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## TRANSPORTATION IMPACT ASSESSMENT

**91 SOUTHDALE ROAD EAST**

LONDON, ONTARIO

PROPOSED RESIDENTIAL DEVELOPMENT

2271075 ONTARIO LTD.

AUGUST 2024

SBM-21-3978

### LONDON LOCATION

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**City of London**  
**Transportation Impact Assessment**

**CERTIFICATE OF OWNERSHIP**

Development Name/Reference: **91 Southdale Road East**

Company or Firm: **Strik, Baldinelli, Moniz Ltd.**

Original Submission or Addendum: **Original**

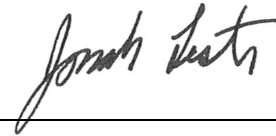
Original Report Name: **Transportation Impact Assessment - 91 Southdale Road East**

I hereby certify that the attached document has been prepared accurately and to the best of my knowledge. The assumptions and analysis contained herein have been formulated using sound transportation planning and traffic operations methodologies.

Individual accepting corporate responsibility:

Name: **Jonah Lester, P.Eng.**

Signature:



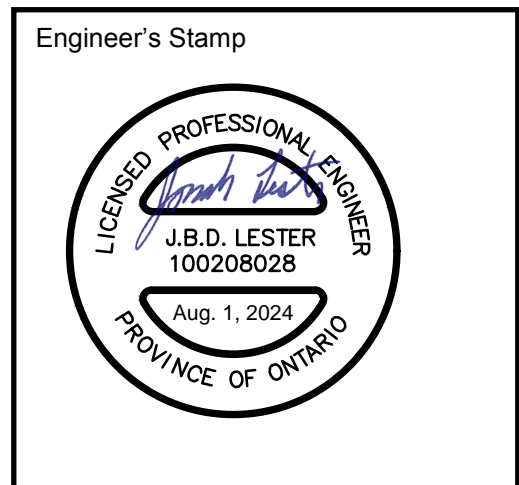
Project Manager (if different than above):

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Other Individuals involved in the preparation of the assessment and can be contact regarding study content:

Name:

Name:





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August 1, 2024  
SBM-21-3978

**Attn: Carlos Ramirez**

**Re: Transportation Impact Assessment  
91 Southdale Road East  
London, Ontario**

Strik, Baldinelli, Moniz Ltd. is pleased to provide you with the enclosed Transportation Impact Assessment report for the proposed residential development at 91 Southdale Road East in London, Ontario. The report concludes that the development proposal can generally be accommodated by the existing transportation network with no significant impact to traffic operations.

We trust this submission meets your satisfaction and will assist with the approval of the development. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

Respectfully submitted,

**Strik, Baldinelli, Moniz Ltd.**

Planning • Civil • Structural • Mechanical • Electrical

Jonah Lester, P.Eng.  
Transportation Engineer

## **EXECUTIVE SUMMARY**

This Transportation Impact Assessment (TIA) has been prepared by Strik, Baldinelli, Moniz Ltd. (SBM) for 2271075 Ontario Ltd. to identify transportation impacts, or a lack thereof, associated with the proposed residential development located at 91 Southdale Road East in London, Ontario. The development is proposed to include a six-storey apartment building with 55 dwelling units. Vehicular access is proposed from existing driveways on Petty Road and White Oak Road that serve existing commercial uses on the site.

This study has forecasted traffic volumes for a 2030 horizon year and assessed traffic operations within the vicinity of the subject site for existing, future background and future total traffic conditions. Site access and active transportation considerations have also been assessed. Based on the analysis completed, the following key conclusions and recommendations are made in this TIA:

- It is forecast that the proposed development will generate 20 new trips in the AM peak hour (5 in and 15 out) and 22 trips during the PM peak hour (13 in and 9 out).
- Under existing conditions, the study area intersections are generally operating acceptably, however, the northbound left turn movement at the Southdale Road East and White Oak Road intersection has a v/c ratio of 0.94 during the PM peak hour with LOS E and significant queuing, indicating this movement is nearing capacity.
- Under 2030 background and total traffic conditions, all movements at the Southdale Road East and White Oak Road intersection will operate acceptably except for the northbound left turn movement, which could reach a v/c ratio of 1.09 during the PM peak hour. Since all other movements have spare capacity, there should be opportunity to optimize the signal timing to provide additional green time for the northbound left turn phase if needed in the future.

Under future conditions at the Southdale Road East and Petty Road intersection, all movements will operate acceptably except for the southbound left turns from the Private Access Road opposite Petty Road, which will be over capacity with significant delay during the PM peak hour. Since it is only a small number of southbound left turn movements causing the delay, it is expected that motorists may start to avoid making this movement during this time period.

The West Site Access and East Site Access are expected to continue to operate acceptably throughout the horizon period, however, some longer delay (LOS F) is expected at the East Site Access during the AM peak hour.

- The construction of the Bradley Avenue extension, between White Oak Road and Wharncliffe Road, is planned to commence in 2025. Once complete, the extension should reduce traffic volumes on Southdale Road East and White Oak Road through the study area and improve future operations for the critical movements identified.
- The need for a right turn lane on Southdale Road East at Petty Road was considered with respect to the City of London Access Management Guidelines and it was concluded that the turning volumes are not high enough to warrant a right turn lane.
- The proposed site plan provides good internal and external pedestrian connections, and the site has direct access to existing and planned cycling facilities (i.e. bike lanes on White Oak Road and future buffered bike lanes on Southdale Road East), which should help promote active transportation trips.

- Overall, the forecasted site traffic does not introduce any operational problems on the surrounding road network and no road improvements are required to accommodate the proposed development.

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## 1 INTRODUCTION

This Transportation Impact Assessment (TIA) has been prepared by Strik, Baldinelli, Moniz Ltd. (SBM) for 2271075 Ontario Ltd. to identify transportation impacts, or a lack thereof, associated with the proposed residential development located at 91 Southdale Road East in London, Ontario. The development is proposed to include a six-storey apartment building with 55 dwelling units. Vehicular access is proposed from existing driveways on Petty Road and White Oak Road that serve existing commercial uses on the site. The location of the proposed development is illustrated in Figure 1.

**Figure 1: Site Location**



Aerial Image Source: Google Earth

### 1.1 SCOPE AND METHODOLOGY

The general scope of the analysis in this study is summarized in Table 1. In accordance with the City of London Transportation Impact Assessment Guidelines (2013), the TIA scope was confirmed with City staff prior to commencing the assessment.



**Table 1: Study Scope and Parameters**

Study Scope and Parameters	
Analysis Intersections (Study Area)	<ul style="list-style-type: none"> <li>• Southdale Road East / White Oak Road / Homeview Road</li> <li>• Southdale Road East / Petty Road</li> <li>• Petty Road / Existing Site Access (“West Site Access”)</li> <li>• White Oak Road / Existing Site Access (“East Site Access”)</li> </ul>
Analysis Time Periods	<ul style="list-style-type: none"> <li>• Weekday AM peak hour</li> <li>• Weekday PM peak hour</li> </ul>
Analysis Scenarios (Years)	<ul style="list-style-type: none"> <li>• Existing Traffic</li> <li>• 2030 Background Traffic</li> <li>• 2030 Total Traffic</li> </ul>

The intersection operational analysis has been performed using Synchro 11 software based on the Highway Capacity Manual 2000 (HCM 2000) methodology published by the Transportation Research Board National Research Council.

As per the City’s TIA Guidelines, the operational analysis has identified all intersections where:

- the volume to capacity ratio (v/c ratio) for overall operations, through movements, shared through/turning movements increased to 0.9 or above and Level of Service (LOS) E or worse.
- v/c ratios for dedicated turning movements increased to 0.9 or above and LOS E or worse.
- Queues for an individual movement and turning movement projected to exceed available lane storage (95<sup>th</sup> percentile queue).

Level of Service (LOS) is a function of the average control delay for an entire intersection or an individual movement. The relationships between the LOS letters and average delay ranges are defined in Table 2 for signalized and unsignalized intersections.

