. Flow (perm)	984	1879	0	1216	1921	1601	1218	1857	0	1284	1902	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				208		6				248
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		199.5			208.1			259.8			200.0	
Travel Time (s)		14.4			15.0			15.6			12.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	0%	0%	10%	0%	2%	0%	2%	0%	1%	1%	4%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	463	80	14	11	65	208	19	114	14	281	197	248
Shared Lane Traffic (%)												
Lane Group Flow (vph)	463	94	0	11	65	208	19	128	0	281	197	248
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	20.0	20.0		20.0	20.0	20.0
Minimum Split (s)	9.5	36.0		36.0	36.0	36.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	28.0	64.0		36.0	36.0	36.0	46.0	46.0		46.0	46.0	46.0
Total Split (%)	25.5%	58.2%		32.7%	32.7%	32.7%	41.8%	41.8%		41.8%	41.8%	41.8%
Maximum Green (s)	25.0	57.8		29.8	29.8	29.8	39.7	39.7		39.7	39.7	39.7
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	0.0	2.9		2.9	2.9	2.9	2.1	2.1		2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		22.0		22.0	22.0	22.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	41.1	37.9		9.9	9.9	9.9	59.6	59.6		59.6	59.6	59.6
Actuated g/C Ratio	0.37	0.34		0.09	0.09	0.09	0.54	0.54		0.54	0.54	0.54
v/c Ratio	0.87	0.14		0.10	0.38	0.63	0.03	0.13		0.40	0.19	0.26
Control Delay	48.3	21.7		46.6	52.9	15.2	12.8	12.7		7.3	4.8	2.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	48.3	21.7		46.6	52.9	15.2	12.8	12.7		7.3	4.8	2.2
LOS	D	C		D	D	B	B	B		A	A	A
Approach Delay		43.8			25.0			12.7			4.9	
Approach LOS		D			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 40.7 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 21.5		Intersection LOS: C	
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Whites Road South & Oaklahoma Drive

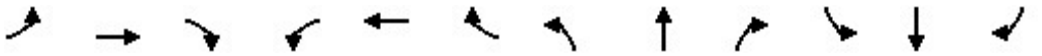




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	463	94	11	65	208	19	128	281	197	248
v/c Ratio	0.87	0.14	0.10	0.38	0.63	0.03	0.13	0.40	0.19	0.26
Control Delay	48.3	21.7	46.6	52.9	15.2	12.8	12.7	7.3	4.8	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.3	21.7	46.6	52.9	15.2	12.8	12.7	7.3	4.8	2.2
Queue Length 50th (m)	85.5	12.1	2.2	13.5	0.0	1.8	12.0	15.5	10.1	3.0
Queue Length 95th (m)	#126.1	22.2	7.5	26.0	20.9	5.8	23.4	20.2	14.6	6.7
Internal Link Dist (m)		175.5		184.1			235.8		176.0	
Turn Bay Length (m)	30.0		15.0		15.0	20.0		20.0		
Base Capacity (vph)	531	993	329	520	585	660	1009	696	1031	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.09	0.03	0.13	0.36	0.03	0.13	0.40	0.19	0.26

Intersection Summary

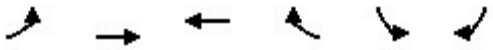
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	431	74	13	10	60	193	18	106	13	261	183	231
Future Volume (vph)	431	74	13	10	60	193	18	106	13	261	183	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1706	1878		1659	1921	1601	1825	1857		1807	1902	1570
Flt Permitted	0.55	1.00		0.70	1.00	1.00	0.63	1.00		0.67	1.00	1.00
Satd. Flow (perm)	985	1878		1216	1921	1601	1218	1857		1284	1902	1570
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	463	80	14	11	65	208	19	114	14	281	197	248
RTOR Reduction (vph)	0	8	0	0	0	189	0	3	0	0	0	114
Lane Group Flow (vph)	463	86	0	11	65	19	19	125	0	281	197	134
Heavy Vehicles (%)	4%	0%	0%	10%	0%	2%	0%	2%	0%	1%	1%	4%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	37.9	37.9		9.9	9.9	9.9	59.6	59.6		59.6	59.6	59.6
Effective Green, g (s)	37.9	37.9		9.9	9.9	9.9	59.6	59.6		59.6	59.6	59.6
Actuated g/C Ratio	0.34	0.34		0.09	0.09	0.09	0.54	0.54		0.54	0.54	0.54
Clearance Time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	503	647		109	172	144	659	1006		695	1030	850
v/s Ratio Prot	c0.21	0.05			0.03			0.07			0.10	
v/s Ratio Perm	c0.11			0.01		0.01	0.02			c0.22		0.09
v/c Ratio	0.92	0.13		0.10	0.38	0.13	0.03	0.12		0.40	0.19	0.16
Uniform Delay, d1	32.7	24.8		46.0	47.1	46.1	11.7	12.4		14.8	12.9	12.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.37	0.33	0.88
Incremental Delay, d2	22.3	0.1		0.4	1.4	0.4	0.1	0.3		1.5	0.4	0.3
Delay (s)	55.0	24.9		46.4	48.5	46.5	11.8	12.6		6.9	4.6	11.5
Level of Service	D	C		D	D	D	B	B		A	A	B
Approach Delay (s)		49.9			47.0			12.5			7.8	
Approach LOS		D			D			B			A	

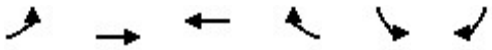
Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	484	257	53	34	3
Future Volume (vph)	5	484	257	53	34	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.977		0.990	
Flt Protected					0.956	
Satd. Flow (prot)	0	1883	1840	0	1783	0
Flt Permitted					0.956	
Satd. Flow (perm)	0	1883	1840	0	1783	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		466.2	199.5		125.8	
Travel Time (s)		33.6	14.4		9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	526	279	58	37	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	531	337	0	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	484	257	53	34	3
Future Volume (Veh/h)	5	484	257	53	34	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	526	279	58	37	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			200			
pX, platoon unblocked	1.00				1.00	1.00
vC, conflicting volume	337				844	308
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	334				843	305
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				89	100
cM capacity (veh/h)	1222				332	733

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	531	337	40
Volume Left	5	0	37
Volume Right	0	58	3
cSH	1222	1700	346
Volume to Capacity	0.00	0.20	0.12
Queue Length 95th (m)	0.1	0.0	2.9
Control Delay (s)	0.1	0.0	16.7
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	16.7
Approach LOS			C

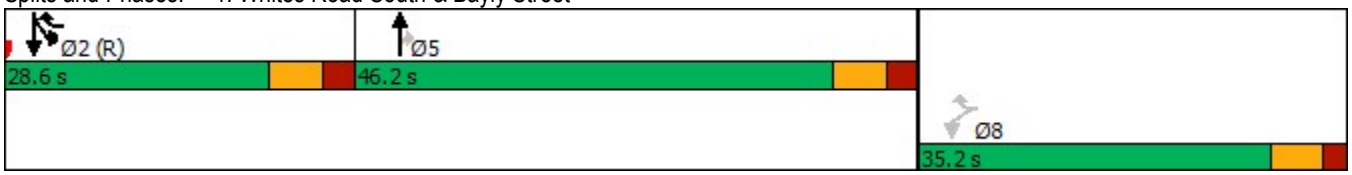
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	105	279	551	70	384	530
Future Volume (vph)	105	279	551	70	384	530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		30.0	70.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	0.993
Satd. Flow (prot)	1722	1570	3510	1601	1612	3371
Flt Permitted	0.950				0.950	0.993
Satd. Flow (perm)	1722	1570	3510	1601	1612	3371
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		95		61		
Link Speed (k/h)	60		60			60
Link Distance (m)	376.4		200.0			221.2
Travel Time (s)	22.6		12.0			13.3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	4%	4%	2%	3%	3%
Adj. Flow (vph)	125	332	656	83	457	631
Shared Lane Traffic (%)					23%	
Lane Group Flow (vph)	125	332	656	83	352	736
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	8	8		5		
Detector Phase	8	2	5	5	2	2
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	27.0	39.0	39.0	27.0	27.0
Total Split (s)	35.2	28.6	46.2	46.2	28.6	28.6
Total Split (%)	32.0%	26.0%	42.0%	42.0%	26.0%	26.0%
Maximum Green (s)	28.8	21.6	39.2	39.2	21.6	21.6
Yellow Time (s)	4.2	4.4	4.4	4.4	4.4	4.4
All-Red Time (s)	2.2	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max
Walk Time (s)	7.0	5.0	7.0	7.0	5.0	5.0
Flash Dont Walk (s)	18.0	5.0	25.0	25.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	13.3	68.7	27.3	27.3	49.0	49.0
Actuated g/C Ratio	0.12	0.62	0.25	0.25	0.45	0.45
v/c Ratio	0.60	0.33	0.75	0.19	0.49	0.49
Control Delay	57.2	8.5	36.4	7.6	27.0	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	8.5	36.4	7.6	27.0	24.8
LOS	E	A	D	A	C	C
Approach Delay	21.8		33.2			25.5
Approach LOS	C		C			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 24.2 (22%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 27.3		Intersection LOS: C	
Intersection Capacity Utilization 56.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Whites Road South & Bayly Street



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	125	332	656	83	352	736
v/c Ratio	0.60	0.33	0.75	0.19	0.49	0.49
Control Delay	57.2	8.5	36.4	7.6	27.0	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	8.5	36.4	7.6	27.0	24.8
Queue Length 50th (m)	25.8	21.1	67.7	0.3	57.9	60.4
Queue Length 95th (m)	39.2	38.2	76.3	5.8	95.1	85.6
Internal Link Dist (m)	352.4		176.0			197.2
Turn Bay Length (m)				30.0	70.0	
Base Capacity (vph)	450	1016	1250	609	718	1502
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.33	0.52	0.14	0.49	0.49

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	105	279	551	70	384	530
Future Volume (vph)	105	279	551	70	384	530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.99
Satd. Flow (prot)	1722	1570	3510	1601	1612	3371
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.99
Satd. Flow (perm)	1722	1570	3510	1601	1612	3371
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	125	332	656	83	457	631
RTOR Reduction (vph)	0	41	0	46	0	0
Lane Group Flow (vph)	125	291	656	37	352	736
Heavy Vehicles (%)	6%	4%	4%	2%	3%	3%
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2
Permitted Phases	8	8		5		
Actuated Green, G (s)	13.3	62.3	27.3	27.3	49.0	49.0
Effective Green, g (s)	13.3	62.3	27.3	27.3	49.0	49.0
Actuated g/C Ratio	0.12	0.57	0.25	0.25	0.45	0.45
Clearance Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	208	889	871	397	718	1501
v/s Ratio Prot		0.15	c0.19		c0.22	0.22
v/s Ratio Perm	c0.07	0.04		0.02		
v/c Ratio	0.60	0.33	0.75	0.09	0.49	0.49
Uniform Delay, d1	45.8	12.7	38.2	31.8	21.6	21.6
Progression Factor	1.00	1.00	0.81	0.60	1.00	1.00
Incremental Delay, d2	4.8	0.2	3.5	0.1	2.4	1.1
Delay (s)	50.7	12.9	34.6	19.3	24.0	22.8
Level of Service	D	B	C	B	C	C
Approach Delay (s)	23.2		32.9			23.2
Approach LOS	C		C			C

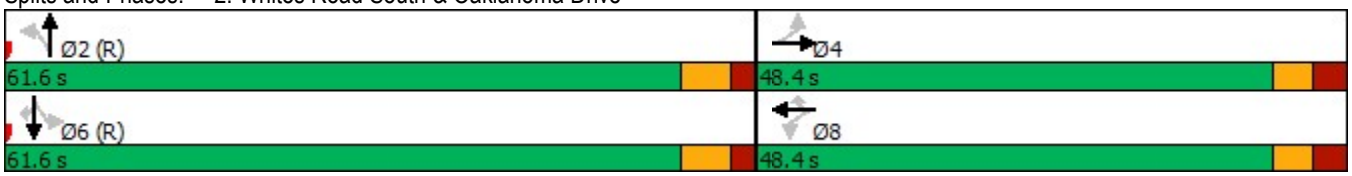
Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

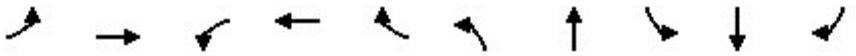
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	168	42	8	7	55	305	17	135	25	189	88	351
Future Volume (vph)	168	42	8	7	55	305	17	135	25	189	88	351
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	15.0		15.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	40.0			10.0			40.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.976				0.850		0.977				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1836	0	1825	1921	1601	1722	1861	0	1755	1762	1601
Flt Permitted	0.713			0.717			0.687			0.633		
Satd. Flow (perm)	1244	1836	0	1377	1921	1601	1245	1861	0	1169	1762	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				377		12				433
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		78.3			208.1			259.8			200.0	
Travel Time (s)		5.6			15.0			15.6			12.0	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	7%	0%	13%	0%	0%	2%	6%	1%	0%	4%	9%	2%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	207	52	10	9	68	377	21	167	31	233	109	433
Shared Lane Traffic (%)												
Lane Group Flow (vph)	207	62	0	9	68	377	21	198	0	233	109	433
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	36.0	36.0		36.0	36.0	36.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	48.4	48.4		48.4	48.4	48.4	61.6	61.6		61.6	61.6	61.6
Total Split (%)	44.0%	44.0%		44.0%	44.0%	44.0%	56.0%	56.0%		56.0%	56.0%	56.0%
Maximum Green (s)	42.2	42.2		42.2	42.2	42.2	55.3	55.3		55.3	55.3	55.3
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	2.9	2.9		2.9	2.9	2.9	2.1	2.1		2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	22.0	22.0		22.0	22.0	22.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	24.0	24.0		24.0	24.0	24.0	73.5	73.5		73.5	73.5	73.5
Actuated g/C Ratio	0.22	0.22		0.22	0.22	0.22	0.67	0.67		0.67	0.67	0.67
v/c Ratio	0.76	0.15		0.03	0.16	0.59	0.03	0.16		0.30	0.09	0.36
Control Delay	57.6	27.8		29.6	33.1	7.1	8.4	7.9		14.0	12.7	6.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	57.6	27.8		29.6	33.1	7.1	8.4	7.9		14.0	12.7	6.5
LOS	E	C		C	C	A	A	A		B	B	A
Approach Delay		50.8			11.5			7.9			9.6	
Approach LOS		D			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 83.6 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 16.3		Intersection LOS: B	
Intersection Capacity Utilization 52.4%		ICU Level of Service A	
Analysis Period (min) 15			

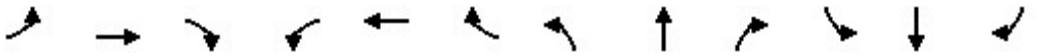
Splits and Phases: 2: Whites Road South & Oaklahoma Drive





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	207	62	9	68	377	21	198	233	109	433
v/c Ratio	0.76	0.15	0.03	0.16	0.59	0.03	0.16	0.30	0.09	0.36
Control Delay	57.6	27.8	29.6	33.1	7.1	8.4	7.9	14.0	12.7	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.6	27.8	29.6	33.1	7.1	8.4	7.9	14.0	12.7	6.5
Queue Length 50th (m)	41.9	9.1	1.5	11.9	0.0	1.4	13.3	12.1	5.6	0.7
Queue Length 95th (m)	53.1	15.8	4.6	18.7	12.0	4.6	25.0	42.8	23.6	52.9
Internal Link Dist (m)		54.3		184.1			235.8		176.0	
Turn Bay Length (m)	20.0		15.0		15.0	20.0		20.0		
Base Capacity (vph)	477	710	528	736	846	832	1247	781	1177	1213
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.09	0.02	0.09	0.45	0.03	0.16	0.30	0.09	0.36

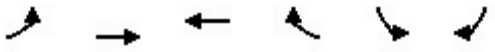
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	168	42	8	7	55	305	17	135	25	189	88	351
Future Volume (vph)	168	42	8	7	55	305	17	135	25	189	88	351
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1658	1836		1825	1921	1601	1722	1860		1755	1762	1601
Flt Permitted	0.71	1.00		0.72	1.00	1.00	0.69	1.00		0.63	1.00	1.00
Satd. Flow (perm)	1244	1836		1377	1921	1601	1245	1860		1170	1762	1601
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	207	52	10	9	68	377	21	167	31	233	109	433
RTOR Reduction (vph)	0	8	0	0	0	295	0	4	0	0	0	144
Lane Group Flow (vph)	207	54	0	9	68	82	21	194	0	233	109	289
Heavy Vehicles (%)	7%	0%	13%	0%	0%	2%	6%	1%	0%	4%	9%	2%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	24.0	24.0		24.0	24.0	24.0	73.5	73.5		73.5	73.5	73.5
Effective Green, g (s)	24.0	24.0		24.0	24.0	24.0	73.5	73.5		73.5	73.5	73.5
Actuated g/C Ratio	0.22	0.22		0.22	0.22	0.22	0.67	0.67		0.67	0.67	0.67
Clearance Time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	271	400		300	419	349	831	1242		781	1177	1069
v/s Ratio Prot		0.03			0.04			0.10			0.06	
v/s Ratio Perm	c0.17			0.01		0.05	0.02			c0.20		0.18
v/c Ratio	0.76	0.14		0.03	0.16	0.24	0.03	0.16		0.30	0.09	0.27
Uniform Delay, d1	40.3	34.6		33.8	34.9	35.4	6.2	6.8		7.6	6.5	7.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.42	1.58	5.72
Incremental Delay, d2	12.0	0.2		0.0	0.2	0.3	0.1	0.3		0.9	0.1	0.6
Delay (s)	52.4	34.8		33.9	35.0	35.8	6.2	7.0		11.7	10.3	42.9
Level of Service	D	C		C	D	D	A	A		B	B	D
Approach Delay (s)		48.3			35.6			7.0			28.9	
Approach LOS		D			D			A			C	

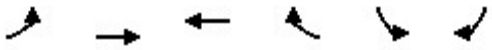
Intersection Summary			
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	219	423	0	0	0
Future Volume (vph)	0	219	423	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1883	1883	0	1883	0
Flt Permitted						
Satd. Flow (perm)	0	1883	1883	0	1883	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		466.2	78.3		125.8	
Travel Time (s)		33.6	5.6		9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	238	460	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	238	460	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	219	423	0	0	0
Future Volume (Veh/h)	0	219	423	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	238	460	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			78			
pX, platoon unblocked	0.98				0.98	0.98
vC, conflicting volume	460				698	460
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	441				684	441
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1099				407	605