**Table 2: Vehicular Level of Service Designations**

LEVEL OF SERVICE (LOS)	CONTROL DELAY PER VEHICLE (s)	
	SIGNALIZED INTERSECTION	UNSIGNALIZED INTERSECTION
<b>A</b>	≤ 10	≤ 10
<b>B</b>	10 to 20	10 to 15
<b>C</b>	20 to 35	15 to 25
<b>D</b>	35 to 55	25 to 35
<b>E</b>	55 to 80	35 to 50
<b>F</b>	> 80	> 50

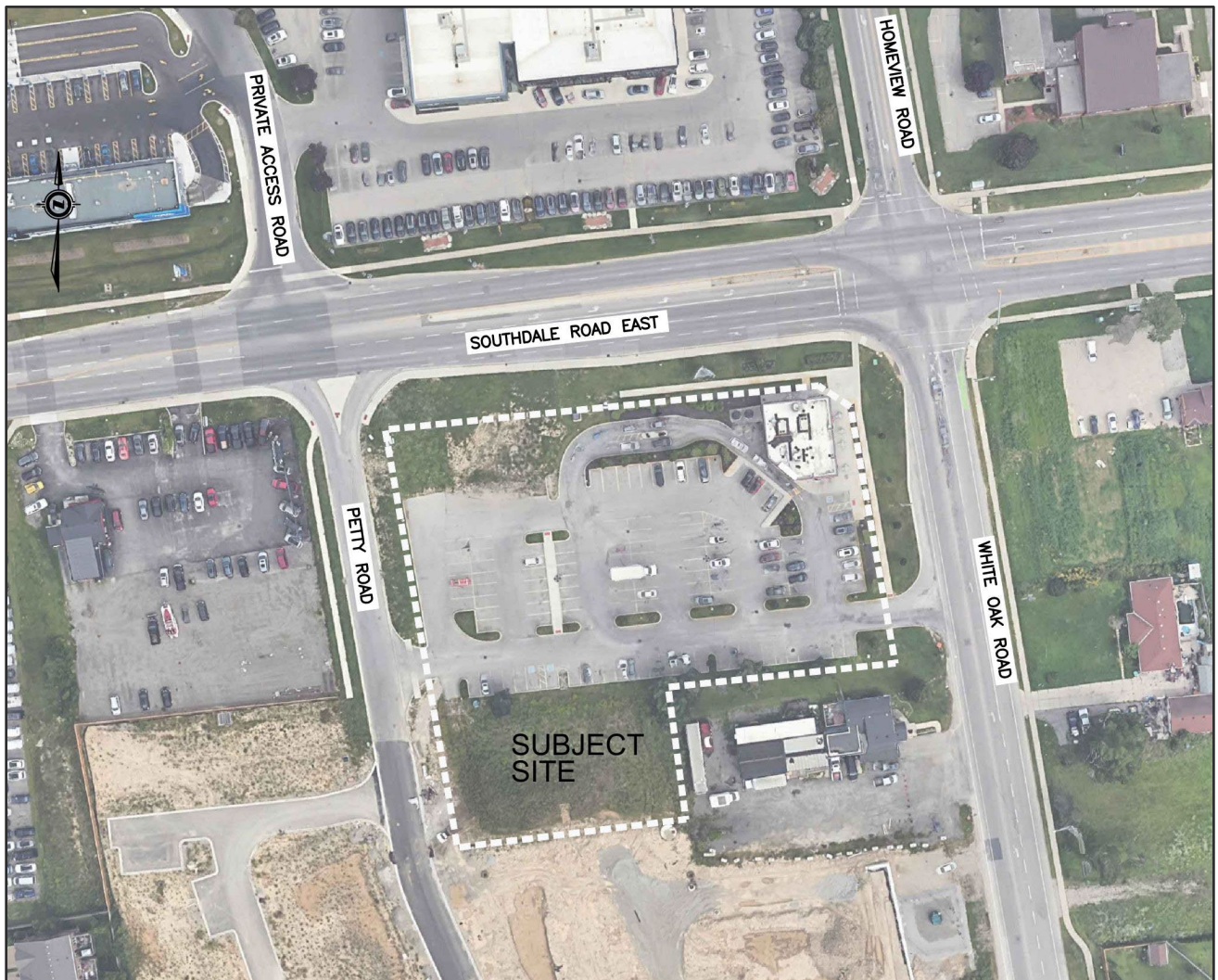
## 2 EXISTING CONDITIONS

### 2.1 SITE CONTEXT

The subject site is located on the south side of Southdale Road East, between Petty Road and White Oak Road. The overall site has an approximate area of one hectare and there is an existing commercial building (Tim Horton's restaurant with drive-through) in the northeast corner of the site with a surface parking lot through the middle of the site, as shown in Figure 2. A second commercial building (site plan approved) is planned to be constructed in the northwest corner of the site. The proposed residential building will be located in the southwest corner of the site, which is currently vacant. Site access is provided by driveways on Petty Road and White Oak Road.

The subject property is bounded by Southdale Road East to the north, Petty Road to the west, White Oak Road and commercial land to the east, and residential development to the south.

**Figure 2: Site Area**



Aerial Image Source: Google Earth

## 2.2 EXISTING ROAD NETWORK

A site visit was conducted on April 30<sup>th</sup>, 2024 to review current road and intersection conditions. The existing road network is described below and the existing lane configurations, traffic control and storage lengths are illustrated in Figure 3.

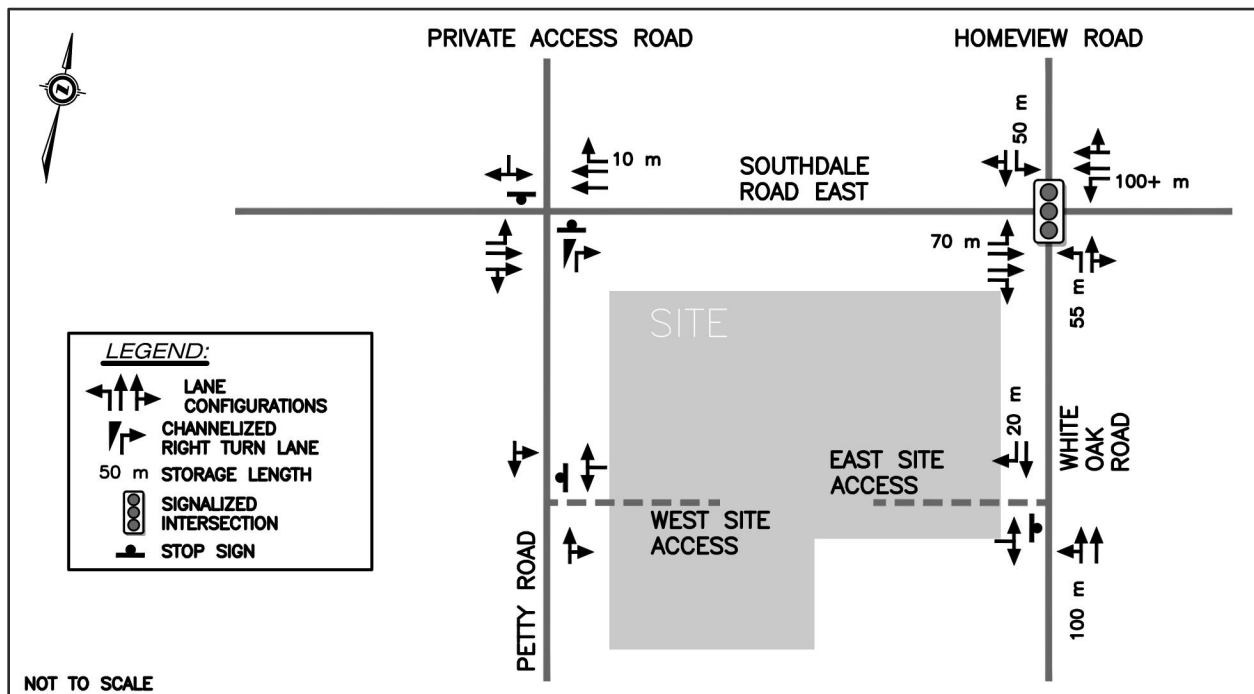
Southdale Road East is a four-lane arterial road (Civic Boulevard) running east-west with an urban cross-section (curb and gutter) and sidewalk on both sides. The posted speed limit is 60 km/h and on-street parking is prohibited.

White Oak Road is a two-lane arterial road (Civic Boulevard) running north-south to the south of Southdale Road East. It has a mixed cross-section of curb & gutter on the east side and gravel shoulder with ditching on the west side. The posted speed limit is 60 km/h and on-street parking is prohibited in the study area. Bike lanes are provided on both sides of White Oak Road and there is an existing sidewalk on the east side. To the north of Southdale Road East, White Oak Road becomes Homeview Road, which is a two-lane neighborhood connector with a posted speed limit of 50 km/h.

Petty Road is a two-lane local road running north-south to the south of Southdale Road East. Petty Road has an urban cross-section with a sidewalk on the west side. The posted speed limit is 40 km/h. At the Southdale Road East intersection, Petty Road is restricted to right turn movements only.

The two existing site accesses are referred to as the West Site Access and East Site Access in this TIA. The West Site Access is a full-movement driveway on Petty Road. The East Site Access is a full-movement driveway on White Oak Road.

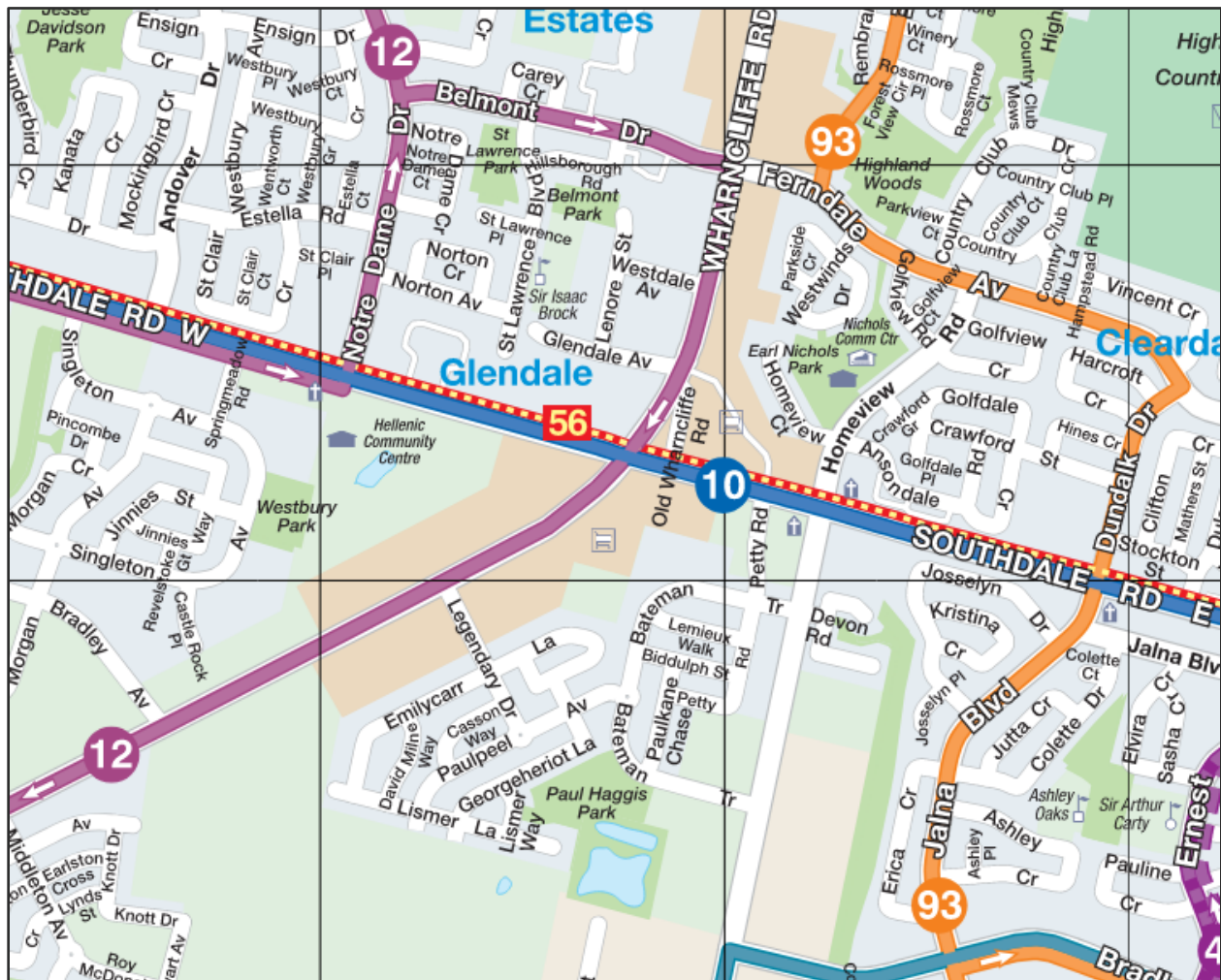
**Figure 3: Existing Study Area Traffic Control and Lane Configuration**



## 2.3 EXISTING TRANSIT SERVICES

The study area is served by bus routes 10 and 56 as shown in the excerpt from the London Transit Commission (LTC) Ride Guide (service map) in Figure 4.

**Figure 4: Transit Service Map**



Source: London Transit Commission Ride Guide (September 2023)

The general routes, operating times and headways are summarized as follows:

- **Route 10 Barker at Huron – Masonville Place** runs east-west along Southdale Road East and loops around the east and west ends of the city. Service runs Monday to Friday approximately 6:30 AM to 1:30 AM with 15-45 minute headways, Saturdays 6:30 AM to 12:45 AM with 45-70 minute headways, and Sundays 9:00 AM to 11:00 PM with approximately 30 minute headways.
- **Route 56 Wednesday Community Bus** runs between Berkshire and the White Oaks Mall. Service runs on Wednesdays only between approximately 10:00 AM and 2:00 PM with approximately 80 minute headways.

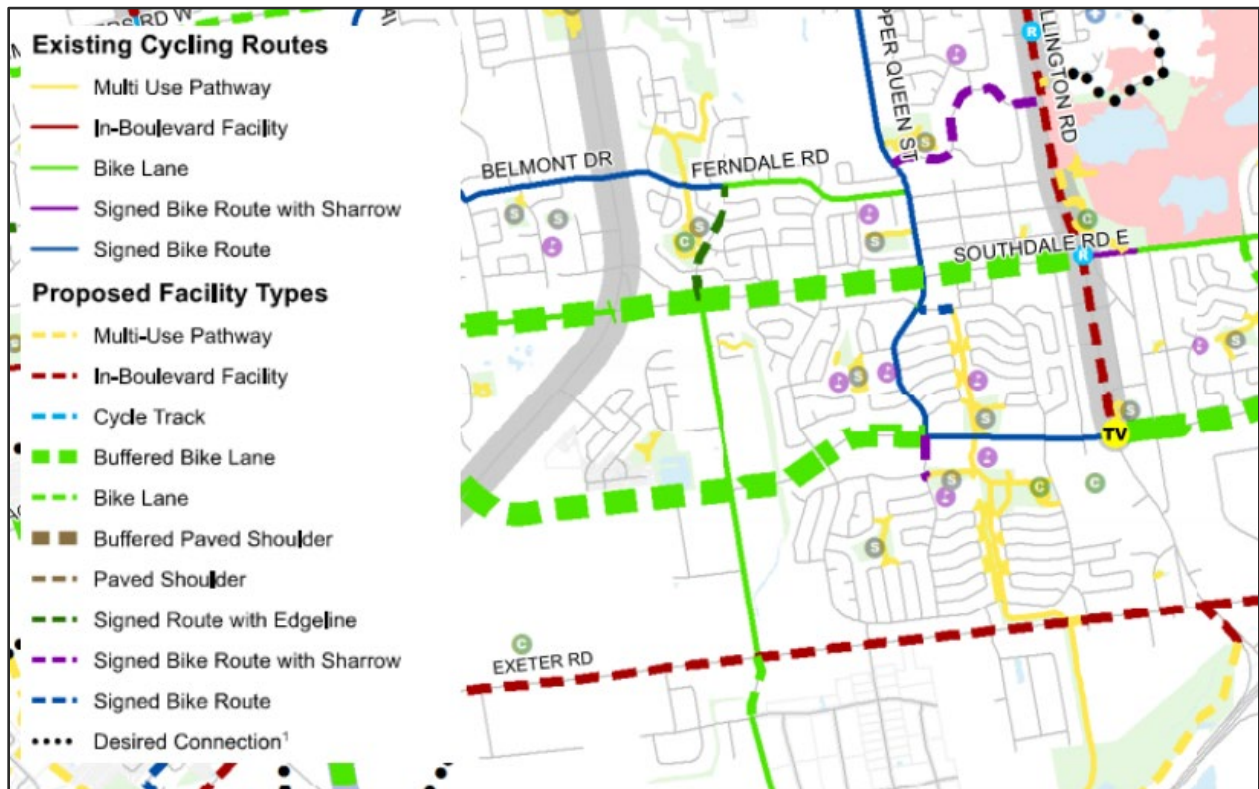
The nearest bus stop to the site is located on Southdale Road East, just east of White Oak Road, which is approximately 170 m northeast of the proposed apartment building and should provide good transit access for the development.