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	238	460	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1099	1700	1700
Volume to Capacity	0.00	0.27	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		25.6%	ICU Level of Service A
Analysis Period (min)		15	

Network Totals

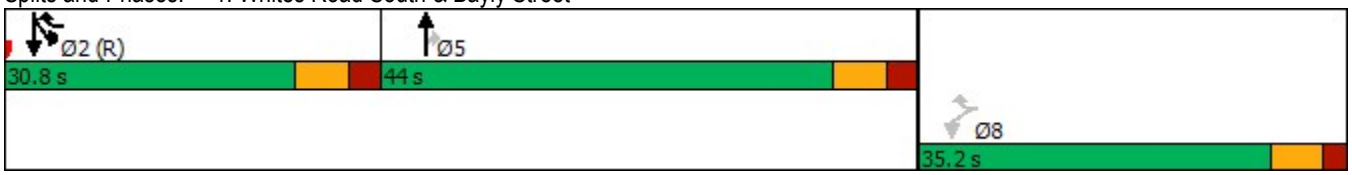
Number of Intersections	3
Total Delay (hr)	21
Stops (#)	1838
Average Speed (km/hr	24
Total Travel Time (hr)	36
Distance Traveled (km)	871
Fuel Consumed (l)	192
Fuel Economy (km/l)	4.5
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	70
Performance Index	25.9

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	139	338	554	189	735	511
Future Volume (vph)	139	338	554	189	735	511
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		30.0	70.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	0.981
Satd. Flow (prot)	1789	1617	3544	1585	1628	3363
Flt Permitted	0.950				0.950	0.981
Satd. Flow (perm)	1789	1617	3544	1585	1628	3363
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		110		158		
Link Speed (k/h)	60		60			60
Link Distance (m)	376.4		200.0			221.2
Travel Time (s)	22.6		12.0			13.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	3%	3%	2%	2%
Adj. Flow (vph)	146	356	583	199	774	538
Shared Lane Traffic (%)					45%	
Lane Group Flow (vph)	146	356	583	199	426	886
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	8	8		5		
Detector Phase	8	2	5	5	2	2
Switch Phase						
Minimum Initial (s)	8.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	27.0	39.0	39.0	27.0	27.0
Total Split (s)	35.2	30.8	44.0	44.0	30.8	30.8
Total Split (%)	32.0%	28.0%	40.0%	40.0%	28.0%	28.0%
Maximum Green (s)	28.8	23.8	37.0	37.0	23.8	23.8
Yellow Time (s)	4.2	4.4	4.4	4.4	4.4	4.4
All-Red Time (s)	2.2	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max
Walk Time (s)	7.0	5.0	7.0	7.0	5.0	5.0
Flash Dont Walk (s)	18.0	5.0	25.0	25.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	14.3	70.5	25.5	25.5	49.8	49.8
Actuated g/C Ratio	0.13	0.64	0.23	0.23	0.45	0.45
v/c Ratio	0.63	0.33	0.71	0.41	0.58	0.58
Control Delay	56.8	7.5	58.9	27.5	28.6	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	7.5	58.9	27.5	28.6	26.0
LOS	E	A	E	C	C	C
Approach Delay	21.9		50.9			26.9
Approach LOS	C		D			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 33 (30%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 33.1		Intersection LOS: C	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Whites Road South & Bayly Street



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	146	356	583	199	426	886
v/c Ratio	0.63	0.33	0.71	0.41	0.58	0.58
Control Delay	56.8	7.5	58.9	27.5	28.6	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	7.5	58.9	27.5	28.6	26.0
Queue Length 50th (m)	30.1	20.3	67.3	17.6	72.1	75.2
Queue Length 95th (m)	47.9	42.5	m83.5	m31.1	130.1	116.7
Internal Link Dist (m)	352.4		176.0			197.2
Turn Bay Length (m)				30.0	70.0	
Base Capacity (vph)	468	1076	1192	637	737	1523
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.33	0.49	0.31	0.58	0.58

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	139	338	554	189	735	511
Future Volume (vph)	139	338	554	189	735	511
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.98
Satd. Flow (prot)	1789	1617	3544	1585	1628	3362
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.98
Satd. Flow (perm)	1789	1617	3544	1585	1628	3362
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	146	356	583	199	774	538
RTOR Reduction (vph)	0	46	0	121	0	0
Lane Group Flow (vph)	146	310	583	78	426	886
Heavy Vehicles (%)	2%	1%	3%	3%	2%	2%
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2
Permitted Phases	8	8		5		
Actuated Green, G (s)	14.3	64.1	25.5	25.5	49.8	49.8
Effective Green, g (s)	14.3	64.1	25.5	25.5	49.8	49.8
Actuated g/C Ratio	0.13	0.58	0.23	0.23	0.45	0.45
Clearance Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	232	942	821	367	737	1522
v/s Ratio Prot		0.15	c0.16		0.26	c0.26
v/s Ratio Perm	c0.08	0.04		0.05		
v/c Ratio	0.63	0.33	0.71	0.21	0.58	0.58
Uniform Delay, d1	45.3	11.8	38.9	34.1	22.3	22.4
Progression Factor	1.00	1.00	1.42	2.98	1.00	1.00
Incremental Delay, d2	5.3	0.2	2.4	0.2	3.3	1.6
Delay (s)	50.6	12.1	57.7	102.1	25.6	24.0
Level of Service	D	B	E	F	C	C
Approach Delay (s)	23.3		69.0			24.5
Approach LOS	C		E			C

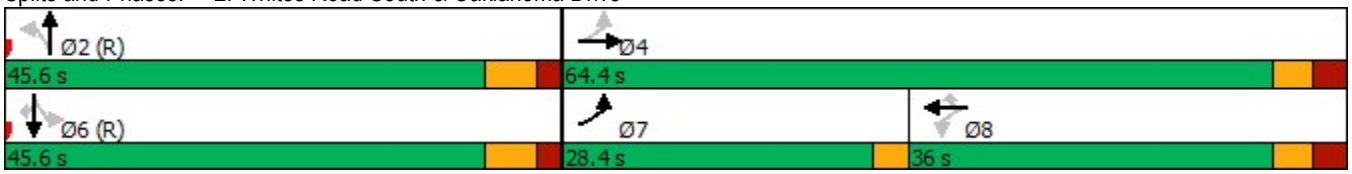
Intersection Summary			
HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

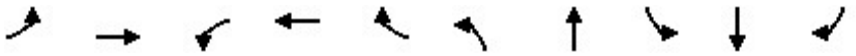
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	412	72	11	10	58	198	16	108	13	267	193	188
Future Volume (vph)	412	72	11	10	58	198	16	108	13	267	193	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	15.0		15.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	40.0			10.0			40.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980				0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1706	1883	0	1659	1921	1601	1825	1857	0	1807	1902	1570
Flt Permitted	0.549			0.699			0.624			0.674		
Satd. Flow (perm)	986	1883	0	1221	1921	1601	1199	1857	0	1282	1902	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				213		6				202
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		78.3			208.1			259.8			200.0	
Travel Time (s)		5.6			15.0			15.6			12.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	0%	0%	10%	0%	2%	0%	2%	0%	1%	1%	4%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	443	77	12	11	62	213	17	116	14	287	208	202
Shared Lane Traffic (%)												
Lane Group Flow (vph)	443	89	0	11	62	213	17	130	0	287	208	202
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	20.0	20.0		20.0	20.0	20.0
Minimum Split (s)	9.5	36.0		36.0	36.0	36.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	28.4	64.4		36.0	36.0	36.0	45.6	45.6		45.6	45.6	45.6
Total Split (%)	25.8%	58.5%		32.7%	32.7%	32.7%	41.5%	41.5%		41.5%	41.5%	41.5%
Maximum Green (s)	25.4	58.2		29.8	29.8	29.8	39.3	39.3		39.3	39.3	39.3
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	0.0	2.9		2.9	2.9	2.9	2.1	2.1		2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		22.0		22.0	22.0	22.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	41.4	38.2		9.8	9.8	9.8	59.3	59.3		59.3	59.3	59.3
Actuated g/C Ratio	0.38	0.35		0.09	0.09	0.09	0.54	0.54		0.54	0.54	0.54
v/c Ratio	0.82	0.13		0.10	0.36	0.63	0.03	0.13		0.42	0.20	0.22
Control Delay	43.1	21.5		46.6	52.5	15.3	13.0	12.9		7.6	4.9	2.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	43.1	21.5		46.6	52.5	15.3	13.0	12.9		7.6	4.9	2.1
LOS	D	C		D	D	B	B	B		A	A	A
Approach Delay		39.5			24.6			12.9			5.2	
Approach LOS		D			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 40.7 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 20.2		Intersection LOS: C	
Intersection Capacity Utilization 78.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Whites Road South & Oaklahoma Drive

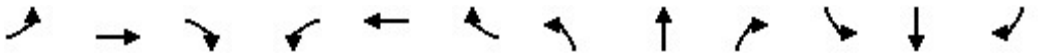




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	443	89	11	62	213	17	130	287	208	202
v/c Ratio	0.82	0.13	0.10	0.36	0.63	0.03	0.13	0.42	0.20	0.22
Control Delay	43.1	21.5	46.6	52.5	15.3	13.0	12.9	7.6	4.9	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	21.5	46.6	52.5	15.3	13.0	12.9	7.6	4.9	2.1
Queue Length 50th (m)	80.2	11.5	2.2	12.9	0.0	1.6	12.3	17.5	10.6	2.2
Queue Length 95th (m)	#109.0	21.1	7.5	24.8	20.9	5.4	23.9	20.3	15.5	5.7
Internal Link Dist (m)		54.3		184.1			235.8		176.0	
Turn Bay Length (m)	20.0		15.0		15.0	20.0		20.0		
Base Capacity (vph)	537	1001	330	520	589	646	1004	691	1025	939
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.09	0.03	0.12	0.36	0.03	0.13	0.42	0.20	0.22

Intersection Summary

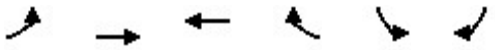
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	412	72	11	10	58	198	16	108	13	267	193	188
Future Volume (vph)	412	72	11	10	58	198	16	108	13	267	193	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1706	1882		1659	1921	1601	1825	1857		1807	1902	1570
Flt Permitted	0.55	1.00		0.70	1.00	1.00	0.62	1.00		0.67	1.00	1.00
Satd. Flow (perm)	985	1882		1221	1921	1601	1199	1857		1282	1902	1570
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	443	77	12	11	62	213	17	116	14	287	208	202
RTOR Reduction (vph)	0	7	0	0	0	194	0	3	0	0	0	93
Lane Group Flow (vph)	443	82	0	11	62	19	17	127	0	287	208	109
Heavy Vehicles (%)	4%	0%	0%	10%	0%	2%	0%	2%	0%	1%	1%	4%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	38.2	38.2		9.8	9.8	9.8	59.3	59.3		59.3	59.3	59.3
Effective Green, g (s)	38.2	38.2		9.8	9.8	9.8	59.3	59.3		59.3	59.3	59.3
Actuated g/C Ratio	0.35	0.35		0.09	0.09	0.09	0.54	0.54		0.54	0.54	0.54
Clearance Time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	508	653		108	171	142	646	1001		691	1025	846
v/s Ratio Prot	c0.20	0.04			0.03			0.07			0.11	
v/s Ratio Perm	c0.10			0.01		0.01	0.01			c0.22		0.07
v/c Ratio	0.87	0.13		0.10	0.36	0.13	0.03	0.13		0.42	0.20	0.13
Uniform Delay, d1	31.7	24.5		46.1	47.2	46.2	11.9	12.5		15.1	13.1	12.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.37	0.33	0.79
Incremental Delay, d2	15.1	0.1		0.4	1.3	0.4	0.1	0.3		1.6	0.4	0.3
Delay (s)	46.9	24.6		46.5	48.5	46.6	11.9	12.8		7.2	4.7	10.2
Level of Service	D	C		D	D	D	B	B		A	A	B
Approach Delay (s)		43.1			47.0			12.7			7.3	
Approach LOS		D			D			B			A	

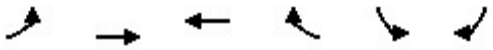
Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	497	263	0	0	0
Future Volume (vph)	0	497	263	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1883	1883	0	1883	0
Flt Permitted						
Satd. Flow (perm)	0	1883	1883	0	1883	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		466.2	78.3		125.8	
Travel Time (s)		33.6	5.6		9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	540	286	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	540	286	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	497	263	0	0	0
Future Volume (Veh/h)	0	497	263	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	540	286	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			78			
pX, platoon unblocked	0.97				0.97	0.97
vC, conflicting volume	286				826	286
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	255				809	255
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1277				341	764

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	540	286	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1277	1700	1700
Volume to Capacity	0.00	0.17	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		

Network Totals

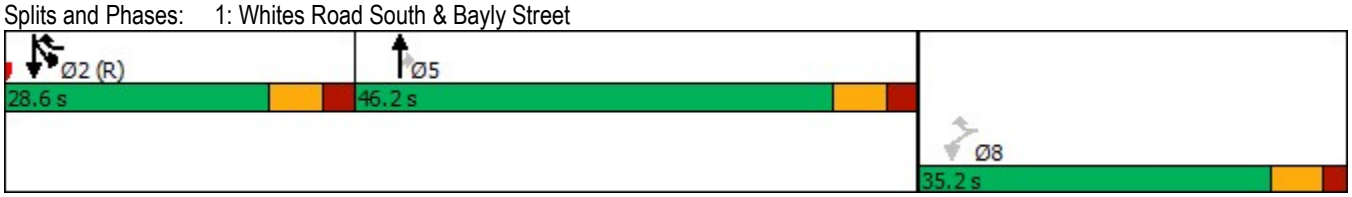
Number of Intersections	3
Total Delay (hr)	31
Stops (#)	2537
Average Speed (km/hr	22
Total Travel Time (hr)	51
Distance Traveled (km)	1116
Fuel Consumed (l)	264
Fuel Economy (km/l)	4.2
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	50
Performance Index	38.4

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	108	279	591	76	384	543
Future Volume (vph)	108	279	591	76	384	543
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		30.0	70.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	0.993
Satd. Flow (prot)	1722	1570	3510	1601	1612	3371
Flt Permitted	0.950				0.950	0.993
Satd. Flow (perm)	1722	1570	3510	1601	1612	3371
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		78		61		
Link Speed (k/h)	60		60			60
Link Distance (m)	376.4		200.0			221.2
Travel Time (s)	22.6		12.0			13.3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	4%	4%	2%	3%	3%
Adj. Flow (vph)	129	332	704	90	457	646
Shared Lane Traffic (%)					22%	
Lane Group Flow (vph)	129	332	704	90	356	747
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	8	8		5		
Detector Phase	8	2	5	5	2	2
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	27.0	39.0	39.0	27.0	27.0
Total Split (s)	35.2	28.6	46.2	46.2	28.6	28.6
Total Split (%)	32.0%	26.0%	42.0%	42.0%	26.0%	26.0%
Maximum Green (s)	28.8	21.6	39.2	39.2	21.6	21.6
Yellow Time (s)	4.2	4.4	4.4	4.4	4.4	4.4
All-Red Time (s)	2.2	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max
Walk Time (s)	7.0	5.0	7.0	7.0	5.0	5.0
Flash Dont Walk (s)	18.0	5.0	25.0	25.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	13.6	66.8	29.2	29.2	46.9	46.9
Actuated g/C Ratio	0.12	0.61	0.27	0.27	0.43	0.43
v/c Ratio	0.61	0.34	0.76	0.19	0.52	0.52
Control Delay	57.3	9.9	35.5	8.2	29.2	26.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.3	9.9	35.5	8.2	29.2	26.8
LOS	E	A	D	A	C	C
Approach Delay	23.1		32.4			27.6
Approach LOS	C		C			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 24.2 (22%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 28.3		Intersection LOS: C	
Intersection Capacity Utilization 57.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Whites Road South & Bayly Street



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	129	332	704	90	356	747
v/c Ratio	0.61	0.34	0.76	0.19	0.52	0.52
Control Delay	57.3	9.9	35.5	8.2	29.2	26.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.3	9.9	35.5	8.2	29.2	26.8
Queue Length 50th (m)	26.6	24.1	74.5	1.5	60.6	63.6
Queue Length 95th (m)	40.2	42.7	74.1	5.7	100.2	90.4
Internal Link Dist (m)	352.4		176.0			197.2
Turn Bay Length (m)				30.0	70.0	
Base Capacity (vph)	450	984	1250	609	686	1436
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.34	0.56	0.15	0.52	0.52

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	108	279	591	76	384	543
Future Volume (vph)	108	279	591	76	384	543
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.99
Satd. Flow (prot)	1722	1570	3510	1601	1612	3372
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.99
Satd. Flow (perm)	1722	1570	3510	1601	1612	3372
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	129	332	704	90	457	646
RTOR Reduction (vph)	0	35	0	45	0	0
Lane Group Flow (vph)	129	297	704	45	356	747
Heavy Vehicles (%)	6%	4%	4%	2%	3%	3%
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2
Permitted Phases	8	8		5		
Actuated Green, G (s)	13.6	60.4	29.2	29.2	46.8	46.8
Effective Green, g (s)	13.6	60.4	29.2	29.2	46.8	46.8
Actuated g/C Ratio	0.12	0.55	0.27	0.27	0.43	0.43
Clearance Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	212	862	931	424	685	1434
v/s Ratio Prot		0.15	c0.20		0.22	c0.22
v/s Ratio Perm	c0.07	0.04		0.03		
v/c Ratio	0.61	0.34	0.76	0.11	0.52	0.52
Uniform Delay, d1	45.7	13.8	37.1	30.5	23.3	23.3
Progression Factor	1.00	1.00	0.82	0.65	1.00	1.00
Incremental Delay, d2	4.9	0.2	3.3	0.1	2.8	1.4
Delay (s)	50.6	14.0	33.8	19.8	26.1	24.7
Level of Service	D	B	C	B	C	C
Approach Delay (s)	24.3		32.2			25.1
Approach LOS	C		C			C