## 2.4 ACTIVE TRANSPORTATION FACILITIES

As previously noted, there are existing sidewalks on Southdale Road East and Petty Road. On White Oak Road there are bike lanes along both sides of the road and a sidewalk on the east side.

The City of London Cycling Master Plan (MMM Group, September 2016) proposes a buffered bike lane on Southdale Road East, however, we are not aware of any planned timeline for this improvement.

**Figure 5: Proposed Cycling Facilities from City of London Cycling Master Plan (2016)**



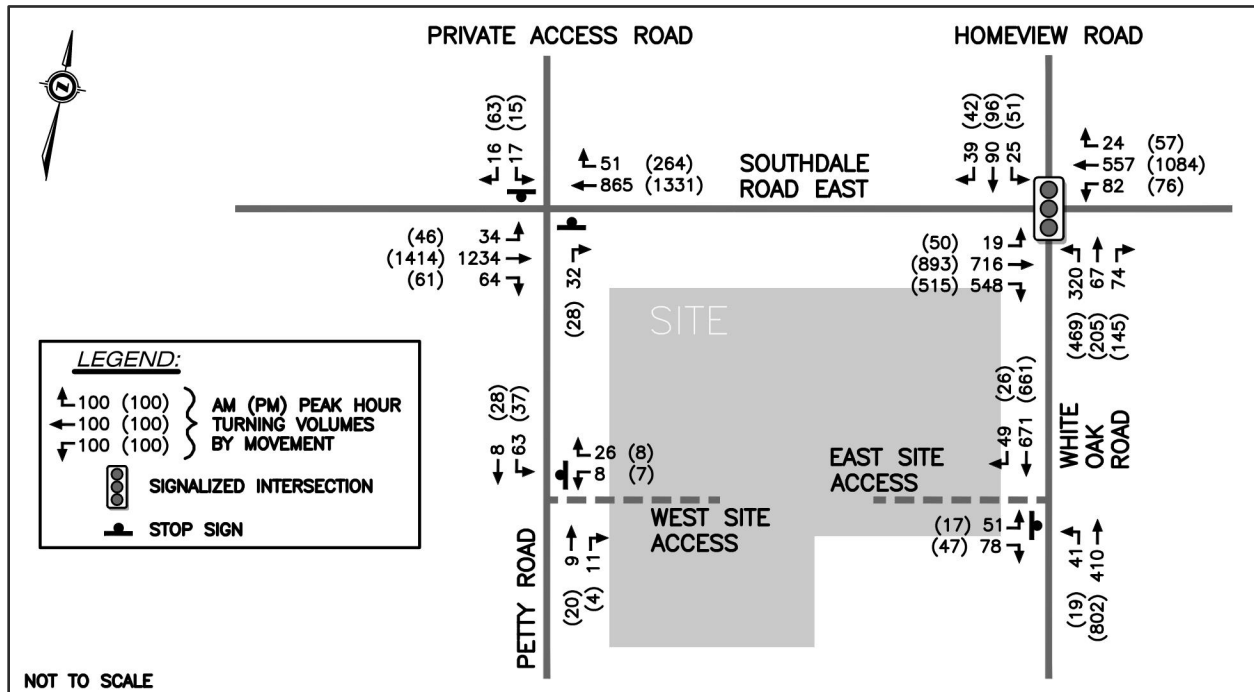
Source: City of London Cycling Master Plan (MMM Group, September 2016)

## 2.5 EXISTING TRAFFIC VOLUMES

The City was able to provide a turning movement count for the Southdale Road East and White Oak Road intersection taken on Thursday, September 29<sup>th</sup>, 2022. New turning movement counts were undertaken at the remaining study area intersections on Wednesday, May 1, 2024 by Pyramid Traffic Inc. The traffic count data is provided in Appendix A.

Link volumes between intersections on Southdale Road East and White Oak Road were compared between adjacent intersections (i.e. 2022 count volume vs. 2024 count volume) and minor adjustments were made to balance movements. Where the 2022 count volume was higher than the 2024 count volume, the volumes were averaged (i.e. 2022 count volume reduced and 2024 count volume increased evenly). Where the 2022 count volume was lower, it was increased to match the 2024 count volume. The resulting “existing” peak hour traffic volumes for the study area intersections are illustrated in Figure 6.

**Figure 6: Existing Peak Hour Traffic Volumes**



## 2.6 EXISTING TRAFFIC OPERATIONS AND QUEUING

Existing traffic operations were assessed at the study area intersections based on the existing lane configuration and traffic volumes presented in Sections 2.2 and 2.5. Existing traffic signal timing plans were obtained from the City and incorporated in the analysis.

Where peak hour factors (PHFs) could be calculated from the traffic count data, the calculated values were used in the analysis (i.e. between 0.91 and 0.94). Detailed traffic count data was not available for the Southdale Road East and White Oak Road intersection, therefore PHFs of 0.92 for the AM and 0.93 for PM were assumed.

Table 3 provides a summary of the existing intersection operations and complete Synchro output reports are provided in Appendix B.

**Table 3: Existing Intersection Operations Summary**

INTERSECTIONS / MOVEMENTS		EXISTING TRAFFIC			
		AM PEAK HOUR		PM PEAK HOUR	
		V/C	LOS (DELAY)	V/C	LOS (DELAY)
Southdale Road East and White Oak Road	Overall	0.57	B	0.80	C
	EB L	0.06	B	0.42	C
	EB T	0.39	B	0.52	C
	EB R	0.39	A	0.36	A
	WB L	0.30	B	0.39	C
	WB TR	0.32	B	0.66	C
	NB L	0.81	D	<b>0.94</b>	E
	NB TR	0.20	C	0.53	C
	SB L	0.19	D	0.45	D
SB TR	0.62	E	0.63	E	
Southdale Road East and Petty Road / Private Access Road	EB L	0.05	B	0.11	B
	EB TR	0.53	A	0.58	A
	WB T	0.28	A	0.41	A
	WB R	0.03	A	0.16	A
	NB R	0.10	C	0.09	C
	SB LR	0.35	<b>F</b> <b>(57)</b>	0.76	<b>F</b> <b>(105)</b>
Petty Road and West Site Access	WB Lr	0.04	A	0.02	A
	NB TR	0.01	A	0.02	A
	SB LT	0.05	A	0.03	A
White Oak Road and East Site Access	EB LR	0.47	D	0.24	C
	NB LT	0.05	A	0.02	A
	NB T	0.17	A	0.34	A
	SB T	0.42	A	0.42	A
	SB R	0.03	A	0.02	A
<b>Notes:</b> V/C - Volume to Capacity Ratio, LOS – Level of Service, Delay = Average Delay in Seconds EB – Eastbound, WB – Westbound, NB – Northbound, SB - Southbound L – Left, T – Through, R – Right					

From the results shown, it can be seen that the Southdale Road East and White Oak Road intersection is generally operating acceptably although the northbound left turn movement has a v/c ratio of 0.94 during the PM peak hour with LOS E, indicating this movement is nearing capacity.