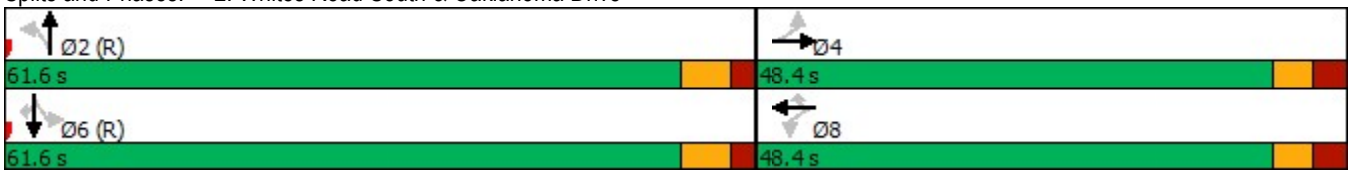
Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

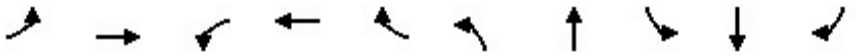
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	45	11	7	56	305	18	135	25	189	88	367
Future Volume (vph)	214	45	11	7	56	305	18	135	25	189	88	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		15.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	30.0			10.0			40.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970				0.850		0.977				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1816	0	1825	1921	1601	1722	1861	0	1755	1762	1601
Flt Permitted	0.712			0.711			0.687			0.633		
Satd. Flow (perm)	1243	1816	0	1366	1921	1601	1245	1861	0	1169	1762	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				377		12				453
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		199.5			208.1			259.8			200.0	
Travel Time (s)		14.4			15.0			15.6			12.0	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	7%	0%	13%	0%	0%	2%	6%	1%	0%	4%	9%	2%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	264	56	14	9	69	377	22	167	31	233	109	453
Shared Lane Traffic (%)												
Lane Group Flow (vph)	264	70	0	9	69	377	22	198	0	233	109	453
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	36.0	36.0		36.0	36.0	36.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	48.4	48.4		48.4	48.4	48.4	61.6	61.6		61.6	61.6	61.6
Total Split (%)	44.0%	44.0%		44.0%	44.0%	44.0%	56.0%	56.0%		56.0%	56.0%	56.0%
Maximum Green (s)	42.2	42.2		42.2	42.2	42.2	55.3	55.3		55.3	55.3	55.3
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	2.9	2.9		2.9	2.9	2.9	2.1	2.1		2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	22.0	22.0		22.0	22.0	22.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	29.1	29.1		29.1	29.1	29.1	68.4	68.4		68.4	68.4	68.4
Actuated g/C Ratio	0.26	0.26		0.26	0.26	0.26	0.62	0.62		0.62	0.62	0.62
v/c Ratio	0.80	0.14		0.02	0.14	0.54	0.03	0.17		0.32	0.10	0.39
Control Delay	55.2	23.3		25.4	28.6	5.7	10.8	10.2		18.1	16.6	8.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	55.2	23.3		25.4	28.6	5.7	10.8	10.2		18.1	16.6	8.6
LOS	E	C		C	C	A	B	B		B	B	A
Approach Delay		48.5			9.6			10.2			12.5	
Approach LOS		D			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 83.6 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 18.1		Intersection LOS: B	
Intersection Capacity Utilization 54.9%		ICU Level of Service A	
Analysis Period (min) 15			

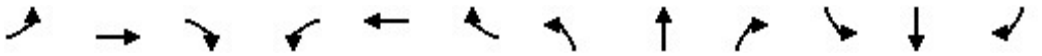
Splits and Phases: 2: Whites Road South & Oaklahoma Drive





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	264	70	9	69	377	22	198	233	109	453
v/c Ratio	0.80	0.14	0.02	0.14	0.54	0.03	0.17	0.32	0.10	0.39
Control Delay	55.2	23.3	25.4	28.6	5.7	10.8	10.2	18.1	16.6	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	23.3	25.4	28.6	5.7	10.8	10.2	18.1	16.6	8.6
Queue Length 50th (m)	52.9	9.3	1.4	11.3	0.0	1.7	15.6	12.1	5.7	2.1
Queue Length 95th (m)	63.1	15.6	4.2	17.2	11.0	5.4	28.9	48.2	26.3	59.8
Internal Link Dist (m)		175.5		184.1			235.8		176.0	
Turn Bay Length (m)	30.0		15.0		15.0	20.0		20.0		
Base Capacity (vph)	476	704	524	736	846	774	1161	726	1095	1166
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.10	0.02	0.09	0.45	0.03	0.17	0.32	0.10	0.39

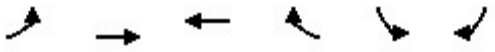
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	45	11	7	56	305	18	135	25	189	88	367
Future Volume (vph)	214	45	11	7	56	305	18	135	25	189	88	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1658	1816		1825	1921	1601	1722	1860		1755	1762	1601
Flt Permitted	0.71	1.00		0.71	1.00	1.00	0.69	1.00		0.63	1.00	1.00
Satd. Flow (perm)	1243	1816		1367	1921	1601	1245	1860		1170	1762	1601
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	264	56	14	9	69	377	22	167	31	233	109	453
RTOR Reduction (vph)	0	10	0	0	0	277	0	5	0	0	0	171
Lane Group Flow (vph)	264	60	0	9	69	100	22	193	0	233	109	282
Heavy Vehicles (%)	7%	0%	13%	0%	0%	2%	6%	1%	0%	4%	9%	2%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	29.1	29.1		29.1	29.1	29.1	68.4	68.4		68.4	68.4	68.4
Effective Green, g (s)	29.1	29.1		29.1	29.1	29.1	68.4	68.4		68.4	68.4	68.4
Actuated g/C Ratio	0.26	0.26		0.26	0.26	0.26	0.62	0.62		0.62	0.62	0.62
Clearance Time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	328	480		361	508	423	774	1156		727	1095	995
v/s Ratio Prot		0.03			0.04			0.10			0.06	
v/s Ratio Perm	c0.21			0.01		0.06	0.02			c0.20		0.18
v/c Ratio	0.80	0.13		0.02	0.14	0.24	0.03	0.17		0.32	0.10	0.28
Uniform Delay, d1	37.8	30.8		29.9	30.9	31.7	8.0	8.8		9.8	8.4	9.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.44	1.60	6.05
Incremental Delay, d2	13.4	0.1		0.0	0.1	0.3	0.1	0.3		1.0	0.2	0.6
Delay (s)	51.2	30.9		30.0	31.0	32.0	8.1	9.1		15.1	13.6	58.4
Level of Service	D	C		C	C	C	A	A		B	B	E
Approach Delay (s)		46.9			31.8			9.0			39.6	
Approach LOS		D			C			A			D	

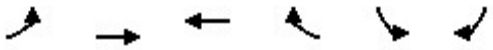
Intersection Summary			
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	219	423	18	51	5
Future Volume (vph)	2	219	423	18	51	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994		0.989	
Flt Protected					0.956	
Satd. Flow (prot)	0	1883	1872	0	1781	0
Flt Permitted					0.956	
Satd. Flow (perm)	0	1883	1872	0	1781	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		466.2	199.5		125.8	
Travel Time (s)		33.6	14.4		9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	238	460	20	55	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	240	480	0	60	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.4%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	219	423	18	51	5
Future Volume (Veh/h)	2	219	423	18	51	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	238	460	20	55	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			200			
pX, platoon unblocked						
vC, conflicting volume	480				712	470
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	480				712	470
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				86	99
cM capacity (veh/h)	1082				398	594

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	240	480	60
Volume Left	2	0	55
Volume Right	0	20	5
cSH	1082	1700	409
Volume to Capacity	0.00	0.28	0.15
Queue Length 95th (m)	0.0	0.0	3.9
Control Delay (s)	0.1	0.0	15.3
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	15.3
Approach LOS			C

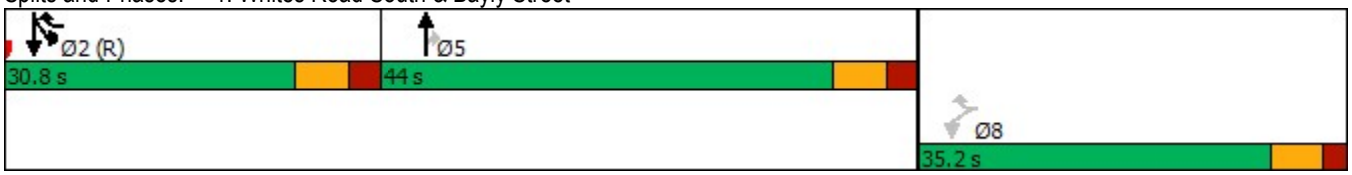
Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	33.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	148	338	575	197	735	549
Future Volume (vph)	148	338	575	197	735	549
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		30.0	70.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	0.982
Satd. Flow (prot)	1789	1617	3544	1585	1628	3366
Flt Permitted	0.950				0.950	0.982
Satd. Flow (perm)	1789	1617	3544	1585	1628	3366
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		101		159		
Link Speed (k/h)	60		60			60
Link Distance (m)	376.4		200.0			221.2
Travel Time (s)	22.6		12.0			13.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	3%	3%	2%	2%
Adj. Flow (vph)	156	356	605	207	774	578
Shared Lane Traffic (%)					43%	
Lane Group Flow (vph)	156	356	605	207	441	911
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	8	8		5		
Detector Phase	8	2	5	5	2	2
Switch Phase						
Minimum Initial (s)	8.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	27.0	39.0	39.0	27.0	27.0
Total Split (s)	35.2	30.8	44.0	44.0	30.8	30.8
Total Split (%)	32.0%	28.0%	40.0%	40.0%	28.0%	28.0%
Maximum Green (s)	28.8	23.8	37.0	37.0	23.8	23.8
Yellow Time (s)	4.2	4.4	4.4	4.4	4.4	4.4
All-Red Time (s)	2.2	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max
Walk Time (s)	7.0	5.0	7.0	7.0	5.0	5.0
Flash Dont Walk (s)	18.0	5.0	25.0	25.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	14.9	69.9	26.1	26.1	48.6	48.6
Actuated g/C Ratio	0.14	0.64	0.24	0.24	0.44	0.44
v/c Ratio	0.64	0.33	0.72	0.42	0.61	0.61
Control Delay	56.8	8.1	59.1	28.4	30.6	27.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	8.1	59.1	28.4	30.6	27.6
LOS	E	A	E	C	C	C
Approach Delay	22.9		51.3			28.6
Approach LOS	C		D			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 33 (30%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 34.4		Intersection LOS: C	
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Whites Road South & Bayly Street



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	156	356	605	207	441	911
v/c Ratio	0.64	0.33	0.72	0.42	0.61	0.61
Control Delay	56.8	8.1	59.1	28.4	30.6	27.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	8.1	59.1	28.4	30.6	27.6
Queue Length 50th (m)	32.1	21.7	70.1	19.3	77.4	80.0
Queue Length 95th (m)	50.6	44.7	m83.3	m31.6	#150.4	124.0
Internal Link Dist (m)	352.4		176.0			197.2
Turn Bay Length (m)				30.0	70.0	
Base Capacity (vph)	468	1064	1192	638	719	1488
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.33	0.51	0.32	0.61	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	148	338	575	197	735	549
Future Volume (vph)	148	338	575	197	735	549
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.98
Satd. Flow (prot)	1789	1617	3544	1585	1628	3366
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.98
Satd. Flow (perm)	1789	1617	3544	1585	1628	3366
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	156	356	605	207	774	578
RTOR Reduction (vph)	0	43	0	121	0	0
Lane Group Flow (vph)	156	313	605	86	441	911
Heavy Vehicles (%)	2%	1%	3%	3%	2%	2%
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2
Permitted Phases	8	8		5		
Actuated Green, G (s)	14.9	63.5	26.1	26.1	48.6	48.6
Effective Green, g (s)	14.9	63.5	26.1	26.1	48.6	48.6
Actuated g/C Ratio	0.14	0.58	0.24	0.24	0.44	0.44
Clearance Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	242	933	840	376	719	1487
v/s Ratio Prot		0.15	c0.17		c0.27	0.27
v/s Ratio Perm	c0.09	0.05		0.05		
v/c Ratio	0.64	0.34	0.72	0.23	0.61	0.61
Uniform Delay, d1	45.0	12.2	38.6	33.8	23.5	23.5
Progression Factor	1.00	1.00	1.44	2.92	1.00	1.00
Incremental Delay, d2	5.8	0.2	2.4	0.2	3.9	1.9
Delay (s)	50.8	12.4	58.0	99.1	27.4	25.4
Level of Service	D	B	E	F	C	C
Approach Delay (s)	24.1		68.5			26.0
Approach LOS	C		E			C

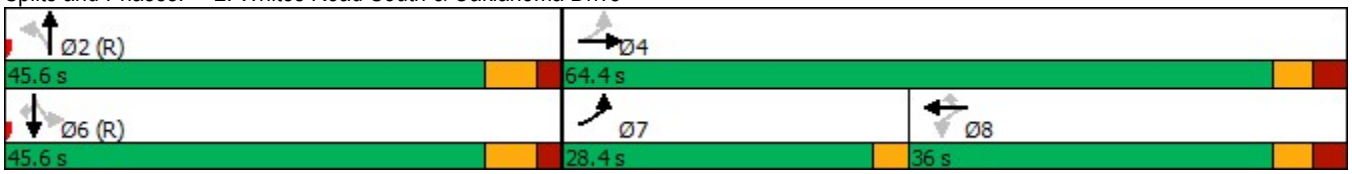
Intersection Summary			
HCM 2000 Control Delay	38.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

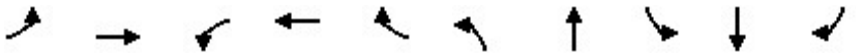
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	441	76	13	10	61	198	18	108	13	267	193	236
Future Volume (vph)	441	76	13	10	61	198	18	108	13	267	193	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		15.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	30.0			10.0			40.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.978				0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1706	1879	0	1659	1921	1601	1825	1857	0	1807	1902	1570
Flt Permitted	0.550			0.695			0.624			0.674		
Satd. Flow (perm)	988	1879	0	1214	1921	1601	1199	1857	0	1282	1902	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				213		6				254
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		199.5			208.1			259.8			200.0	
Travel Time (s)		14.4			15.0			15.6			12.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	0%	0%	10%	0%	2%	0%	2%	0%	1%	1%	4%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	474	82	14	11	66	213	19	116	14	287	208	254
Shared Lane Traffic (%)												
Lane Group Flow (vph)	474	96	0	11	66	213	19	130	0	287	208	254
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	20.0	20.0		20.0	20.0	20.0
Minimum Split (s)	9.5	36.0		36.0	36.0	36.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	28.4	64.4		36.0	36.0	36.0	45.6	45.6		45.6	45.6	45.6
Total Split (%)	25.8%	58.5%		32.7%	32.7%	32.7%	41.5%	41.5%		41.5%	41.5%	41.5%
Maximum Green (s)	25.4	58.2		29.8	29.8	29.8	39.3	39.3		39.3	39.3	39.3
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	0.0	2.9		2.9	2.9	2.9	2.1	2.1		2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		22.0		22.0	22.0	22.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	41.7	38.5		10.1	10.1	10.1	59.0	59.0		59.0	59.0	59.0
Actuated g/C Ratio	0.38	0.35		0.09	0.09	0.09	0.54	0.54		0.54	0.54	0.54
v/c Ratio	0.88	0.14		0.10	0.38	0.63	0.03	0.13		0.42	0.20	0.26
Control Delay	48.4	21.3		46.0	52.3	14.9	13.3	13.1		7.1	4.7	2.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	48.4	21.3		46.0	52.3	14.9	13.3	13.1		7.1	4.7	2.1
LOS	D	C		D	D	B	B	B		A	A	A
Approach Delay		43.8			24.6			13.1			4.7	
Approach LOS		D			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 40.7 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 21.4		Intersection LOS: C	
Intersection Capacity Utilization 80.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Whites Road South & Oaklahoma Drive

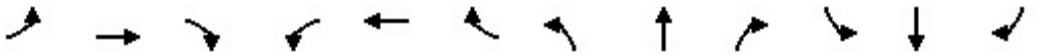




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	474	96	11	66	213	19	130	287	208	254
v/c Ratio	0.88	0.14	0.10	0.38	0.63	0.03	0.13	0.42	0.20	0.26
Control Delay	48.4	21.3	46.0	52.3	14.9	13.3	13.1	7.1	4.7	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.4	21.3	46.0	52.3	14.9	13.3	13.1	7.1	4.7	2.1
Queue Length 50th (m)	87.6	12.3	2.2	13.7	0.0	1.8	12.4	14.6	10.5	3.1
Queue Length 95th (m)	#125.6	22.0	7.4	25.9	20.6	5.9	24.4	20.5	15.4	6.7
Internal Link Dist (m)		175.5		184.1			235.8		176.0	
Turn Bay Length (m)	30.0		15.0		15.0	20.0		20.0		
Base Capacity (vph)	540	999	328	520	589	642	999	688	1020	959
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.10	0.03	0.13	0.36	0.03	0.13	0.42	0.20	0.26

Intersection Summary

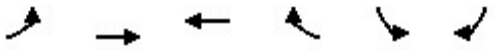
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	441	76	13	10	61	198	18	108	13	267	193	236
Future Volume (vph)	441	76	13	10	61	198	18	108	13	267	193	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1706	1879		1659	1921	1601	1825	1857		1807	1902	1570
Flt Permitted	0.55	1.00		0.69	1.00	1.00	0.62	1.00		0.67	1.00	1.00
Satd. Flow (perm)	988	1879		1214	1921	1601	1198	1857		1282	1902	1570
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	474	82	14	11	66	213	19	116	14	287	208	254
RTOR Reduction (vph)	0	8	0	0	0	193	0	3	0	0	0	118
Lane Group Flow (vph)	474	88	0	11	66	20	19	127	0	287	208	136
Heavy Vehicles (%)	4%	0%	0%	10%	0%	2%	0%	2%	0%	1%	1%	4%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	38.5	38.5		10.1	10.1	10.1	59.0	59.0		59.0	59.0	59.0
Effective Green, g (s)	38.5	38.5		10.1	10.1	10.1	59.0	59.0		59.0	59.0	59.0
Actuated g/C Ratio	0.35	0.35		0.09	0.09	0.09	0.54	0.54		0.54	0.54	0.54
Clearance Time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	511	657		111	176	147	642	996		687	1020	842
v/s Ratio Prot	c0.21	0.05			0.03			0.07			0.11	
v/s Ratio Perm	c0.11			0.01		0.01	0.02			c0.22		0.09
v/c Ratio	0.93	0.13		0.10	0.38	0.13	0.03	0.13		0.42	0.20	0.16
Uniform Delay, d1	32.5	24.4		45.8	47.0	45.9	12.0	12.7		15.2	13.3	12.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.34	0.31	0.80
Incremental Delay, d2	23.0	0.1		0.4	1.3	0.4	0.1	0.3		1.6	0.4	0.4
Delay (s)	55.6	24.5		46.2	48.3	46.3	12.1	13.0		6.7	4.5	10.7
Level of Service	E	C		D	D	D	B	B		A	A	B
Approach Delay (s)		50.3			46.8			12.8			7.4	
Approach LOS		D			D			B			A	