The rest of the study area intersections are operating well during the peak hours with all movements at v/c ratios of 0.58 or lower and LOS D or better, with one exception. The southbound left-right movement on the Private Access Road (opposite Petty Road) experiences longer delay with LOS F, however, this is not uncommon for a stop-controlled movement at a busy arterial road and since the v/c ratio is acceptable, the longer delay is not a significant concern.

Queuing results were also reviewed by comparing the 95<sup>th</sup> percentile queue length from the Synchro analysis with the available storage length for the turn lanes within the study area in order to determine where queues may block adjacent lanes. The results are summarized in Table 4.

**Table 4: Existing Intersection Queuing**

INTERSECTIONS / MOVEMENTS		AVAILABLE STORAGE (m)	95 <sup>th</sup> PERCENTILE QUEUE (m)	
			EXISTING TRAFFIC	
			AM	PM
Southdale Road East and White Oak Road	EB L	70	7	23
	EB T	-	75	104
	EB R	50	8	8
	WB L	100+	25	29
	WB TR	-	59	146
	NB L	55 <sup>1</sup>	87	124
	NB TR	-	28	84
	SB L	50	14	25
	SB TR	-	47	49
Southdale Road East and Petty Road / Private Access Road	EB L	-	5	5
	NB R	-	5	5
	SB LR	-	11	32
Petty Road and West Site Access	WB LR	-	5	5
	SB LT	-	5	5
White Oak Road and East Site Access	EB LR	-		7
	NB LT	100		5
<p><b>Notes:</b> EB – Eastbound, WB – Westbound, NB – Northbound, SB - Southbound L – Left, T – Through, R – Right Queue lengths that were less than 5 m have been rounded up to 5 m to represent a minimum of one car length. <sup>1</sup> Upstream distance to East Site Access, but an additional 100 m of storage is available beyond access</p>				

As shown in Table 4, there are no queuing concerns at the study area intersections. It is noted that the northbound left turn queue for the Southdale Road East and White Oak Road intersection does periodically extend beyond the East Site Access during peak hours, however, our observations are that the queue generally clears with every signal cycle and the extended queue does not significantly impact the operation of the East Site Access.

### **3 FUTURE BACKGROUND TRAFFIC**

Future background traffic includes existing traffic with a general growth rate applied, plus traffic anticipated to be generated from other developments within or surrounding the study area. For the purposes of this assessment, it is assumed that the proposed development will be constructed in 2025, therefore a 2030 horizon year was selected for future traffic projections and analysis.

#### **3.1 BACKGROUND GROWTH RATE**

A background growth rate of 2% per annum has been used. The background growth rate was applied to all movements in the study area.

#### **3.2 BACKGROUND DEVELOPMENT TRAFFIC**

The only development identified to be taken into consideration in the future background traffic forecast (i.e. background development) is the commercial building approved for the northwest corner of property, which will include four units with a total gross floor area (GFA) of approximately 5,000 sq. ft. It is our understanding that restaurant uses are anticipated, so the trip generation was estimated based on



published rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11<sup>th</sup> Edition* for Fast Casual Restaurant (ITE Land Use Code 930) and Fast-Food Restaurant Without Drive Through Window (ITE Land Use Code 933). The building area is assumed to be split evenly between these two uses and the trip generation estimates are summarized in Table 5. It is noted that the ITE PM trip rate was also applied to the AM for the Fast-Food Restaurant Without Drive-Through use because it not likely that the restaurants will be breakfast oriented (i.e. lower rate used, but still considered conservative).

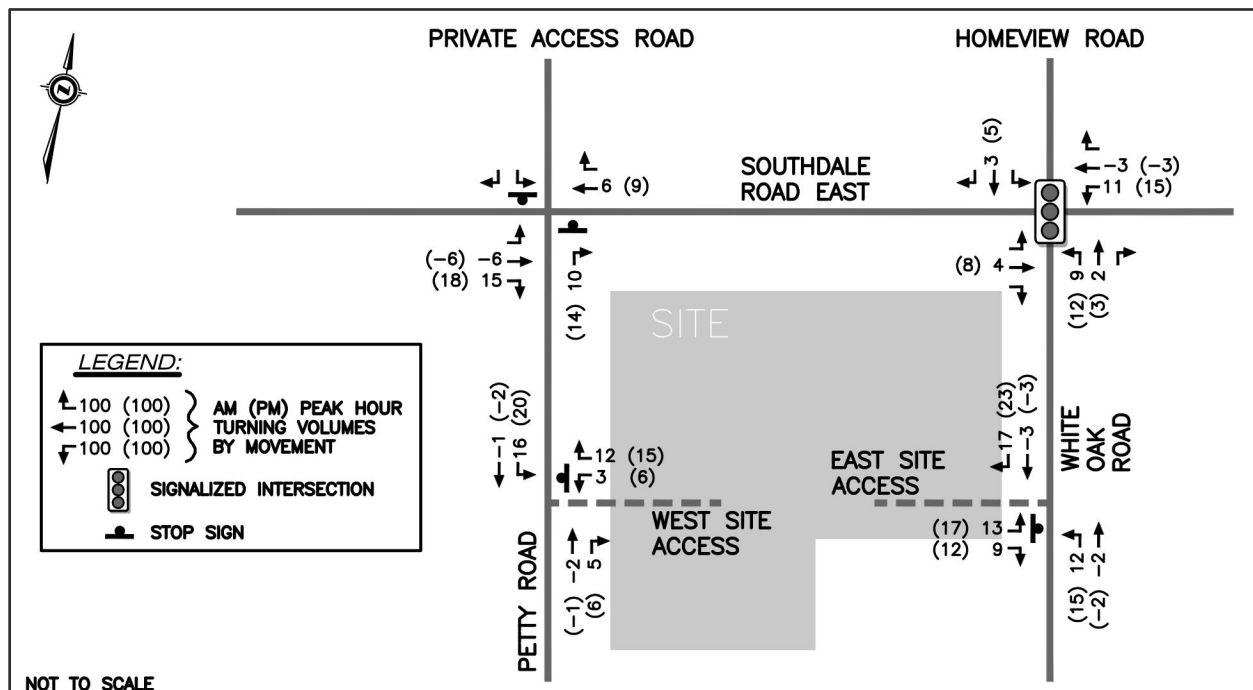
Pass-by trips (trips that are already using the adjacent road network and stop at the site since they are passing by) were assumed to represent 40% of the trips for the Fast-Food Restaurant Without Drive-Through use.

**Table 5: Background Development Trip Generation Summary**

ITE LAND USE DESCRIPTION	GFA	AM PEAK HOUR TRIPS			PM PEAK HOUR TRIPS		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Fast Casual Restaurant (Land Use Code 930)	2,500	2	2	4	16	15	31
Fast-Food Restaurant Without Drive-Through Window (Land Use Code 933)	2,500	48	35	83	48	35	83
Pass-by Trips (only applied to LUC 933)	40%	-17	-17	-34	-17	-17	-34
<b>Total New Trips</b>	<b>5,000</b>	<b>33</b>	<b>20</b>	<b>53</b>	<b>47</b>	<b>33</b>	<b>80</b>

The background development traffic was assigned to the road network based on the existing distribution of turning movements in the study area and the anticipated origins/destinations. The resulting peak hour background development traffic volumes through the study area are shown in Figure 7.

**Figure 7: Background Development Traffic**



### 3.3 FUTURE ROAD NETWORK

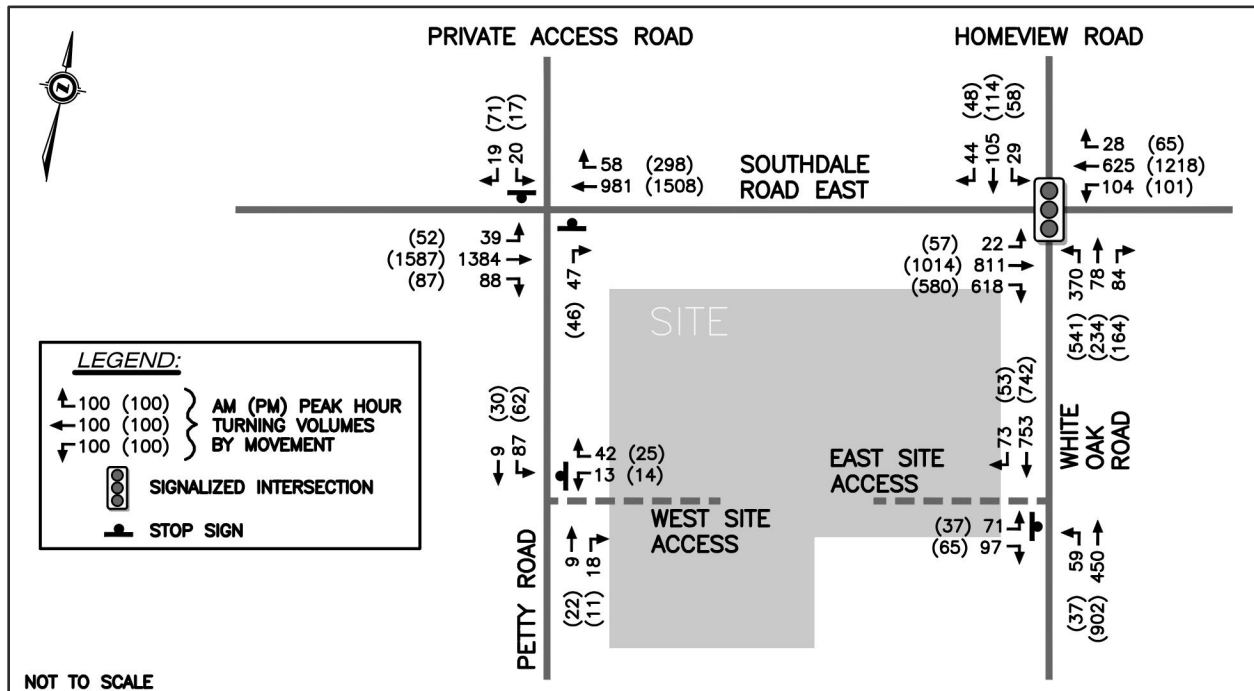
No future road work is planned within the study area that would alter the lane configuration, therefore the existing lane configuration has been used for analysis of future conditions.

It is noted that construction of the Bradley Avenue extension, between White Oak Road and Wharncliffe Road, is planned to begin in 2025. Once completed, it can be expected that this extension will reduce traffic at the Southdale Road East and White Oak Road intersection, however, to remain conservative, we have not included any volume reductions in our 2030 traffic forecasts.

### 3.4 2030 BACKGROUND TRAFFIC VOLUMES

Combining the background growth rate applied to the existing traffic and the traffic from the background development discussed in 3.2, the resulting 2030 background traffic volumes for the AM and PM peak hours are presented in Figure 8.

**Figure 8: 2030 Background Traffic Volumes**

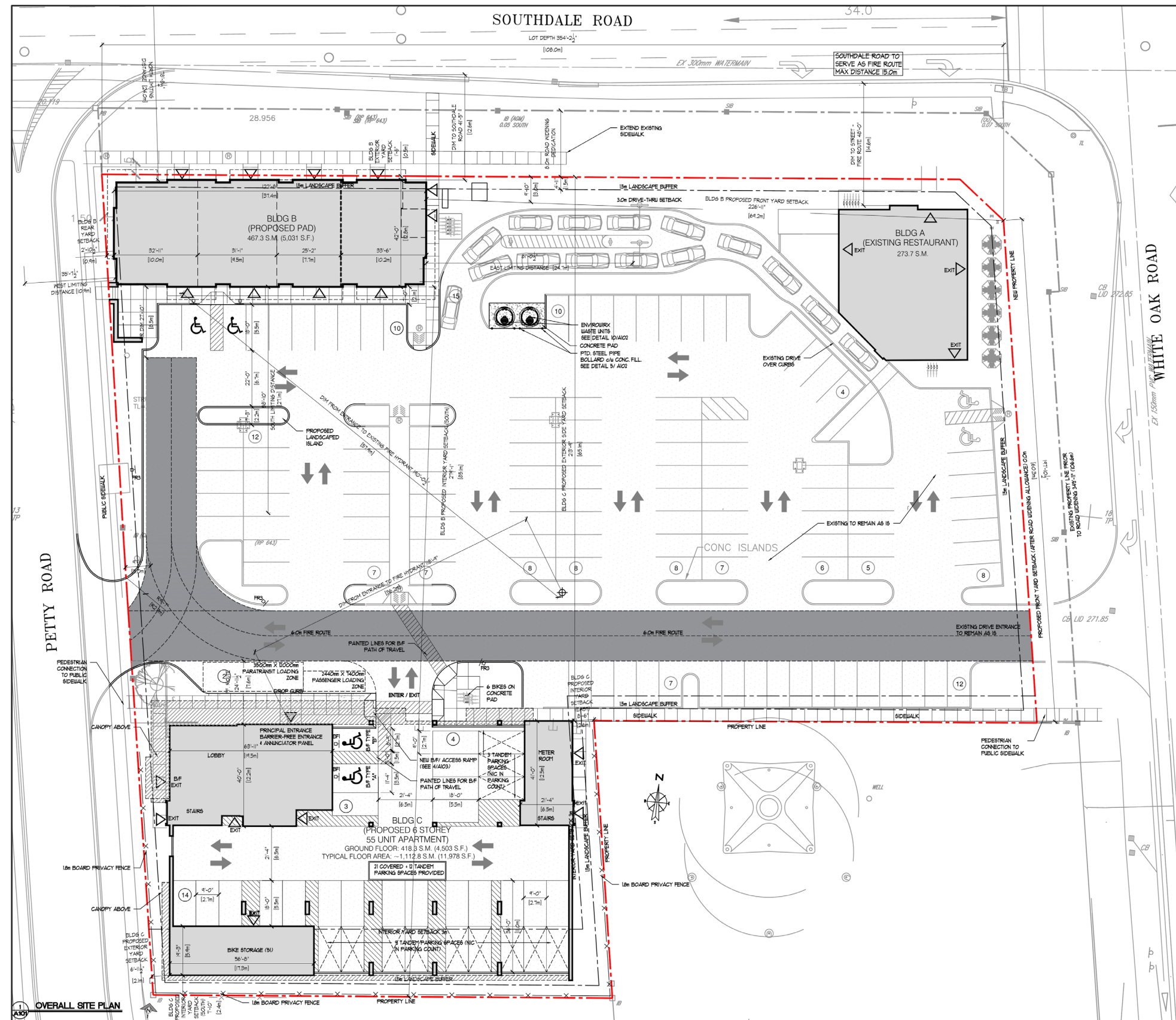


## 4 PROPOSED DEVELOPMENT

### 4.1 DEVELOPMENT PLAN

The development is proposed to include a six-storey building with 55 apartment units. A cropped version of the Site Plan by Philip Agar Architect Inc. (October 22, 2024) is provided in Figure 9 and the full version of the drawing is included in Appendix C. As shown, vehicular access to the development will be provided by the existing driveways for the site on Petty Road and White Oak Road (i.e. East and West Site Accesses) and a connection to the main drive aisle will allow access to the ground-level parking area within the building.

Figure 9: Site Plan



## 4.2 SITE TRAFFIC GENERATION AND DISTRIBUTION

Site generated traffic volumes from the proposed development have been estimated based on trip rate information contained in the ITE *Trip Generation Manual 11<sup>th</sup> Edition* (ITE September 2021). The “Multifamily Housing (Mid-Rise)” (Land Use Code 221) land use was used for the trip generation estimates. The resulting trip generation estimates for the development are summarized in Table 6.

No adjustments for non-auto mode trips or internal interaction with the existing/planned commercial uses on the site have been applied, so the vehicular site traffic is considered to be a conservative estimate.

**Table 6: Trip Generation Summary**

ITE LAND USE DESCRIPTION	Units	AM PEAK HOUR TRIPS			PM PEAK HOUR TRIPS		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Multifamily Housing (Mid-Rise) (Land Use Code 221)	55	5	15	20	13	9	22

As shown in Table 6, the new trip generation (two-way) for the proposed development is forecast to be 20 and 22 trips in the AM and PM peak hours, respectively.