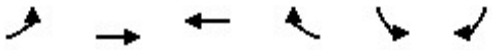
Intersection Summary			
HCM 2000 Control Delay	28.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	497	263	53	34	3
Future Volume (vph)	5	497	263	53	34	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.977		0.990	
Flt Protected					0.956	
Satd. Flow (prot)	0	1883	1840	0	1783	0
Flt Permitted					0.956	
Satd. Flow (perm)	0	1883	1840	0	1783	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		466.2	199.5		125.8	
Travel Time (s)		33.6	14.4		9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	540	286	58	37	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	545	344	0	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.1%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	497	263	53	34	3
Future Volume (Veh/h)	5	497	263	53	34	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	540	286	58	37	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			200			
pX, platoon unblocked	1.00				1.00	1.00
vC, conflicting volume	344				865	315
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	340				863	311
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				89	100
cM capacity (veh/h)	1215				323	727

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	545	344	40
Volume Left	5	0	37
Volume Right	0	58	3
cSH	1215	1700	337
Volume to Capacity	0.00	0.20	0.12
Queue Length 95th (m)	0.1	0.0	3.0
Control Delay (s)	0.1	0.0	17.1
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	17.1
Approach LOS			C

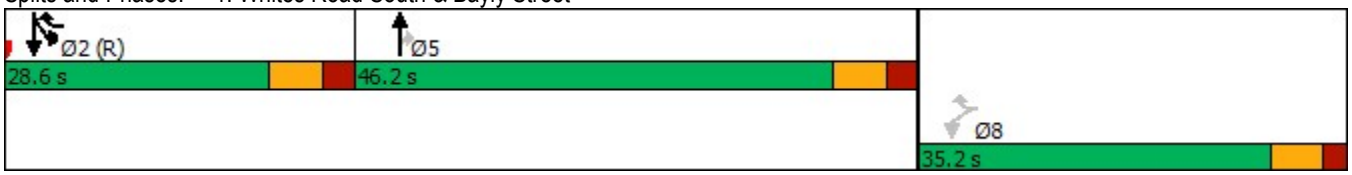
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	108	286	565	72	393	543
Future Volume (vph)	108	286	565	72	393	543
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		30.0	70.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	0.993
Satd. Flow (prot)	1722	1570	3510	1601	1612	3371
Flt Permitted	0.950				0.950	0.993
Satd. Flow (perm)	1722	1570	3510	1601	1612	3371
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		89		61		
Link Speed (k/h)	60		60			60
Link Distance (m)	376.4		200.0			221.2
Travel Time (s)	22.6		12.0			13.3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	4%	4%	2%	3%	3%
Adj. Flow (vph)	129	340	673	86	468	646
Shared Lane Traffic (%)					23%	
Lane Group Flow (vph)	129	340	673	86	360	754
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	8	8		5		
Detector Phase	8	2	5	5	2	2
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	27.0	39.0	39.0	27.0	27.0
Total Split (s)	35.2	28.6	46.2	46.2	28.6	28.6
Total Split (%)	32.0%	26.0%	42.0%	42.0%	26.0%	26.0%
Maximum Green (s)	28.8	21.6	39.2	39.2	21.6	21.6
Yellow Time (s)	4.2	4.4	4.4	4.4	4.4	4.4
All-Red Time (s)	2.2	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max
Walk Time (s)	7.0	5.0	7.0	7.0	5.0	5.0
Flash Dont Walk (s)	18.0	5.0	25.0	25.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	13.6	68.0	28.0	28.0	48.0	48.0
Actuated g/C Ratio	0.12	0.62	0.25	0.25	0.44	0.44
v/c Ratio	0.61	0.34	0.75	0.19	0.51	0.51
Control Delay	57.3	9.2	35.5	7.5	28.4	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.3	9.2	35.5	7.5	28.4	26.0
LOS	E	A	D	A	C	C
Approach Delay	22.4		32.4			26.8
Approach LOS	C		C			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 24.2 (22%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 27.7		Intersection LOS: C	
Intersection Capacity Utilization 57.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Whites Road South & Bayly Street



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	129	340	673	86	360	754
v/c Ratio	0.61	0.34	0.75	0.19	0.51	0.51
Control Delay	57.3	9.2	35.5	7.5	28.4	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.3	9.2	35.5	7.5	28.4	26.0
Queue Length 50th (m)	26.6	23.1	69.6	0.5	60.5	63.4
Queue Length 95th (m)	40.2	41.7	76.6	5.8	100.2	90.3
Internal Link Dist (m)	352.4		176.0			197.2
Turn Bay Length (m)				30.0	70.0	
Base Capacity (vph)	450	1004	1250	609	703	1471
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.34	0.54	0.14	0.51	0.51

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	108	286	565	72	393	543
Future Volume (vph)	108	286	565	72	393	543
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.99
Satd. Flow (prot)	1722	1570	3510	1601	1612	3370
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.99
Satd. Flow (perm)	1722	1570	3510	1601	1612	3370
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	129	340	673	86	468	646
RTOR Reduction (vph)	0	39	0	45	0	0
Lane Group Flow (vph)	129	301	673	41	360	754
Heavy Vehicles (%)	6%	4%	4%	2%	3%	3%
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2
Permitted Phases	8	8		5		
Actuated Green, G (s)	13.6	61.6	28.0	28.0	48.0	48.0
Effective Green, g (s)	13.6	61.6	28.0	28.0	48.0	48.0
Actuated g/C Ratio	0.12	0.56	0.25	0.25	0.44	0.44
Clearance Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	212	879	893	407	703	1470
v/s Ratio Prot		0.15	c0.19		0.22	c0.22
v/s Ratio Perm	c0.07	0.04		0.03		
v/c Ratio	0.61	0.34	0.75	0.10	0.51	0.51
Uniform Delay, d1	45.7	13.2	37.8	31.4	22.5	22.5
Progression Factor	1.00	1.00	0.81	0.59	1.00	1.00
Incremental Delay, d2	4.9	0.2	3.4	0.1	2.7	1.3
Delay (s)	50.6	13.4	34.0	18.6	25.2	23.8
Level of Service	D	B	C	B	C	C
Approach Delay (s)	23.6		32.2			24.2
Approach LOS	C		C			C

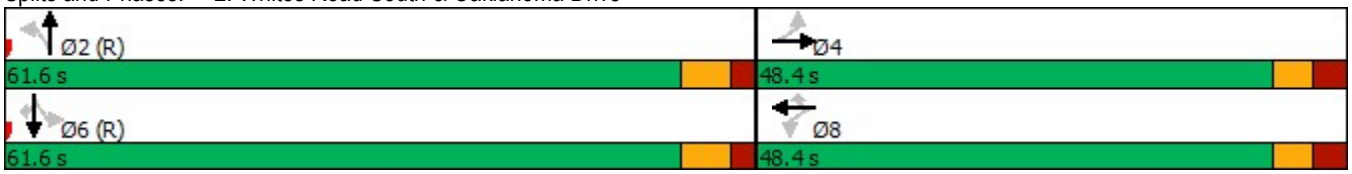
Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

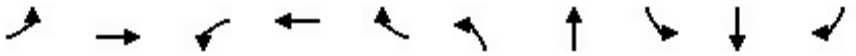
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	43	8	7	56	312	17	138	26	194	90	359
Future Volume (vph)	172	43	8	7	56	312	17	138	26	194	90	359
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	15.0		15.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	40.0			10.0			40.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.976				0.850		0.976				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1837	0	1825	1921	1601	1722	1859	0	1755	1762	1601
Flt Permitted	0.712			0.716			0.685			0.631		
Satd. Flow (perm)	1243	1837	0	1376	1921	1601	1241	1859	0	1166	1762	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				385		12				443
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		78.3			208.1			259.8			200.0	
Travel Time (s)		5.6			15.0			15.6			12.0	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	7%	0%	13%	0%	0%	2%	6%	1%	0%	4%	9%	2%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	212	53	10	9	69	385	21	170	32	240	111	443
Shared Lane Traffic (%)												
Lane Group Flow (vph)	212	63	0	9	69	385	21	202	0	240	111	443
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	36.0	36.0		36.0	36.0	36.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	48.4	48.4		48.4	48.4	48.4	61.6	61.6		61.6	61.6	61.6
Total Split (%)	44.0%	44.0%		44.0%	44.0%	44.0%	56.0%	56.0%		56.0%	56.0%	56.0%
Maximum Green (s)	42.2	42.2		42.2	42.2	42.2	55.3	55.3		55.3	55.3	55.3
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	2.9	2.9		2.9	2.9	2.9	2.1	2.1		2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	22.0	22.0		22.0	22.0	22.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	24.4	24.4		24.4	24.4	24.4	73.1	73.1		73.1	73.1	73.1
Actuated g/C Ratio	0.22	0.22		0.22	0.22	0.22	0.66	0.66		0.66	0.66	0.66
v/c Ratio	0.77	0.15		0.03	0.16	0.59	0.03	0.16		0.31	0.09	0.37
Control Delay	57.4	27.5		29.1	32.7	7.0	8.6	8.1		15.4	13.8	7.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	57.4	27.5		29.1	32.7	7.0	8.6	8.1		15.4	13.8	7.3
LOS	E	C		C	C	A	A	A		B	B	A
Approach Delay		50.5			11.3			8.1			10.6	
Approach LOS		D			B			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 83.6 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 53.3%		ICU Level of Service A	
Analysis Period (min) 15			

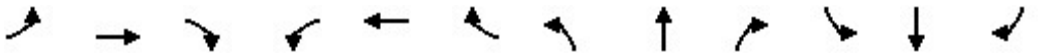
Splits and Phases: 2: Whites Road South & Oaklahoma Drive





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	212	63	9	69	385	21	202	240	111	443
v/c Ratio	0.77	0.15	0.03	0.16	0.59	0.03	0.16	0.31	0.09	0.37
Control Delay	57.4	27.5	29.1	32.7	7.0	8.6	8.1	15.4	13.8	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.4	27.5	29.1	32.7	7.0	8.6	8.1	15.4	13.8	7.3
Queue Length 50th (m)	42.9	9.2	1.5	12.0	0.0	1.4	13.9	12.4	5.8	0.7
Queue Length 95th (m)	54.2	15.9	4.5	18.8	12.0	4.6	25.9	47.5	25.7	56.7
Internal Link Dist (m)		54.3		184.1			235.8		176.0	
Turn Bay Length (m)	20.0		15.0		15.0	20.0		20.0		
Base Capacity (vph)	476	710	527	736	851	824	1238	774	1170	1212
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.09	0.02	0.09	0.45	0.03	0.16	0.31	0.09	0.37

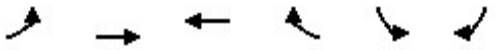
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	43	8	7	56	312	17	138	26	194	90	359
Future Volume (vph)	172	43	8	7	56	312	17	138	26	194	90	359
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1658	1837		1825	1921	1601	1722	1860		1755	1762	1601
Flt Permitted	0.71	1.00		0.72	1.00	1.00	0.69	1.00		0.63	1.00	1.00
Satd. Flow (perm)	1243	1837		1375	1921	1601	1242	1860		1166	1762	1601
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	212	53	10	9	69	385	21	170	32	240	111	443
RTOR Reduction (vph)	0	8	0	0	0	300	0	4	0	0	0	149
Lane Group Flow (vph)	212	55	0	9	69	85	21	198	0	240	111	294
Heavy Vehicles (%)	7%	0%	13%	0%	0%	2%	6%	1%	0%	4%	9%	2%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	24.4	24.4		24.4	24.4	24.4	73.1	73.1		73.1	73.1	73.1
Effective Green, g (s)	24.4	24.4		24.4	24.4	24.4	73.1	73.1		73.1	73.1	73.1
Actuated g/C Ratio	0.22	0.22		0.22	0.22	0.22	0.66	0.66		0.66	0.66	0.66
Clearance Time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	275	407		305	426	355	825	1236		774	1170	1063
v/s Ratio Prot		0.03			0.04			0.11			0.06	
v/s Ratio Perm	c0.17			0.01		0.05	0.02			c0.21		0.18
v/c Ratio	0.77	0.14		0.03	0.16	0.24	0.03	0.16		0.31	0.09	0.28
Uniform Delay, d1	40.2	34.3		33.5	34.5	35.2	6.3	6.9		7.8	6.6	7.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.52	1.68	6.42
Incremental Delay, d2	12.5	0.2		0.0	0.2	0.4	0.1	0.3		0.9	0.1	0.6
Delay (s)	52.7	34.5		33.6	34.7	35.5	6.4	7.2		12.8	11.2	49.2
Level of Service	D	C		C	C	D	A	A		B	B	D
Approach Delay (s)		48.5			35.4			7.1			32.9	
Approach LOS		D			D			A			C	

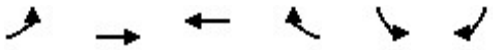
Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	225	434	0	0	0
Future Volume (vph)	0	225	434	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1883	1883	0	1883	0
Flt Permitted						
Satd. Flow (perm)	0	1883	1883	0	1883	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		466.2	78.3		125.8	
Travel Time (s)		33.6	5.6		9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	245	472	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	245	472	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.2%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	225	434	0	0	0
Future Volume (Veh/h)	0	225	434	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	245	472	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			78			
pX, platoon unblocked	0.98				0.98	0.98
vC, conflicting volume	472				717	472
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	453				702	453
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1088				397	596

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	245	472	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1088	1700	1700
Volume to Capacity	0.00	0.28	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		26.2%	ICU Level of Service A
Analysis Period (min)		15	

Network Totals

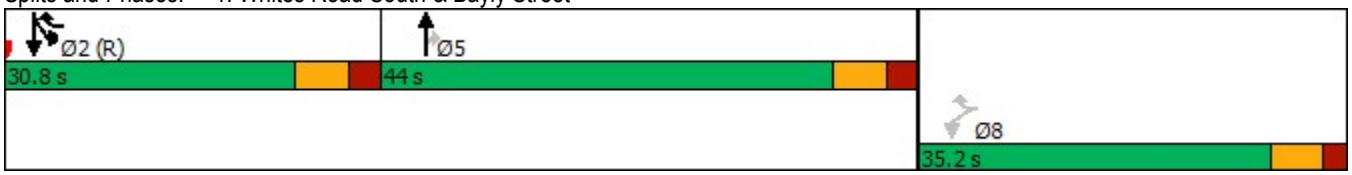
Number of Intersections	3
Total Delay (hr)	22
Stops (#)	1921
Average Speed (km/hr	24
Total Travel Time (hr)	37
Distance Traveled (km)	893
Fuel Consumed (l)	199
Fuel Economy (km/l)	4.5
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	73
Performance Index	27.1

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	143	346	568	194	753	524
Future Volume (vph)	143	346	568	194	753	524
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		30.0	70.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	0.981
Satd. Flow (prot)	1789	1617	3544	1585	1628	3363
Flt Permitted	0.950				0.950	0.981
Satd. Flow (perm)	1789	1617	3544	1585	1628	3363
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		103		158		
Link Speed (k/h)	60		60			60
Link Distance (m)	376.4		200.0			221.2
Travel Time (s)	22.6		12.0			13.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	3%	3%	2%	2%
Adj. Flow (vph)	151	364	598	204	793	552
Shared Lane Traffic (%)					45%	
Lane Group Flow (vph)	151	364	598	204	436	909
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	8	8		5		
Detector Phase	8	2	5	5	2	2
Switch Phase						
Minimum Initial (s)	8.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	27.0	39.0	39.0	27.0	27.0
Total Split (s)	35.2	30.8	44.0	44.0	30.8	30.8
Total Split (%)	32.0%	28.0%	40.0%	40.0%	28.0%	28.0%
Maximum Green (s)	28.8	23.8	37.0	37.0	23.8	23.8
Yellow Time (s)	4.2	4.4	4.4	4.4	4.4	4.4
All-Red Time (s)	2.2	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max
Walk Time (s)	7.0	5.0	7.0	7.0	5.0	5.0
Flash Dont Walk (s)	18.0	5.0	25.0	25.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	14.6	70.2	25.8	25.8	49.1	49.1
Actuated g/C Ratio	0.13	0.64	0.23	0.23	0.45	0.45
v/c Ratio	0.64	0.34	0.72	0.41	0.60	0.61
Control Delay	56.8	8.0	58.5	27.8	29.8	27.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	8.0	58.5	27.8	29.8	27.0
LOS	E	A	E	C	C	C
Approach Delay	22.3		50.7			27.9
Approach LOS	C		D			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 33 (30%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 33.7		Intersection LOS: C	
Intersection Capacity Utilization 65.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Whites Road South & Bayly Street



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	151	364	598	204	436	909
v/c Ratio	0.64	0.34	0.72	0.41	0.60	0.61
Control Delay	56.8	8.0	58.5	27.8	29.8	27.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	8.0	58.5	27.8	29.8	27.0
Queue Length 50th (m)	31.1	22.3	69.0	18.6	75.6	79.0
Queue Length 95th (m)	49.1	45.5	m83.4	m31.0	#145.3	122.5
Internal Link Dist (m)	352.4		176.0			197.2
Turn Bay Length (m)				30.0	70.0	
Base Capacity (vph)	468	1068	1192	637	727	1502
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.34	0.50	0.32	0.60	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	143	346	568	194	753	524
Future Volume (vph)	143	346	568	194	753	524
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.98
Satd. Flow (prot)	1789	1617	3544	1585	1628	3362
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.98
Satd. Flow (perm)	1789	1617	3544	1585	1628	3362
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	151	364	598	204	793	552
RTOR Reduction (vph)	0	43	0	121	0	0
Lane Group Flow (vph)	151	321	598	83	436	909
Heavy Vehicles (%)	2%	1%	3%	3%	2%	2%
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2
Permitted Phases	8	8		5		
Actuated Green, G (s)	14.6	63.8	25.8	25.8	49.2	49.2
Effective Green, g (s)	14.6	63.8	25.8	25.8	49.2	49.2
Actuated g/C Ratio	0.13	0.58	0.23	0.23	0.45	0.45
Clearance Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	237	937	831	371	728	1503
v/s Ratio Prot		0.15	c0.17		0.27	c0.27
v/s Ratio Perm	c0.08	0.05		0.05		
v/c Ratio	0.64	0.34	0.72	0.22	0.60	0.60
Uniform Delay, d1	45.2	12.1	38.8	34.0	23.0	23.0
Progression Factor	1.00	1.00	1.42	2.88	1.00	1.00
Incremental Delay, d2	5.5	0.2	2.4	0.2	3.6	1.8
Delay (s)	50.7	12.3	57.4	98.1	26.6	24.8
Level of Service	D	B	E	F	C	C
Approach Delay (s)	23.6		67.7			25.4
Approach LOS	C		E			C

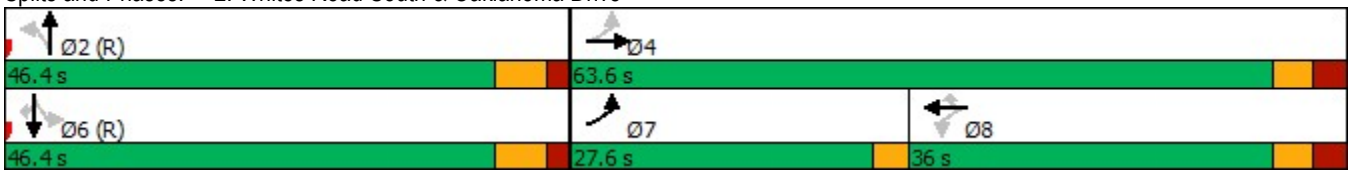
Intersection Summary			
HCM 2000 Control Delay	37.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

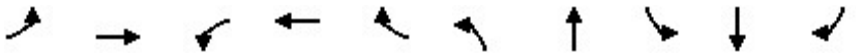
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	423	74	12	10	60	203	16	111	14	274	198	193
Future Volume (vph)	423	74	12	10	60	203	16	111	14	274	198	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	15.0		15.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	40.0			10.0			40.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979				0.850		0.983				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1706	1881	0	1659	1921	1601	1825	1855	0	1807	1902	1570
Flt Permitted	0.551			0.697			0.620			0.671		
Satd. Flow (perm)	989	1881	0	1217	1921	1601	1191	1855	0	1276	1902	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				218		6				208
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		78.3			208.1			259.8			200.0	
Travel Time (s)		5.6			15.0			15.6			12.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	0%	0%	10%	0%	2%	0%	2%	0%	1%	1%	4%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	455	80	13	11	65	218	17	119	15	295	213	208
Shared Lane Traffic (%)												
Lane Group Flow (vph)	455	93	0	11	65	218	17	134	0	295	213	208
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	20.0	20.0		20.0	20.0	20.0
Minimum Split (s)	9.5	36.0		36.0	36.0	36.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	27.6	63.6		36.0	36.0	36.0	46.4	46.4		46.4	46.4	46.4
Total Split (%)	25.1%	57.8%		32.7%	32.7%	32.7%	42.2%	42.2%		42.2%	42.2%	42.2%
Maximum Green (s)	24.6	57.4		29.8	29.8	29.8	40.1	40.1		40.1	40.1	40.1
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	0.0	2.9		2.9	2.9	2.9	2.1	2.1		2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		22.0		22.0	22.0	22.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	40.9	37.7		10.1	10.1	10.1	59.8	59.8		59.8	59.8	59.8
Actuated g/C Ratio	0.37	0.34		0.09	0.09	0.09	0.54	0.54		0.54	0.54	0.54
v/c Ratio	0.86	0.14		0.10	0.37	0.63	0.03	0.13		0.43	0.21	0.22
Control Delay	47.3	21.9		46.0	52.2	14.9	12.9	12.8		7.5	4.9	2.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	47.3	21.9		46.0	52.2	14.9	12.9	12.8		7.5	4.9	2.0
LOS	D	C		D	D	B	B	B		A	A	A
Approach Delay		43.0			24.3			12.8			5.1	
Approach LOS		D			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 40.7 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 79.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Whites Road South & Oaklahoma Drive

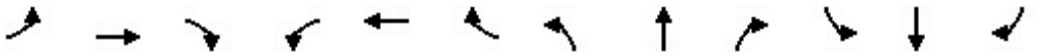




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	455	93	11	65	218	17	134	295	213	208
v/c Ratio	0.86	0.14	0.10	0.37	0.63	0.03	0.13	0.43	0.21	0.22
Control Delay	47.3	21.9	46.0	52.2	14.9	12.9	12.8	7.5	4.9	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.3	21.9	46.0	52.2	14.9	12.9	12.8	7.5	4.9	2.0
Queue Length 50th (m)	84.0	12.2	2.2	13.5	0.0	1.6	12.6	15.6	10.9	2.4
Queue Length 95th (m)	#117.6	22.0	7.4	25.6	20.8	5.4	24.9	21.0	15.9	5.9
Internal Link Dist (m)		54.3		184.1			235.8		176.0	
Turn Bay Length (m)	20.0		15.0		15.0	20.0		20.0		
Base Capacity (vph)	528	986	329	520	592	647	1011	694	1034	948
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.09	0.03	0.13	0.37	0.03	0.13	0.43	0.21	0.22

Intersection Summary

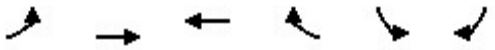
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	423	74	12	10	60	203	16	111	14	274	198	193
Future Volume (vph)	423	74	12	10	60	203	16	111	14	274	198	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1706	1881		1659	1921	1601	1825	1856		1807	1902	1570
Flt Permitted	0.55	1.00		0.70	1.00	1.00	0.62	1.00		0.67	1.00	1.00
Satd. Flow (perm)	989	1881		1217	1921	1601	1191	1856		1277	1902	1570
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	455	80	13	11	65	218	17	119	15	295	213	208
RTOR Reduction (vph)	0	7	0	0	0	198	0	3	0	0	0	95
Lane Group Flow (vph)	455	86	0	11	65	20	17	131	0	295	213	113
Heavy Vehicles (%)	4%	0%	0%	10%	0%	2%	0%	2%	0%	1%	1%	4%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	37.7	37.7		10.1	10.1	10.1	59.8	59.8		59.8	59.8	59.8
Effective Green, g (s)	37.7	37.7		10.1	10.1	10.1	59.8	59.8		59.8	59.8	59.8
Actuated g/C Ratio	0.34	0.34		0.09	0.09	0.09	0.54	0.54		0.54	0.54	0.54
Clearance Time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	499	644		111	176	147	647	1008		694	1033	853
v/s Ratio Prot	c0.20	0.05			0.03			0.07			0.11	
v/s Ratio Perm	c0.11			0.01		0.01	0.01			c0.23		0.07
v/c Ratio	0.91	0.13		0.10	0.37	0.14	0.03	0.13		0.43	0.21	0.13
Uniform Delay, d1	32.7	24.9		45.8	47.0	45.9	11.6	12.3		14.9	12.9	12.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.37	0.33	0.78
Incremental Delay, d2	20.9	0.1		0.4	1.3	0.4	0.1	0.3		1.6	0.4	0.3
Delay (s)	53.6	25.0		46.2	48.3	46.4	11.7	12.6		7.1	4.6	9.9
Level of Service	D	C		D	D	D	B	B		A	A	A
Approach Delay (s)		48.7			46.8			12.5			7.2	
Approach LOS		D			D			B			A	

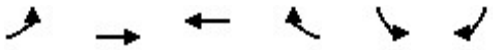
Intersection Summary			
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	509	270	0	0	0
Future Volume (vph)	0	509	270	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1883	1883	0	1883	0
Flt Permitted						
Satd. Flow (perm)	0	1883	1883	0	1883	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		466.2	78.3		125.8	
Travel Time (s)		33.6	5.6		9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	553	293	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	553	293	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.1%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	509	270	0	0	0
Future Volume (Veh/h)	0	509	270	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	553	293	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			78			
pX, platoon unblocked	0.97				0.97	0.97
vC, conflicting volume	293				846	293
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	260				828	260
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1270				332	758

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	553	293	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1270	1700	1700
Volume to Capacity	0.00	0.17	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	30.1%	ICU Level of Service	A
Analysis Period (min)	15		

Network Totals

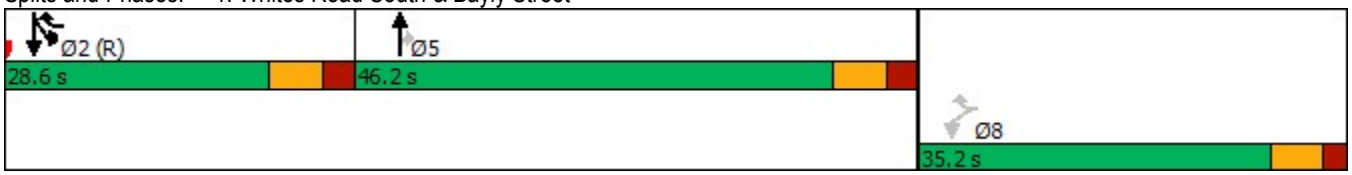
Number of Intersections	3
Total Delay (hr)	33
Stops (#)	2612
Average Speed (km/hr	21
Total Travel Time (hr)	53
Distance Traveled (km)	1144
Fuel Consumed (l)	273
Fuel Economy (km/l)	4.2
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	52
Performance Index	40.3

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	111	286	604	77	393	557
Future Volume (vph)	111	286	604	77	393	557
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		30.0	70.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	0.993
Satd. Flow (prot)	1722	1570	3510	1601	1612	3371
Flt Permitted	0.950				0.950	0.993
Satd. Flow (perm)	1722	1570	3510	1601	1612	3371
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		74		61		
Link Speed (k/h)	60		60			60
Link Distance (m)	376.4		200.0			221.2
Travel Time (s)	22.6		12.0			13.3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	4%	4%	2%	3%	3%
Adj. Flow (vph)	132	340	719	92	468	663
Shared Lane Traffic (%)					22%	
Lane Group Flow (vph)	132	340	719	92	365	766
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	8	8		5		
Detector Phase	8	2	5	5	2	2
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	27.0	39.0	39.0	27.0	27.0
Total Split (s)	35.2	28.6	46.2	46.2	28.6	28.6
Total Split (%)	32.0%	26.0%	42.0%	42.0%	26.0%	26.0%
Maximum Green (s)	28.8	21.6	39.2	39.2	21.6	21.6
Yellow Time (s)	4.2	4.4	4.4	4.4	4.4	4.4
All-Red Time (s)	2.2	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max
Walk Time (s)	7.0	5.0	7.0	7.0	5.0	5.0
Flash Dont Walk (s)	18.0	5.0	25.0	25.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	13.8	66.4	29.6	29.6	46.2	46.2
Actuated g/C Ratio	0.13	0.60	0.27	0.27	0.42	0.42
v/c Ratio	0.61	0.35	0.76	0.19	0.54	0.54
Control Delay	57.2	10.4	35.4	8.4	30.3	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	10.4	35.4	8.4	30.3	27.7
LOS	E	B	D	A	C	C
Approach Delay	23.5		32.3			28.5
Approach LOS	C		C			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 24.2 (22%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 28.8		Intersection LOS: C	
Intersection Capacity Utilization 57.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Whites Road South & Bayly Street



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	132	340	719	92	365	766
v/c Ratio	0.61	0.35	0.76	0.19	0.54	0.54
Control Delay	57.2	10.4	35.4	8.4	30.3	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	10.4	35.4	8.4	30.3	27.7
Queue Length 50th (m)	27.2	25.9	76.1	1.7	63.5	66.5
Queue Length 95th (m)	41.0	45.3	75.3	5.9	104.1	94.3
Internal Link Dist (m)	352.4		176.0			197.2
Turn Bay Length (m)				30.0	70.0	
Base Capacity (vph)	450	976	1250	609	676	1415
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.35	0.58	0.15	0.54	0.54

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	111	286	604	77	393	557
Future Volume (vph)	111	286	604	77	393	557
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.99
Satd. Flow (prot)	1722	1570	3510	1601	1612	3372
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.99
Satd. Flow (perm)	1722	1570	3510	1601	1612	3372
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	132	340	719	92	468	663
RTOR Reduction (vph)	0	34	0	45	0	0
Lane Group Flow (vph)	132	306	719	47	365	766
Heavy Vehicles (%)	6%	4%	4%	2%	3%	3%
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2
Permitted Phases	8	8		5		
Actuated Green, G (s)	13.8	60.0	29.6	29.6	46.2	46.2
Effective Green, g (s)	13.8	60.0	29.6	29.6	46.2	46.2
Actuated g/C Ratio	0.13	0.55	0.27	0.27	0.42	0.42
Clearance Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	216	856	944	430	677	1416
v/s Ratio Prot		0.15	c0.20		0.23	c0.23
v/s Ratio Perm	c0.08	0.04		0.03		
v/c Ratio	0.61	0.36	0.76	0.11	0.54	0.54
Uniform Delay, d1	45.6	14.1	37.0	30.3	23.9	23.9
Progression Factor	1.00	1.00	0.83	0.65	1.00	1.00
Incremental Delay, d2	5.0	0.3	3.4	0.1	3.1	1.5
Delay (s)	50.6	14.4	34.0	19.8	27.0	25.4
Level of Service	D	B	C	B	C	C
Approach Delay (s)	24.5		32.3			25.9
Approach LOS	C		C			C

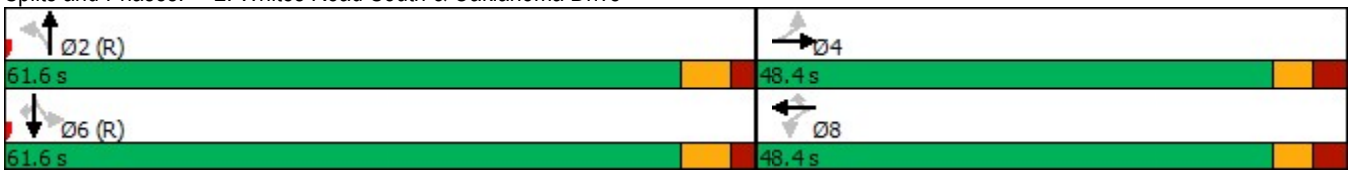
Intersection Summary			
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

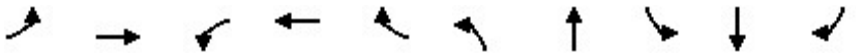
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	46	11	7	57	312	18	138	26	194	90	376
Future Volume (vph)	218	46	11	7	57	312	18	138	26	194	90	376
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		15.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	30.0			10.0			40.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970				0.850		0.976				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1817	0	1825	1921	1601	1722	1859	0	1755	1762	1601
Flt Permitted	0.711			0.711			0.685			0.631		
Satd. Flow (perm)	1241	1817	0	1366	1921	1601	1241	1859	0	1166	1762	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				385		12				464
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		199.5			208.1			259.8			200.0	
Travel Time (s)		14.4			15.0			15.6			12.0	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	7%	0%	13%	0%	0%	2%	6%	1%	0%	4%	9%	2%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	269	57	14	9	70	385	22	170	32	240	111	464
Shared Lane Traffic (%)												
Lane Group Flow (vph)	269	71	0	9	70	385	22	202	0	240	111	464
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	36.0	36.0		36.0	36.0	36.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	48.4	48.4		48.4	48.4	48.4	61.6	61.6		61.6	61.6	61.6
Total Split (%)	44.0%	44.0%		44.0%	44.0%	44.0%	56.0%	56.0%		56.0%	56.0%	56.0%
Maximum Green (s)	42.2	42.2		42.2	42.2	42.2	55.3	55.3		55.3	55.3	55.3
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	2.9	2.9		2.9	2.9	2.9	2.1	2.1		2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	22.0	22.0		22.0	22.0	22.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	29.6	29.6		29.6	29.6	29.6	67.9	67.9		67.9	67.9	67.9
Actuated g/C Ratio	0.27	0.27		0.27	0.27	0.27	0.62	0.62		0.62	0.62	0.62
v/c Ratio	0.81	0.14		0.02	0.14	0.54	0.03	0.18		0.33	0.10	0.40
Control Delay	54.9	23.1		25.0	28.3	5.7	11.0	10.4		19.5	17.7	9.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	54.9	23.1		25.0	28.3	5.7	11.0	10.4		19.5	17.7	9.3
LOS	D	C		C	C	A	B	B		B	B	A
Approach Delay		48.3			9.5			10.5			13.4	
Approach LOS		D			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 83.6 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 18.5		Intersection LOS: B	
Intersection Capacity Utilization 55.8%		ICU Level of Service B	
Analysis Period (min) 15			

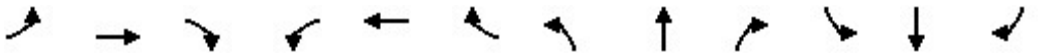
Splits and Phases: 2: Whites Road South & Oaklahoma Drive





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	269	71	9	70	385	22	202	240	111	464
v/c Ratio	0.81	0.14	0.02	0.14	0.54	0.03	0.18	0.33	0.10	0.40
Control Delay	54.9	23.1	25.0	28.3	5.7	11.0	10.4	19.5	17.7	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.9	23.1	25.0	28.3	5.7	11.0	10.4	19.5	17.7	9.3
Queue Length 50th (m)	53.9	9.4	1.4	11.4	0.0	1.7	16.2	14.6	6.8	2.2
Queue Length 95th (m)	63.8	15.6	4.1	17.4	10.9	5.5	29.9	51.3	27.6	61.8
Internal Link Dist (m)		175.5		184.1			235.8		176.0	
Turn Bay Length (m)	30.0		15.0		15.0	20.0		20.0		
Base Capacity (vph)	476	705	524	736	851	765	1152	719	1087	1165
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.10	0.02	0.10	0.45	0.03	0.18	0.33	0.10	0.40