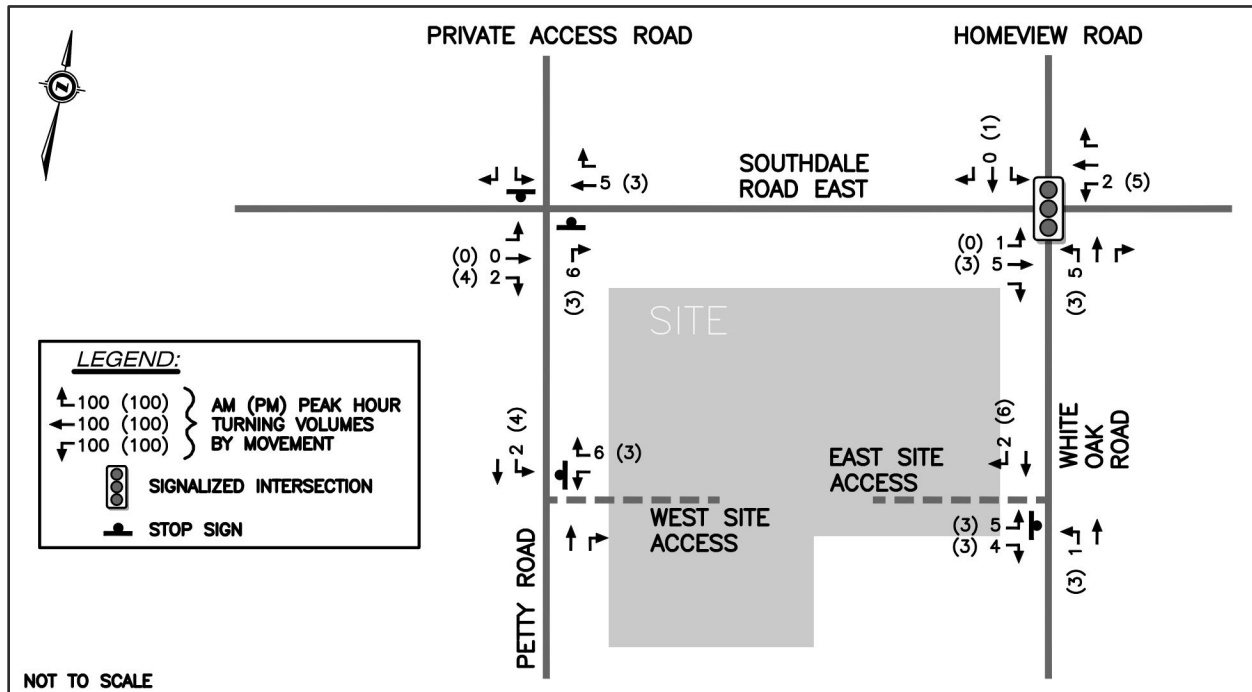
The assumed distribution of site traffic has been determined based on a combination of the existing turning movements in the study area and expected origins/destinations. Table 7 summarizes the trip distribution applied to the site traffic.

**Table 7: Trip Distribution Summary**

DIRECTION TO / FROM	VIA	IN / OUT
North	Homeview Road	5%
South	White Oak Road	30%
East	Southdale Road East	30%
West	Southdale Road West	35%
	<b>Total</b>	<b>100%</b>

Applying the above distribution, the resulting site traffic within the study area from the proposed development is illustrated in Figure 10.

**Figure 10: Site Traffic**



### 4.3 SITE PLAN REVIEW AND ACCESS CONSIDERATIONS

#### 4.3.1 WEST SITE ACCESS

The existing West Site Access is located on Petty Road approximately 77 m south of Southdale Road East (measured centreline to centreline). Sightlines are unobstructed at the West Site Access and the existing and proposed traffic volumes on Petty Road and the West Site Access are very low, so no additional turning lanes are warranted.

Internal to the site, the proposed access to the ground-level parking within the building is approximately 30 m from the west property line, which provides good separation from the West Site Access.

#### 4.3.2 EAST SITE ACCESS

The existing East Site Access is located on White Oak Road approximately 77 m south of Southdale Road East (measured centreline to centreline) and there are no conflicts with other driveways. A right turn lane and left turn lane are already in place on White Oak Road at the East Site Access and sightlines along White Oak Road are good in both directions.

#### 4.3.3 PEDESTRIAN CONNECTIONS

The proposed site plan should provide good pedestrian access with multiple connections between the buildings, parking areas, and municipal sidewalks on Petty Road and White Oak Road.

### 4.4 TRANSPORTATION DEMAND MANAGEMENT (TDM)

Transportation Demand Management (TDM) refers to strategies for increasing the efficiency of the transportation network, most often by reducing the number of single-occupancy vehicle trips. The primary objectives are usually to encourage people to change modes of transportation (e.g. walking,

cycling, or transit), travel less (e.g. work from home, combine trips when possible, etc.) or change trip times (i.e. avoid peak hours).

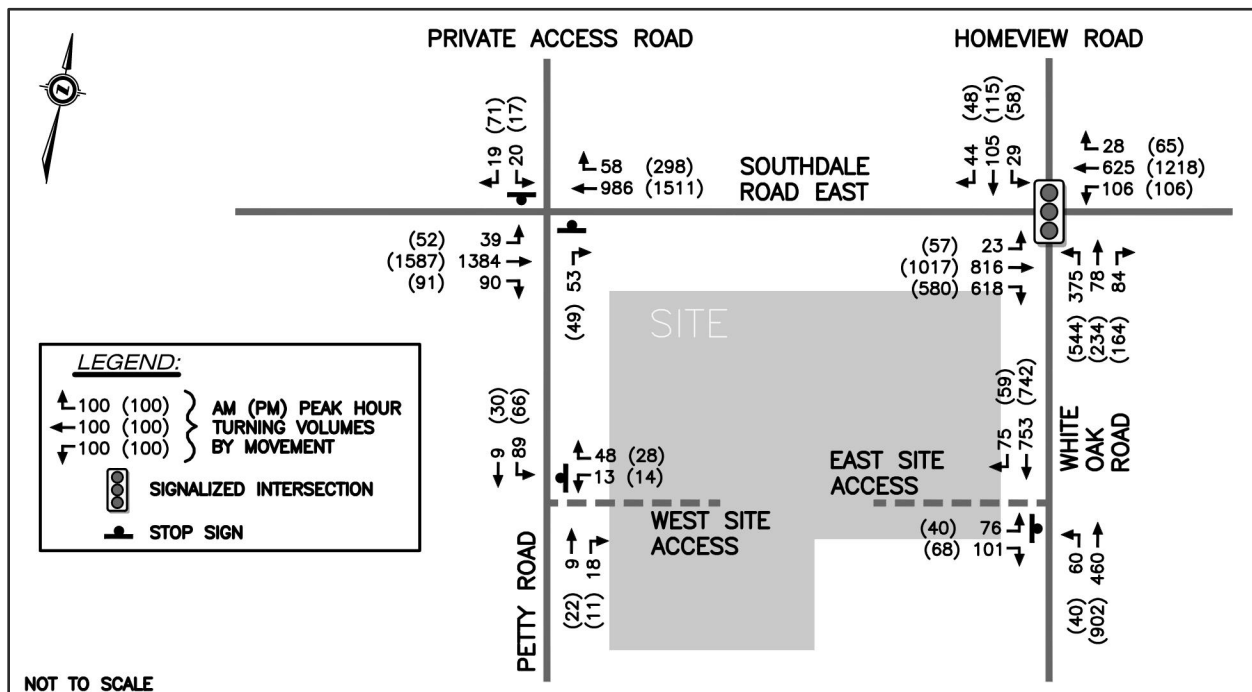
The proposed development supports TDM strategies in the following ways:

- Appropriate parking provisions (i.e. not over-supplied) for the proposed use will promote the use of alternative modes.
- Connections to the public sidewalk network encouraging active transportation and nearby transit access.
- The site is located on existing and planned cycling routes, and convenient internal bicycle parking will be provided, which should promote cycling trips.

## 5 FUTURE TOTAL TRAFFIC

The future total traffic is determined by combining the development traffic (site traffic) from Section 4.2 with the future background traffic from Section 3.4. The resulting 2030 total traffic volumes for the weekday AM and PM peak hours are shown in Figure 11.