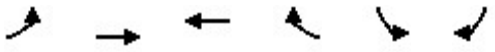
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	46	11	7	57	312	18	138	26	194	90	376
Future Volume (vph)	218	46	11	7	57	312	18	138	26	194	90	376
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1658	1818		1825	1921	1601	1722	1860		1755	1762	1601
Flt Permitted	0.71	1.00		0.71	1.00	1.00	0.69	1.00		0.63	1.00	1.00
Satd. Flow (perm)	1242	1818		1365	1921	1601	1242	1860		1166	1762	1601
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	269	57	14	9	70	385	22	170	32	240	111	464
RTOR Reduction (vph)	0	10	0	0	0	281	0	5	0	0	0	178
Lane Group Flow (vph)	269	61	0	9	70	104	22	197	0	240	111	286
Heavy Vehicles (%)	7%	0%	13%	0%	0%	2%	6%	1%	0%	4%	9%	2%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	29.6	29.6		29.6	29.6	29.6	67.9	67.9		67.9	67.9	67.9
Effective Green, g (s)	29.6	29.6		29.6	29.6	29.6	67.9	67.9		67.9	67.9	67.9
Actuated g/C Ratio	0.27	0.27		0.27	0.27	0.27	0.62	0.62		0.62	0.62	0.62
Clearance Time (s)	6.2	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	334	489		367	516	430	766	1148		719	1087	988
v/s Ratio Prot		0.03			0.04			0.11			0.06	
v/s Ratio Perm	c0.22			0.01		0.06	0.02			c0.21		0.18
v/c Ratio	0.81	0.13		0.02	0.14	0.24	0.03	0.17		0.33	0.10	0.29
Uniform Delay, d1	37.5	30.4		29.6	30.5	31.4	8.2	9.0		10.1	8.6	9.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.50	1.67	6.49
Incremental Delay, d2	13.2	0.1		0.0	0.1	0.3	0.1	0.3		1.1	0.2	0.7
Delay (s)	50.7	30.5		29.6	30.6	31.7	8.3	9.3		16.3	14.5	64.3
Level of Service	D	C		C	C	C	A	A		B	B	E
Approach Delay (s)		46.5			31.5			9.2			43.4	
Approach LOS		D			C			A			D	

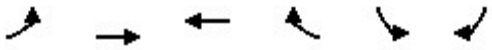
Intersection Summary			
HCM 2000 Control Delay	36.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	225	434	18	51	5
Future Volume (vph)	2	225	434	18	51	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.989	
Flt Protected					0.956	
Satd. Flow (prot)	0	1883	1874	0	1781	0
Flt Permitted					0.956	
Satd. Flow (perm)	0	1883	1874	0	1781	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		466.2	199.5		125.8	
Travel Time (s)		33.6	14.4		9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	245	472	20	55	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	247	492	0	60	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	225	434	18	51	5
Future Volume (Veh/h)	2	225	434	18	51	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	245	472	20	55	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			200			
pX, platoon unblocked						
vC, conflicting volume	492				731	482
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	492				731	482
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				86	99
cM capacity (veh/h)	1071				388	584

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	247	492	60
Volume Left	2	0	55
Volume Right	0	20	5
cSH	1071	1700	399
Volume to Capacity	0.00	0.29	0.15
Queue Length 95th (m)	0.0	0.0	4.0
Control Delay (s)	0.1	0.0	15.6
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	15.6
Approach LOS			C

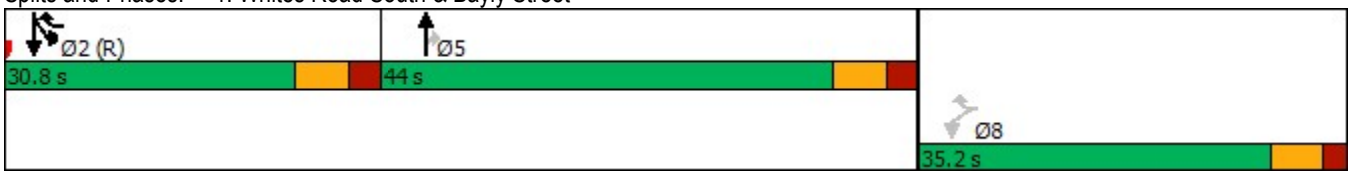
Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	152	346	589	202	753	562
Future Volume (vph)	152	346	589	202	753	562
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		30.0	70.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	0.982
Satd. Flow (prot)	1789	1617	3544	1585	1628	3366
Flt Permitted	0.950				0.950	0.982
Satd. Flow (perm)	1789	1617	3544	1585	1628	3366
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		95		159		
Link Speed (k/h)	60		60			60
Link Distance (m)	376.4		200.0			221.2
Travel Time (s)	22.6		12.0			13.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	3%	3%	2%	2%
Adj. Flow (vph)	160	364	620	213	793	592
Shared Lane Traffic (%)					43%	
Lane Group Flow (vph)	160	364	620	213	452	933
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	8	8		5		
Detector Phase	8	2	5	5	2	2
Switch Phase						
Minimum Initial (s)	8.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	27.0	39.0	39.0	27.0	27.0
Total Split (s)	35.2	30.8	44.0	44.0	30.8	30.8
Total Split (%)	32.0%	28.0%	40.0%	40.0%	28.0%	28.0%
Maximum Green (s)	28.8	23.8	37.0	37.0	23.8	23.8
Yellow Time (s)	4.2	4.4	4.4	4.4	4.4	4.4
All-Red Time (s)	2.2	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max
Walk Time (s)	7.0	5.0	7.0	7.0	5.0	5.0
Flash Dont Walk (s)	18.0	5.0	25.0	25.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	15.2	69.3	26.7	26.7	47.7	47.7
Actuated g/C Ratio	0.14	0.63	0.24	0.24	0.43	0.43
v/c Ratio	0.65	0.35	0.72	0.42	0.64	0.64
Control Delay	56.7	8.7	59.1	28.9	32.3	28.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.7	8.7	59.1	28.9	32.3	28.9
LOS	E	A	E	C	C	C
Approach Delay	23.3		51.4			30.0
Approach LOS	C		D			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 33 (30%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 35.2		Intersection LOS: D	
Intersection Capacity Utilization 67.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Whites Road South & Bayly Street



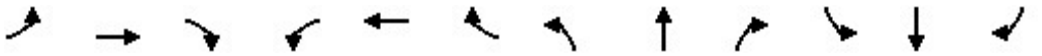
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	160	364	620	213	452	933
v/c Ratio	0.65	0.35	0.72	0.42	0.64	0.64
Control Delay	56.7	8.7	59.1	28.9	32.3	28.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.7	8.7	59.1	28.9	32.3	28.9
Queue Length 50th (m)	33.0	23.6	71.7	20.2	81.0	83.7
Queue Length 95th (m)	51.3	48.4	m85.1	m32.8	#161.7	#138.7
Internal Link Dist (m)	352.4		176.0			197.2
Turn Bay Length (m)				30.0	70.0	
Base Capacity (vph)	468	1053	1192	638	706	1460
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.35	0.52	0.33	0.64	0.64

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	152	346	589	202	753	562
Future Volume (vph)	152	346	589	202	753	562
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.91	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.98
Satd. Flow (prot)	1789	1617	3544	1585	1628	3366
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.98
Satd. Flow (perm)	1789	1617	3544	1585	1628	3366
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	160	364	620	213	793	592
RTOR Reduction (vph)	0	41	0	120	0	0
Lane Group Flow (vph)	160	323	620	93	452	933
Heavy Vehicles (%)	2%	1%	3%	3%	2%	2%
Turn Type	Perm	pm+ov	NA	Perm	Split	NA
Protected Phases		2	5		2	2
Permitted Phases	8	8		5		
Actuated Green, G (s)	15.2	62.9	26.7	26.7	47.7	47.7
Effective Green, g (s)	15.2	62.9	26.7	26.7	47.7	47.7
Actuated g/C Ratio	0.14	0.57	0.24	0.24	0.43	0.43
Clearance Time (s)	6.4	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	247	924	860	384	705	1459
v/s Ratio Prot		0.15	c0.17		c0.28	0.28
v/s Ratio Perm	c0.09	0.05		0.06		
v/c Ratio	0.65	0.35	0.72	0.24	0.64	0.64
Uniform Delay, d1	44.9	12.6	38.2	33.5	24.4	24.4
Progression Factor	1.00	1.00	1.46	2.86	1.00	1.00
Incremental Delay, d2	5.7	0.2	2.3	0.3	4.4	2.2
Delay (s)	50.6	12.8	58.2	96.2	28.9	26.6
Level of Service	D	B	E	F	C	C
Approach Delay (s)	24.4		67.9			27.3
Approach LOS	C		E			C

Intersection Summary			
HCM 2000 Control Delay	39.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

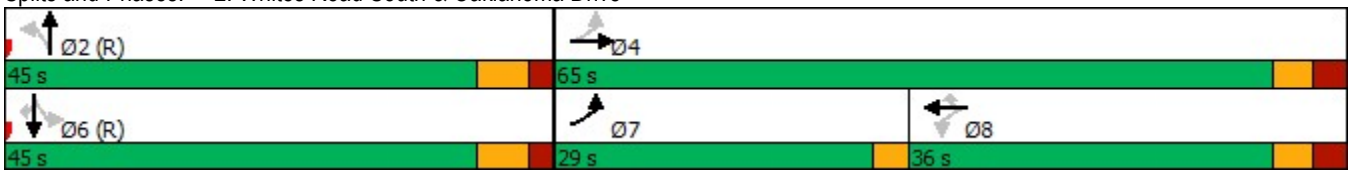


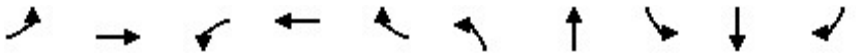
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	451	78	13	10	63	203	19	111	14	274	198	240
Future Volume (vph)	451	78	13	10	63	203	19	111	14	274	198	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		15.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	30.0			10.0			40.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979				0.850		0.983				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1706	1881	0	1659	1921	1601	1825	1855	0	1807	1902	1570
Flt Permitted	0.551			0.694			0.618			0.671		
Satd. Flow (perm)	989	1881	0	1212	1921	1601	1187	1855	0	1276	1902	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				218		6				258
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		199.5			208.1			259.8			200.0	
Travel Time (s)		14.4			15.0			15.6			12.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	0%	0%	10%	0%	2%	0%	2%	0%	1%	1%	4%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	485	84	14	11	68	218	20	119	15	295	213	258
Shared Lane Traffic (%)												
Lane Group Flow (vph)	485	98	0	11	68	218	20	134	0	295	213	258
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	20.0	20.0		20.0	20.0	20.0
Minimum Split (s)	9.5	36.0		36.0	36.0	36.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	29.0	65.0		36.0	36.0	36.0	45.0	45.0		45.0	45.0	45.0
Total Split (%)	26.4%	59.1%		32.7%	32.7%	32.7%	40.9%	40.9%		40.9%	40.9%	40.9%
Maximum Green (s)	26.0	58.8		29.8	29.8	29.8	38.7	38.7		38.7	38.7	38.7
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	0.0	2.9		2.9	2.9	2.9	2.1	2.1		2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		22.0		22.0	22.0	22.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	42.4	39.2		10.2	10.2	10.2	58.3	58.3		58.3	58.3	58.3
Actuated g/C Ratio	0.39	0.36		0.09	0.09	0.09	0.53	0.53		0.53	0.53	0.53
v/c Ratio	0.88	0.14		0.10	0.38	0.63	0.03	0.14		0.44	0.21	0.27
Control Delay	48.2	21.0		45.9	52.5	14.8	13.7	13.5		6.9	4.5	2.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	48.2	21.0		45.9	52.5	14.8	13.7	13.5		6.9	4.5	2.0
LOS	D	C		D	D	B	B	B		A	A	A
Approach Delay		43.6			24.6			13.5			4.6	
Approach LOS		D			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 40.7 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 21.3		Intersection LOS: C	
Intersection Capacity Utilization 80.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Whites Road South & Oaklahoma Drive

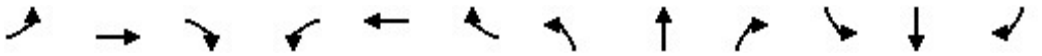




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	485	98	11	68	218	20	134	295	213	258
v/c Ratio	0.88	0.14	0.10	0.38	0.63	0.03	0.14	0.44	0.21	0.27
Control Delay	48.2	21.0	45.9	52.5	14.8	13.7	13.5	6.9	4.5	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	21.0	45.9	52.5	14.8	13.7	13.5	6.9	4.5	2.0
Queue Length 50th (m)	89.5	12.5	2.2	14.1	0.0	1.9	13.0	14.9	10.8	3.2
Queue Length 95th (m)	#128.4	22.2	7.4	26.5	20.8	6.3	25.6	21.0	15.5	6.7
Internal Link Dist (m)		175.5		184.1			235.8		176.0	
Turn Bay Length (m)	30.0		15.0		15.0	20.0		20.0		
Base Capacity (vph)	550	1011	328	520	592	629	986	676	1008	953
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.10	0.03	0.13	0.37	0.03	0.14	0.44	0.21	0.27

Intersection Summary

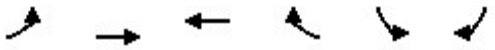
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	451	78	13	10	63	203	19	111	14	274	198	240
Future Volume (vph)	451	78	13	10	63	203	19	111	14	274	198	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1706	1880		1659	1921	1601	1825	1856		1807	1902	1570
Flt Permitted	0.55	1.00		0.69	1.00	1.00	0.62	1.00		0.67	1.00	1.00
Satd. Flow (perm)	989	1880		1211	1921	1601	1187	1856		1277	1902	1570
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	485	84	14	11	68	218	20	119	15	295	213	258
RTOR Reduction (vph)	0	8	0	0	0	198	0	3	0	0	0	121
Lane Group Flow (vph)	485	90	0	11	68	20	20	131	0	295	213	137
Heavy Vehicles (%)	4%	0%	0%	10%	0%	2%	0%	2%	0%	1%	1%	4%
Bus Blockages (#/hr)	7	0	12	0	0	0	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	39.2	39.2		10.2	10.2	10.2	58.3	58.3		58.3	58.3	58.3
Effective Green, g (s)	39.2	39.2		10.2	10.2	10.2	58.3	58.3		58.3	58.3	58.3
Actuated g/C Ratio	0.36	0.36		0.09	0.09	0.09	0.53	0.53		0.53	0.53	0.53
Clearance Time (s)	3.0	6.2		6.2	6.2	6.2	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	521	669		112	178	148	629	983		676	1008	832
v/s Ratio Prot	c0.22	0.05			0.04			0.07			0.11	
v/s Ratio Perm	c0.11			0.01		0.01	0.02			c0.23		0.09
v/c Ratio	0.93	0.13		0.10	0.38	0.14	0.03	0.13		0.44	0.21	0.16
Uniform Delay, d1	32.2	23.9		45.7	46.9	45.9	12.4	13.1		15.8	13.7	13.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.31	0.28	0.74
Incremental Delay, d2	23.5	0.1		0.4	1.4	0.4	0.1	0.3		1.7	0.4	0.4
Delay (s)	55.7	24.0		46.1	48.3	46.3	12.5	13.4		6.5	4.3	10.2
Level of Service	E	C		D	D	D	B	B		A	A	B
Approach Delay (s)		50.4			46.7			13.2			7.2	
Approach LOS		D			D			B			A	

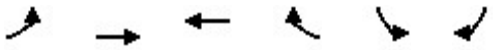
Intersection Summary			
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	509	270	53	34	3
Future Volume (vph)	5	509	270	53	34	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.978		0.990	
Flt Protected					0.956	
Satd. Flow (prot)	0	1883	1842	0	1783	0
Flt Permitted					0.956	
Satd. Flow (perm)	0	1883	1842	0	1783	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		466.2	199.5		125.8	
Travel Time (s)		33.6	14.4		9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	553	293	58	37	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	558	351	0	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.8%		ICU Level of Service A	
Analysis Period (min) 15			



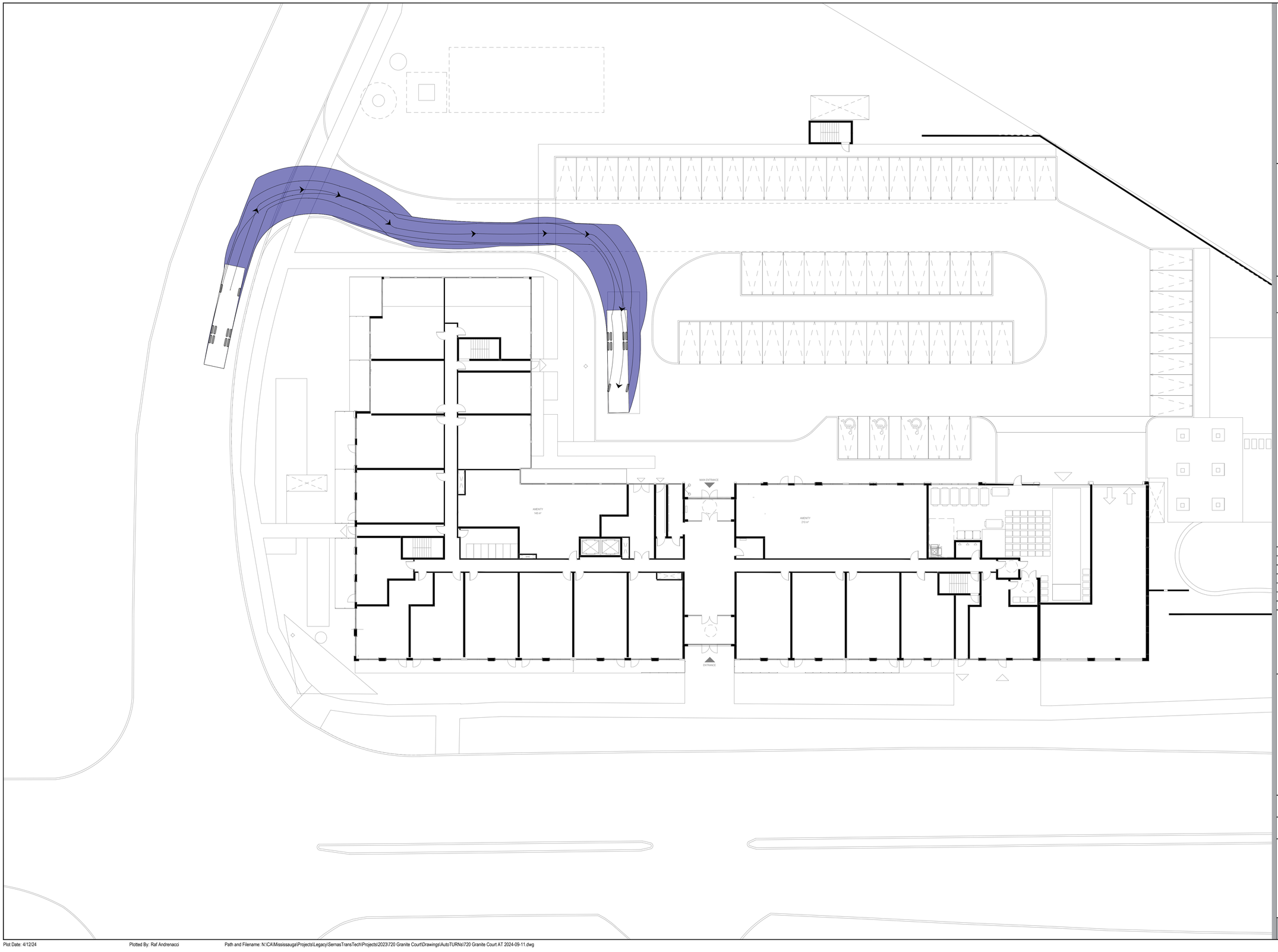
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	509	270	53	34	3
Future Volume (Veh/h)	5	509	270	53	34	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	553	293	58	37	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			200			
pX, platoon unblocked	1.00				1.00	1.00
vC, conflicting volume	351				885	322
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	345				882	316
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				88	100
cM capacity (veh/h)	1208				314	721

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	558	351	40
Volume Left	5	0	37
Volume Right	0	58	3
cSH	1208	1700	328
Volume to Capacity	0.00	0.21	0.12
Queue Length 95th (m)	0.1	0.0	3.1
Control Delay (s)	0.1	0.0	17.5
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	17.5
Approach LOS			C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix F

AutoTURN Circulation Review



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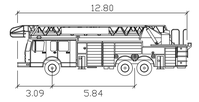


Aerial Fire

	meters
Width	2.54
Track	2.54
Lock to Lock Time	6.0
Steering Angle	37.0

No.	Issue	Checked	Approved	Date
2	Second Submission	W.M	W.M	9/11/24
1	First Submission	W.M	W.M	10/28/21

Author	R.A	Designer	R.A
Drafting Check	W.M	Design Check	W.M
Project Manager	W.M	Project Director	W.M

Client

1334281 ONTARIO LTD.

Project

720 Granite Court

Date	Scale
September 11, 2024	NTS

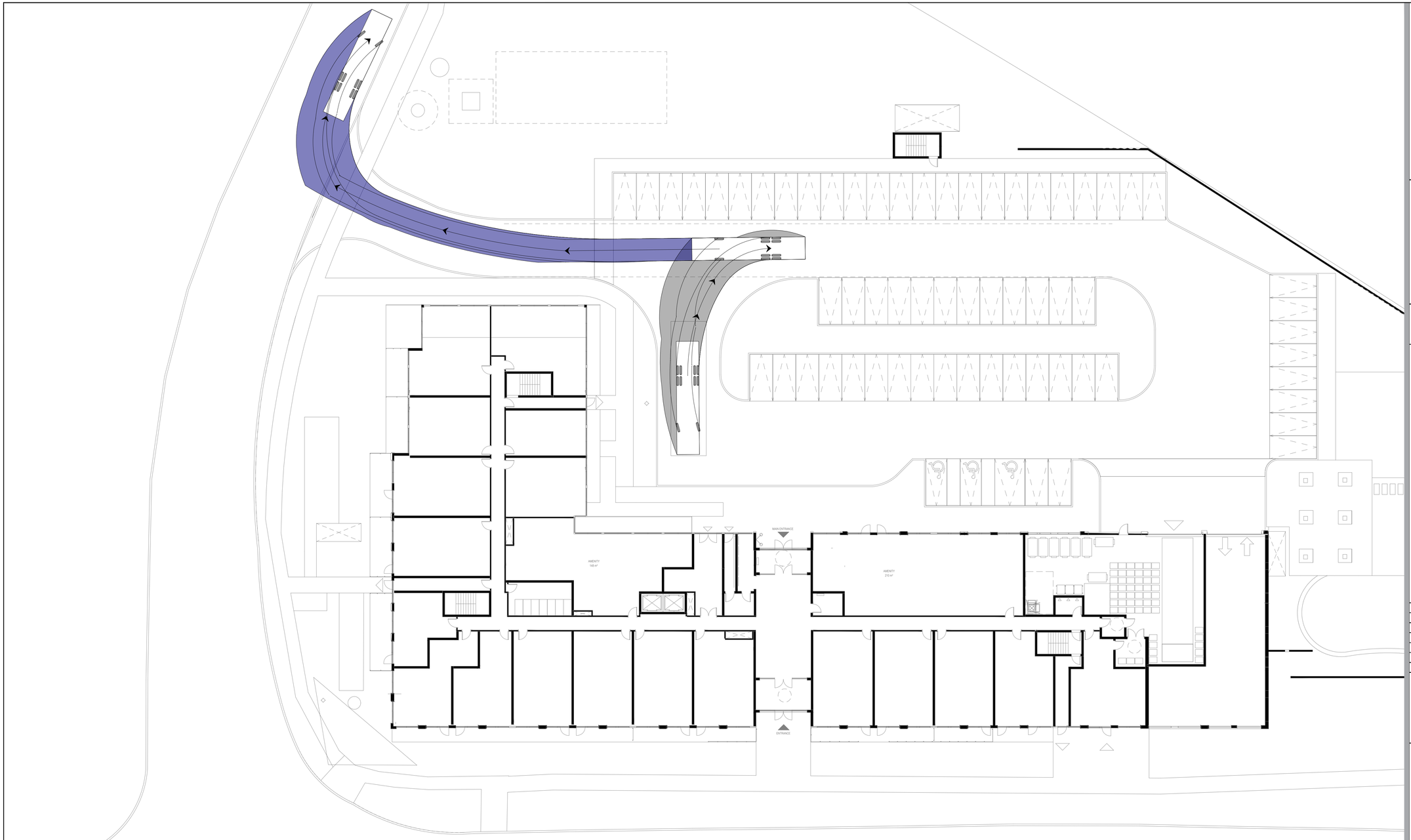
Project No.
-

Title

VEHICLE MANEUVERING DIAGRAM - EMERGENCY VEHICLE (INBOUND)

Size
ANSI D

Sheet No.
AT-101



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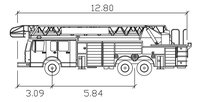

Aerial Fire

	meters
Width	2.54
Track	2.54
Lock to Lock Time	6.0
Steering Angle	37.0

No.	Issue	Checked	Approved	Date
2	Second Submission	W.M	W.M	9/11/24
1	First Submission	W.M	W.M	10/28/21

Author	R.A	Designer	R.A
Drafting Check	W.M	Design Check	W.M
Project Manager	W.M	Project Director	W.M

Client

1334281 ONTARIO LTD.

Project

720 Granite Court

Date	Scale
September 11, 2024	NTS

Project No.
-

Title

VEHICLE MANEUVERING DIAGRAM - EMERGENCY VEHICLE (OUTBOUND)

Size
ANSI D

Sheet No.
AT-102

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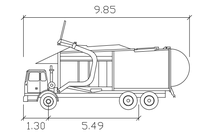

Durham Front-end Garbage
meters

Width	: 2.77
Track	: 2.60
Lock to Lock Time	6.0
Steering Angle	: 28.5

No.	Issue	Checked	Approved	Date
2	Second Submission	W.M	W.M	9/11/24
1	First Submission	W.M	W.M	10/28/21

Author	R.A	Designer	R.A
Drafting Check	W.M	Design Check	W.M
Project Manager	W.M	Project Director	W.M

Client

1334281 ONTARIO LTD.

Project

720 Granite Court

Date	Scale
September 11, 2024	NTS

Project No.
-

Title

VEHICLE MANEUVERING DIAGRAM - GARBAGE TRUCK (INBOUND)

Size
ANSI D

Sheet No.
AT-103

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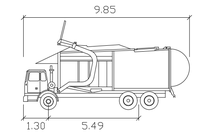


Durham Front-end Garbage
meters

Width	: 2.77
Track	: 2.60
Lock to Lock Time	6.0
Steering Angle	: 28.5

No.	Issue	Checked	Approved	Date
2	Second Submission	W.M	W.M	9/11/24
1	First Submission	W.M	W.M	10/28/21

Author	R.A	Designer	R.A
Drafting Check	W.M	Design Check	W.M
Project Manager	W.M	Project Director	W.M

Client

1334281 ONTARIO LTD.

Project

720 Granite Court

Date: September 11, 2024
Scale: NTS

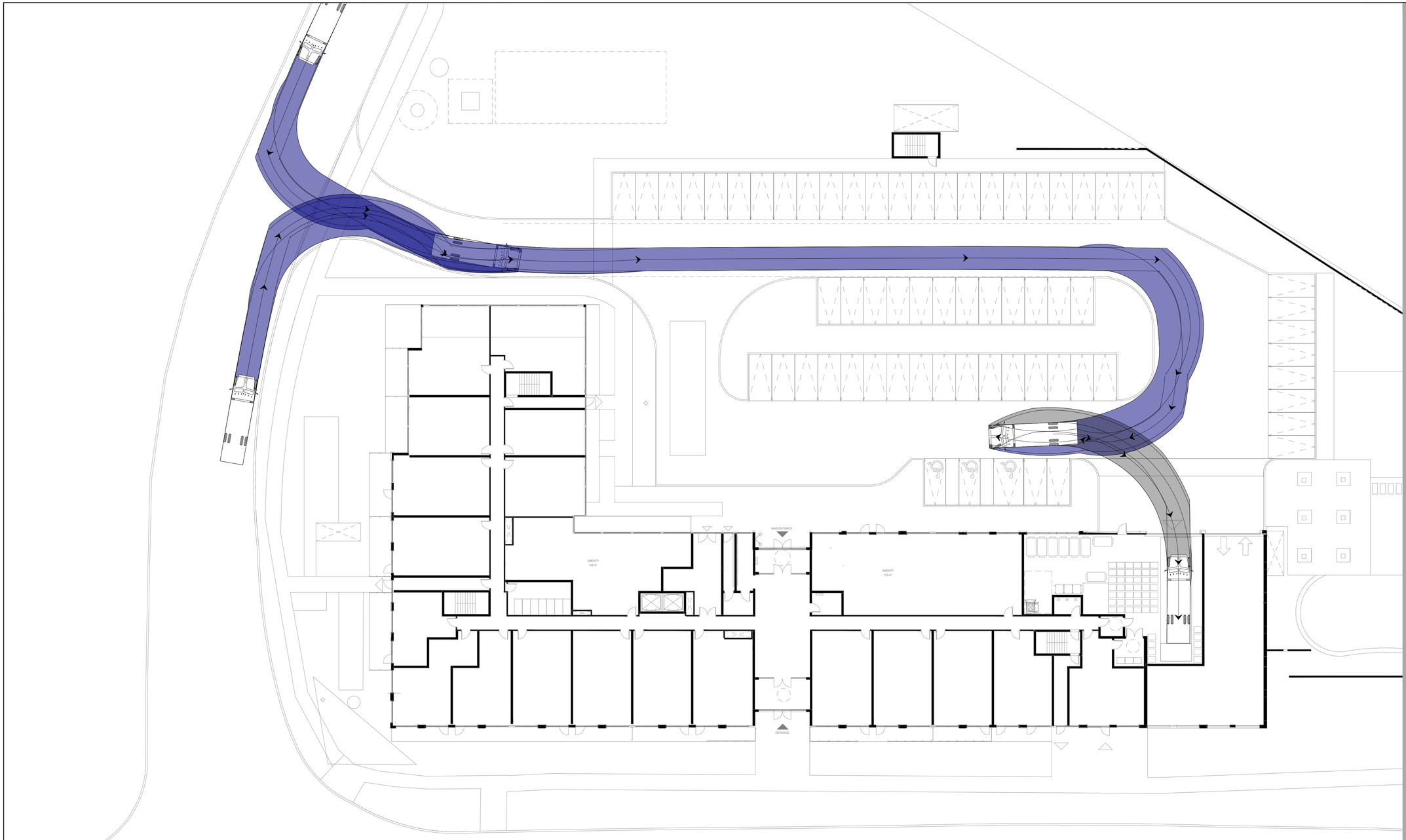
Project No.: -

Title

VEHICLE MANEUVERING DIAGRAM - GARBAGE TRUCK (OUTBOUND)

Size: ANSI D

Sheet No.: AT-104



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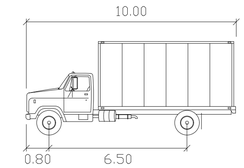


MSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	6.0
Steering Angle	: 40.2

No.	Issue	Checked	Approved	Date
2	Second Submission	W.M	W.M	9/11/24
1	First Submission	W.M	W.M	10/28/21

Author	R.A	Designer	R.A
Drafting Check	W.M	Design Check	W.M
Project Manager	W.M	Project Director	W.M

Client

1334281 ONTARIO LTD.

Project

720 Granite Court

Date: September 11, 2024

Scale: NTS

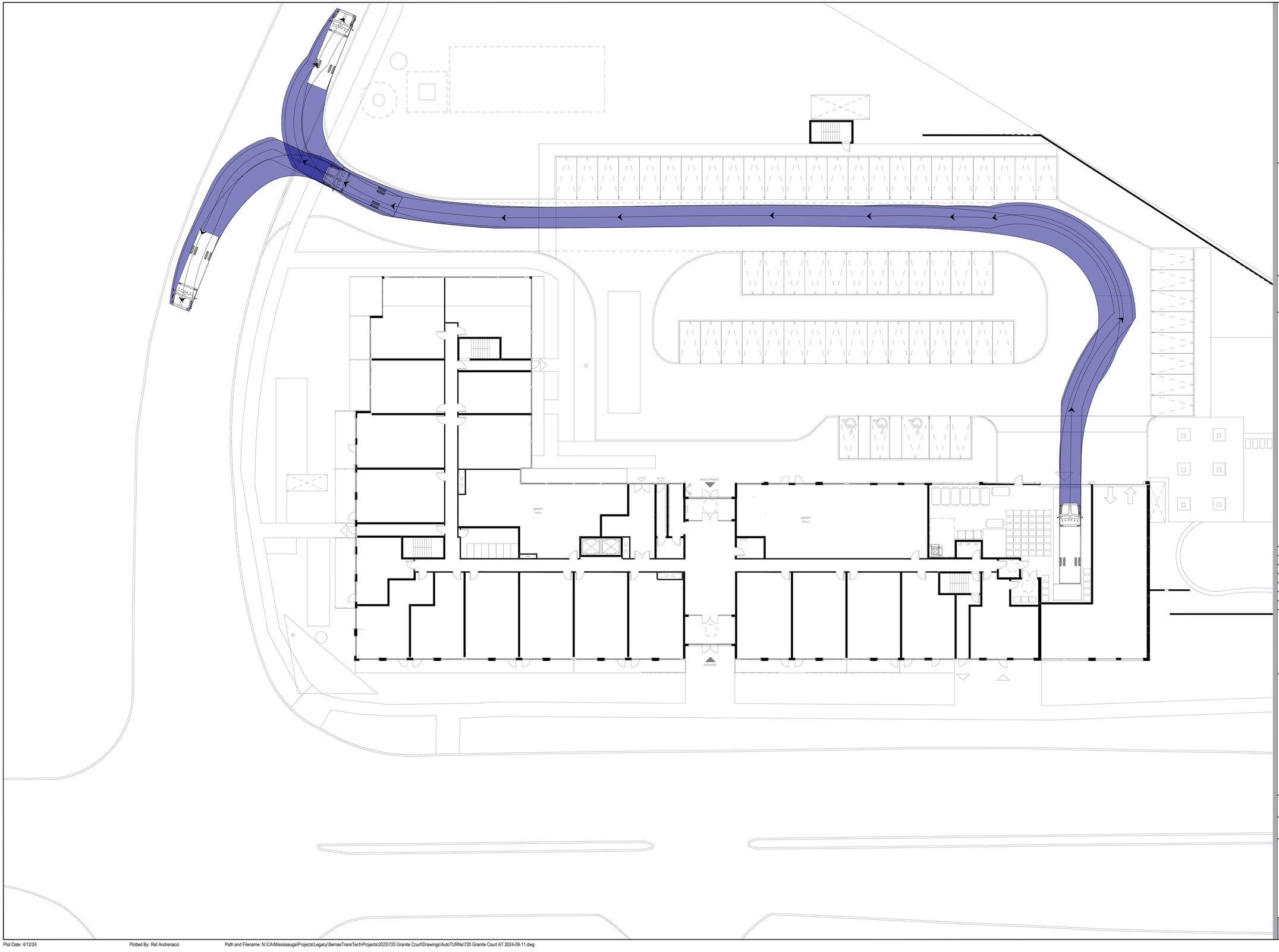
Project No.: -

Title

VEHICLE MANEUVERING DIAGRAM - MSU TRUCK (INBOUND)

Size: ANSI D

Sheet No.: AT-105



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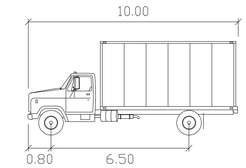

MSU

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Width	: 2.60
Track	: 2.60
Lock to Lock Time	6.0
Steering Angle	: 40.2

No.	Issue	Checked	Approved	Date
2	Second Submission	W.M	W.M	9/11/24
1	First Submission	W.M	W.M	10/28/21

Author	R.A	Designer	R.A
Drafting Check	W.M	Design Check	W.M
Project Manager	W.M	Project Director	W.M

Client

1334281 ONTARIO LTD.

Project

720 Granite Court

Date	Scale
September 11, 2024	NTS

Project No.
-

Title

VEHICLE MANEUVERING DIAGRAM - MSU TRUCK (OUTBOUND)

Size
ANSI D

Sheet No.
AT-106

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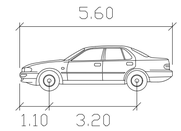

P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

No.	Issue	Checked	Approved	Date
2	Second Submission	W.M	W.M	9/11/24
1	First Submission	W.M	W.M	10/28/21

Author	R.A	Designer	R.A
Drafting Check	W.M	Design Check	W.M
Project Manager	W.M	Project Director	W.M

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1334281 ONTARIO LTD.

Project

720 Granite Court

Date	Scale
September 11, 2024	NTS

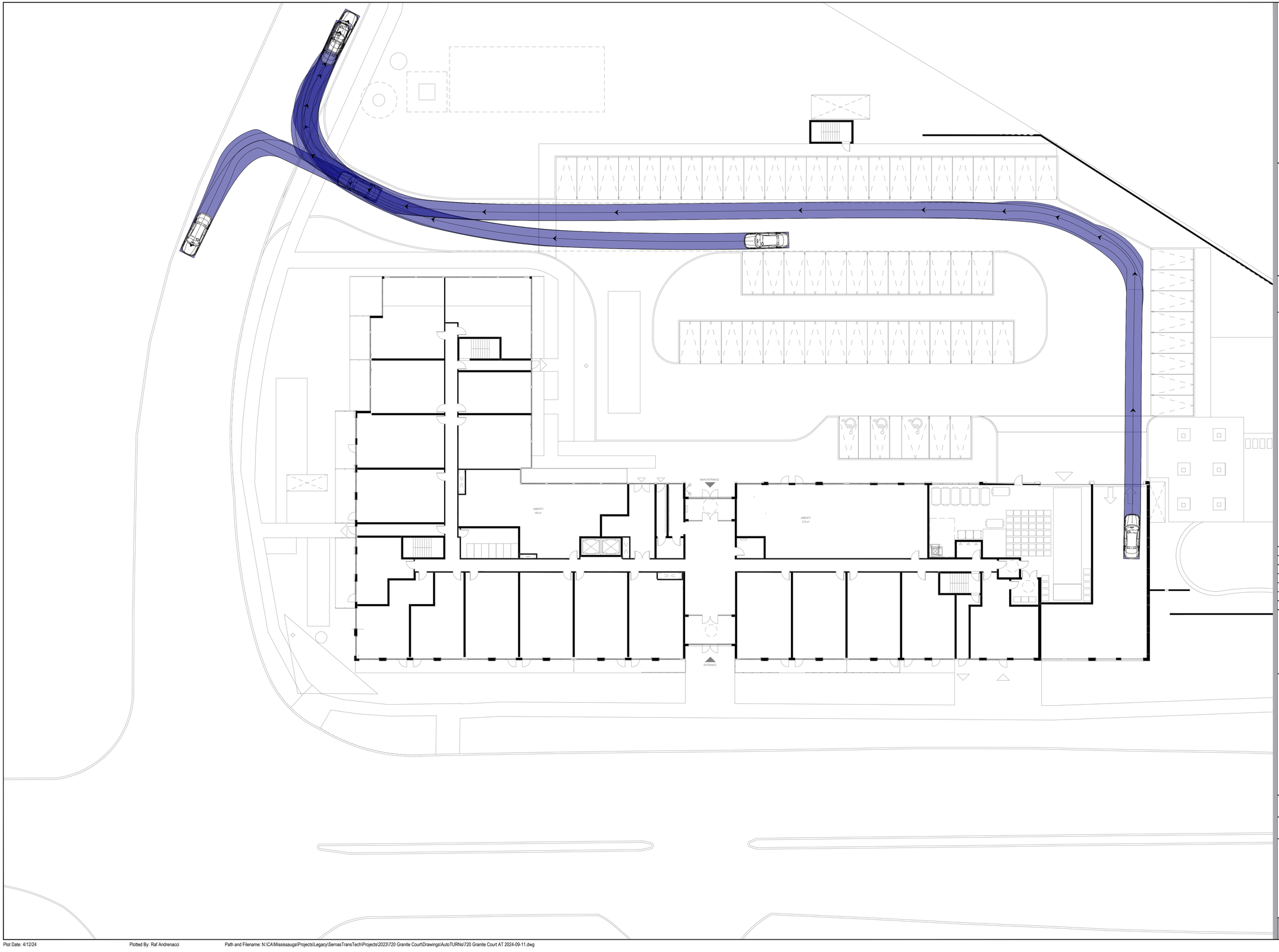
Project No.
-

Title

VEHICLE MANEUVERING DIAGRAM - PASSENGER CAR (INBOUND)

Size
ANSI D

Sheet No.
AT-107



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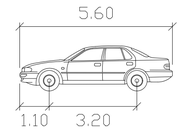

P

meters
Width : 2.00
Track : 2.00
Lock to Lock Time : 6.0
Steering Angle : 35.9

No.	Issue	Checked	Approved	Date
2	Second Submission	W.M	W.M	9/11/24
1	First Submission	W.M	W.M	10/28/21

Author	R.A	Designer	R.A
Drafting Check	W.M	Design Check	W.M
Project Manager	W.M	Project Director	W.M

Client

1334281 ONTARIO LTD.

Project

720 Granite Court

Date	Scale
September 11, 2024	NTS

Project No.
-

Title

VEHICLE MANEUVERING DIAGRAM - PASSENGER CAR (OUTBOUND)

Size
ANSI D

Sheet No.
AT-108

STORM WATER TANK MANHOLE

UNDERGROUND STORMWATER TANK

R 2000

R 2000

1000

6000

7818

7050

6500

BICYCLE PARKING (65)

2600

5300

WATER METER RM (4.5m X 10m)

PROPOSED FIRE LINE & DOMESTIC LINE CONNECTIONS

LINE OF BUILDING ABOVE

DN TO P2

R 18.22 m

R 5.46 m

R 5.46 m

R 27.44 m

R 17479.73 m

ELEC. 5m X 5m

ELEC. 3.6m X 6.5m

COMM. 3.6m X 6.5m

LOCKERS (12)

LOCKERS (46)

VEST

R 14.22 m

R 5.65 m

R 95.73 m

R 5.46 m

R 2000

SANITARY MANHOLE

UP TO GRADE

R 239.06 m

R 35.77 m

R 28.78 m

R 815.96 m

24 m SETBACK FROM RESTRICTED TO RESIDENTIAL

5.60

1.10 3.20

P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

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No.	Issue	Checked	Approved	Date
2	Second Submission	W.M	W.M	9/11/24
1	First Submission	W.M	W.M	10/28/21

Author	R.A	Designer	R.A
Drafting Check	W.M	Design Check	W.M
Project Manager	W.M	Project Director	W.M

Client

1334281 ONTARIO LTD.

Project

720 Granite Court

Date	Scale
September 11, 2024	NTS

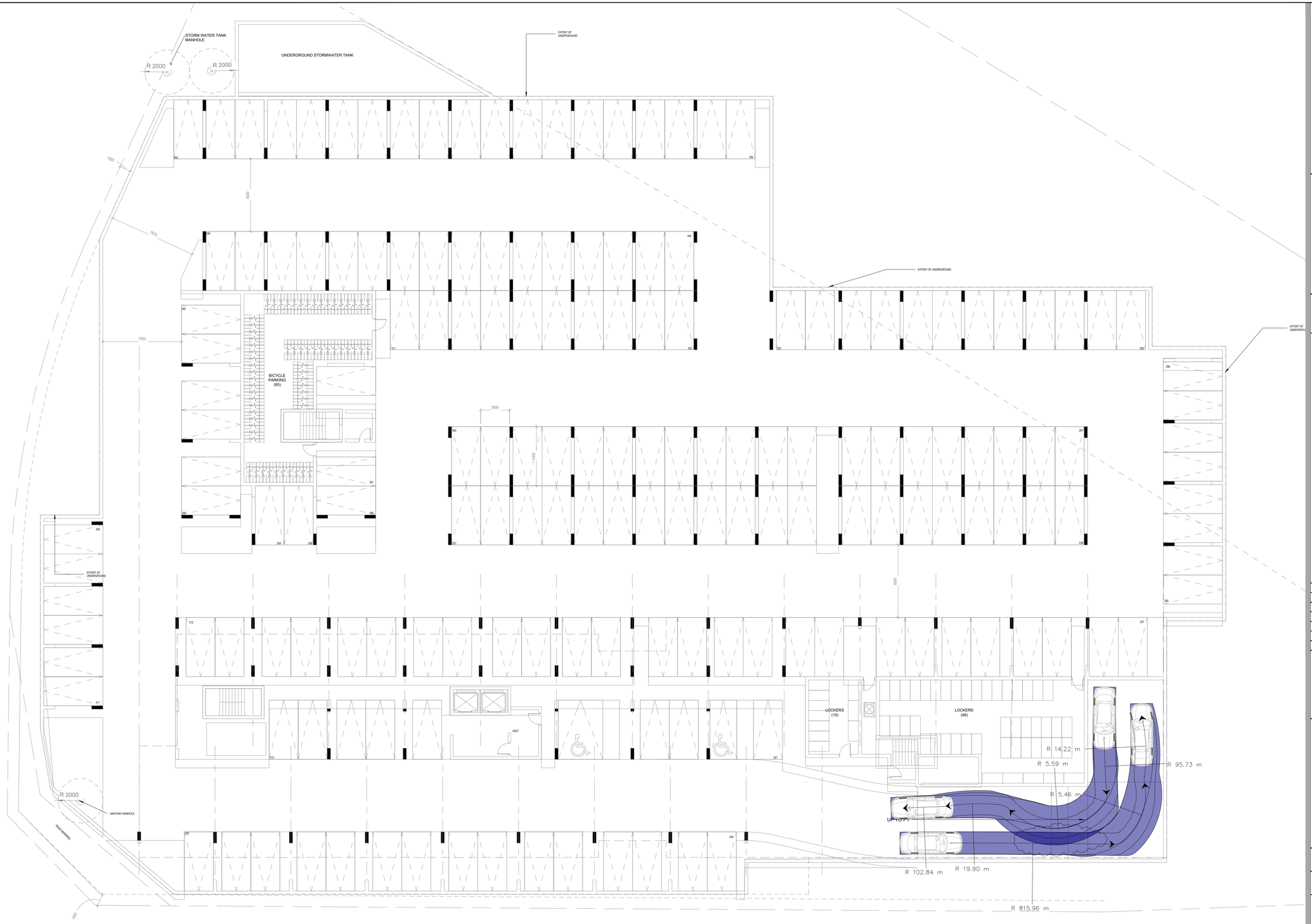
Project No.
-

Title

VEHICLE MANEUVERING DIAGRAM - PASSENGER CAR (P1 RAMP MOVEMENT)

Size
ANSI D

Sheet No.
AT-109



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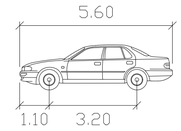

P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

No.	Issue	Checked	Approved	Date
2	Second Submission	W.M	W.M	9/11/24
1	First Submission	W.M	W.M	10/28/21

Author	R.A	Designer	R.A
Drafting Check	W.M	Design Check	W.M
Project Manager	W.M	Project Director	W.M

Client

1334281 ONTARIO LTD.

Project

720 Granite Court

Date	Scale
September 11, 2024	NTS

Project No.
-

Title

VEHICLE MANEUVERING DIAGRAM - PASSENGER CAR (P2 RAMP MOVEMENT)

Size
ANSI D

Sheet No.
AT-110

Appendix G

Intersection Improvements Memo

100 Milverton Drive, Suite 404
Mississauga, ON L5R 4H1
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ghd.com

18 March 2024

Evans Planning
9212 Yonge Street
Unit 1
Richmond Hill, ON
L4C 7A2

Attention: Adam Layton

Re: 720 Granite Court Residential Development

Introduction

GHD was requested to review the operation of the Granite Court/Oklahoma Drive intersection with Whites Road and to make recommendations on intersection improvements that would reduce the length of queuing occurring along Granite Court towards the proposed site access to the proposed residential development at 720 Granite Court in the City of Pickering.

The development proposes a single full moves driveway located on Granite Court as illustrated in Figure 1. The driveway is located approximately 70 metres from the stop eastbound approach stop bar at Whites Road.

Figure 1 – Proposed Driveway Location

GHD prepared a Traffic Study dated April 2023 that was submitted to the City and Region in support of the development which include an assessment of the future 2037 Traffic Scenario for the a.m. and p.m. peak hour. A summary of the v/c ratio, delays and 95th percentile queue length for each movement is provided in Table 1 for the intersection of Whites Road with Granite Court/Oklahoma Drive. The v/c ratios summarized in the table were extracted from the HCM reports while the reported delays and queueing were extracted from SimTraffic as it provided more realistic calculation when compared to existing field observed conditions.

Table 1 Capacity analysis of Whites Road and Granite Court/Oklahoma Drive (Existing Intersection Configuration and Signal Operation)

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que
Future Total 2037 – Existing Operations	Overall: 0.48 (D) 18 EBL = 0.8 (D) 43 EBT = 0.13 (C) 35 WBL = 0.02 (C) 36 WBT = 0.14 (C) 40 WBR = 0.24 (C) 6 NBL = 0.03 (A) 14 NBT = 0.17 (A) 7 SBL = 0.33 (B) 20 SBT = 0.1 (B) 14 SBR = 0.29 (E) 10	 EBL = 61 m EBT = 54 m WBL = 7 m WBT = 24 m WBR = 29 m NBL = 11 m NBT = 27 m SBL = 45 m SBT = 18 m SBR = 57 m	Overall: 0.65 (C) 25 EBL = 0.93 (E) 36 EBT = 0.13 (C) 130 WBL = 0.10 (D) 38 WBT = 0.38 (D) 48 WBR = 0.14 (D) 7 NBL = 0.03 (B) 18 NBT = 0.13 (B) 12 SBL = 0.44 (A) 7 SBT = 0.21 (A) 9 SBR = 0.16 (B) 4	 EBL = 68 m EBT = 189 m WBL = 8 m WBT = 26 m WBR = 27 m NBL = 12 m NBT = 28 m SBL = 33 m SBT = 20 m SBR = 18 m

Under the Future 2037 Traffic Scenario the intersection under the current lane configuration and signal operation is reported to operate with an overall v/c ratio of 0.48 LOS D during the a.m. peak hour without any reported critical movements. The reported eastbound queues are not expected to extend to the location of the proposed site access. During the p.m. peak hour, the intersection is reported to operate with an overall v/c ratio of 0.68 LOS C and similarly with no critical movements. The eastbound queue, however, is reported at approximately 189 metres which would extend beyond the proposed location of the site access and temporarily block vehicles from exiting the site until the queue clears.

For context, it should be noted that the existing eastbound queue currently extends to approximately 135 metres under the 2023 p.m. peak hour traffic scenario and that based on field observations, it includes vehicles queuing side by side for approximately 70 metres before a single queue formed. In all but two cycles during the p.m. peak hour did the queue not completely clear through the intersection once the east/west signal turned green. This is expected to continue during the future 2037 traffic scenario and provide opportunity for vehicles exiting the site driveway to turn left onto Granite Court.

However, based on comments received from the public and to address perceived constraints at the intersection of Granite Court/Oklahoma Drive and Whites Road and in particular the queuing on the eastbound approach, GHD has prepared a supplemental analysis of the intersection capacity for the 2037 Total Traffic scenario that proposes dual left turn lanes on the eastbound approach. The dual left turn lanes are proposed to be provided within the existing lane configuration by converting the existing through/right turn lane to a shared left/through/right turn lane. In addition to the revised lane configuration, the signal would be revised to operate with split phasing in order to accommodate the dual left turns without necessitating any widening or road works on the westbound approach on Oklahoma Drive and to maintain proper lane alignment through the intersection.

Figure 2 – Proposed Intersection Lane Configuration

Capacity analysis of the Whites Road and Granite Court/Oklahoma Drive under the proposed new lane configuration and split phasing operation is summarized in the table below. Consistent with summary provided in Table 1, the v/c ratios summarized below were extracted from the HCM reports while the reported delays and queueing were extracted from SimTraffic.

Table 2 Capacity analysis of Whites Road and Granite Court/Oklahoma Drive (Proposed Dual Left Turn Lanes and Split Phasing)

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que
Future Total 2037 – Split Phasing	Overall: 0.42 (D) 24 EBL = 0.68 (D) 32 EBTLR = 0.64 (D) 43 WBL = 0.05 (D) 45 WBT = 0.36 (D) 45 WBR = 0.24 (D) 12 NBL = 0.03 (B) 23 NBT = 0.19 (B) 16 SBL = 0.36 (B) 57 SBT = 0.11 (B) 28 SBR = 0.29 (D) 15	 EBL = 50 m EBLTR = 63 m WBL = 11 m WBT = 30 m WBR = 51 m NBL = 13 m NBT = 42 m SBL = 61 m SBT = 31 m SBR = 72 m	Overall: 0.54 (D) 27 EBL = 0.79 (D) 30 EBTLR = 0.75 (D) 43 WBL = 0.07 (D) 53 WBT = 0.38 (D) 48 WBR = 0.14 (D) 9 NBL = 0.03 (B) 19 NBT = 0.14 (B) 16 SBL = 0.45 (C) 34 SBT = 0.22 (C) 30 SBR = 0.16 (E) 9	 EBL = 68 m EBLTR = 94 m WBL = 11 m WBT = 28 m WBR = 31 m NBL = 11 m NBT = 31 m SBL = 64 m SBT = 47 m SBR = 35 m

With the proposed dual left turn lane operation, the intersection is reported to operate with an overall v/c ratio of 0.42 LOS D during the a.m. peak hour and without any reported critical movements. The reported eastbound queues continue to not extend to the location of the proposed site access. During the p.m. peak hour, the intersection is reported to operate with an overall v/c ratio of 0.54 LOS D and without any reported

critical movements. The reported eastbound queue is 94 metres which continues to extend slightly beyond the proposed driveway location however, the queue is significantly reduced from the 189 metres reported under the existing configuration. In addition to the reduced queue length, the delay for the eastbound approach is reduced from 130 seconds down to 43 seconds during the p.m. peak hour with only minor increases in the delay for the westbound and southbound approaches. All reported 95th percentile queues for turning movements in the south, west and north approaches are reported to be accommodated by the available storage lengths without spilling out into adjacent lanes.

We trust the enclosed is sufficient for your needs, but please do not hesitate to contact the undersigned should you require any additional assistance.

Regards

William Maria, P. Eng.
Transportation Planning Lead

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The Power of Commitment