Figure 11: 2030 Total Traffic Volumes



### 5.1 RIGHT TURN LANE CONSIDERATIONS

The need for a future right turn lane on Southdale Road East at Petty Road was considered. The City of London Access Management Guidelines suggests that an exclusive right turn lane should be considered when the volume of right turning vehicles is between 10 to 20 percent of the through volume, subject to a minimum of 60 vehicles per hour in the design hour.

Looking at the 2030 total traffic, the right turn volumes onto Petty Road will be only 90 and 91 vehicles during the AM and PM peak hours, respectively. These volumes represent less than 7% of the through volumes, therefore a right turn lane is not warranted at Petty Road.

## 6 FUTURE TRAFFIC OPERATIONAL ANALYSIS

Intersection operations were re-assessed for future background and total traffic conditions. The results of the future conditions analysis are summarized in Table 8. Detailed Synchro reports for the future background traffic and future total traffic are available in Appendix D and Appendix E, respectively.

**Table 8: 2030 Intersection Operations Summary**

INTERSECTIONS / MOVEMENTS		2030 BACKGROUND				2030 TOTAL			
		AM PEAK HOUR		PM PEAK HOUR		AM PEAK HOUR		PM PEAK HOUR	
		V/C	LOS (DELAY)	V/C	LOS (DELAY)	V/C	LOS (DELAY)	V/C	LOS (DELAY)
Southdale Road East and White Oak Road	Overall	0.67	C	0.94	D	0.68	C	0.94	D
	EB L	0.08	B	0.78	E	0.08	B	0.79	F (81)
	EB T	0.46	B	0.61	C	0.46	B	0.61	C
	EB R	0.47	A	0.42	A	0.47	A	0.42	A
	WB L	0.47	C	0.72	D	0.48	C	0.76	D
	WB TR	0.38	B	0.77	C	0.38	B	0.77	C
	NB L	0.93	E	1.08	F (94)	0.94	E	1.09	F (96)
	NB TR	0.24	C	0.59	C	0.24	C	0.59	C
	SB L	0.21	D	0.48	D	0.21	D	0.47	D
SB TR	0.66	E	0.67	E	0.65	E	0.67	E	
Southdale Road East and Petty Road / Private Access Road	EB L	0.06	B	0.16	C	0.07	B	0.16	C
	EB TR	0.60	A	0.65	A	0.60	A	0.65	A
	WB T	0.32	A	0.46	A	0.32	A	0.46	A
	WB R	0.04	A	0.18	A	0.04	A	0.18	A
	NB R	0.16	C	0.17	C	0.18	C	0.18	C
	SB LR	0.64	F (128)	1.77	F (541)	0.67	F (135)	1.81	F (559)
Petty Road and West Site Access	WB LR	0.07	A	0.06	A	0.07	A	0.06	A
	NB TR	0.02	A	0.02	A	0.02	A	0.02	A
	SB LT	0.06	A	0.05	A	0.07	A	0.05	A
White Oak Road and East Site Access	EB LR	0.78	F (60)	0.54	E	0.83	F (68)	0.57	E
	NB LT	0.08	A	0.05	A	0.09	A	0.06	A
	NB T	0.19	A	0.38	A	0.19	A	0.38	A
	SB T	0.47	A	0.47	A	0.47	A	0.47	A
	SB R	0.05	A	0.03	A	0.05	A	0.04	A
<b>Notes:</b> V/C - Volume to Capacity Ratio, LOS – Level of Service EB – Eastbound, WB – Westbound, NB – Northbound, SB - Southbound L – Left, T – Through, R – Right, U – U-Turn									

As shown in the results above, the Southdale Road East and White Oak Road intersection will generally continue to operate acceptably under 2030 background traffic conditions, however, the northbound left turn movement will be over capacity (v/c ratio of 1.08) during the PM peak hour. The 2030 total traffic results are nearly identical to the background traffic, indicating that the site traffic will have a negligible impact on the operation of the Southdale Road East and White Oak Road intersection. The Bradley Avenue extension, once constructed, can be expected to reduce volumes through this intersection (particularly the northbound left turn movement), but until then, it appears there is opportunity to increase the green time for the northbound left turn phase to provide some additional capacity, as required.

The Southdale Road East and Petty Road intersection will continue to function well in the future, however, the southbound turn movements from the Private Access Road opposite Petty Road will be over capacity with significant delay during the PM peak hour. This is mainly caused by the small number of southbound left turn movements and the reduced volumes on Southdale Road East due to the completion of the Bradley Avenue extension may improve the operation of this movement, but it is also expected that motorists will avoid this movement during peak hours if it becomes too difficult.

The existing West and East Site Access intersections will continue to function acceptably under future background and total traffic conditions. The eastbound (exiting) movement at the East Site Access will operate at LOS F during the AM peak hour, but this is not uncommon for stop-controlled access on arterial roads and it should be improved when the Bradley Avenue extension is completed.

Queuing results for the 2030 background and total traffic conditions were reviewed from the Synchro analysis to compare 95<sup>th</sup> percentile queue with the available storage lengths and the results are presented in Table 9.

**Table 9: 2030 Intersection Queuing Summary**

INTERSECTIONS / MOVEMENTS		AVAILABLE STORAGE (m)	95 <sup>th</sup> PERCENTILE QUEUE (m)			
			2030 BACKGROUND		2030 TOTAL	
			AM	PM	AM	PM
Southdale Road East and White Oak Road	EB L	70	8	41	8	41
	EB T	-	90	128	91	129
	EB R	50	17	13	17	13
	WB L	100+	38	56	39	60
	WB TR	-	70	181	70	183
	NB L	55 <sup>1</sup>	100	<b>169</b>	103	<b>171</b>
	NB TR	-	33	97	33	97
	SB L	50	16	27	16	27
	SB TR	-	53	56	53	56
Southdale Road East and Petty Road / Private Access Road	EB L	-	5	5	5	5
	NB R	-	5	5	5	5
	SB LR	-	21	68	22	83
Petty Road and West Site Access	WB LR	-	5	5	5	5
	SB LT	-	5	5	5	5
White Oak Road and East Site Access	EB LR	-	43	21	48	24
	NB LT	100	5	5	5	5
<p><b>Notes:</b> EB – Eastbound, WB – Westbound, NB – Northbound, SB - Southbound L – Left, T – Through, R – Right Queue lengths that were less than 5 m have been rounded up to 5 m to represent a minimum of one car length. <sup>1</sup> Upstream distance to East Site Access, but an additional 100 m of storage is available beyond access</p>						



From the results in Table 9, the only potential queuing concern is with the northbound left turn queue on White Oak Road at Southdale Road East, which could extend slightly beyond the available storage in the left turn lane during the PM peak hour, however, the traffic volume for this movement should be reduced once the Bradley Avenue extension is complete, therefore we do not expect the future queuing to be a concern.

## **7 CONCLUSIONS AND RECOMMENDATIONS**

Based on the analysis completed, the following key conclusions and recommendations are made in this TIA:

- It is forecast that the proposed development will generate 20 new trips in the AM peak hour (5 in and 15 out) and 22 trips during the PM peak hour (13 in and 9 out).
- Under existing conditions, the study area intersections are generally operating acceptably, however, the northbound left turn movement at the Southdale Road East and White Oak Road intersection has a v/c ratio of 0.94 during the PM peak hour with LOS E and significant queuing, indicating this movement is nearing capacity.
- Under 2030 background and total traffic conditions, all movements at the Southdale Road East and White Oak Road intersection will operate acceptably except for the northbound left turn movement, which could reach a v/c ratio of 1.09 during the PM peak hour. Since all other movements have spare capacity, there should be opportunity to optimize the signal timing to provide additional green time for the northbound left turn phase if needed in the future.

Under future conditions at the Southdale Road East and Petty Road intersection, all movements will operate acceptably except for the southbound left turns from the Private Access Road opposite Petty Road, which will be over capacity with significant delay during the PM peak hour. Since it is only a small number of southbound left turn movements causing the delay, it is expected that motorists may start to avoid making this movement during this time period.

The West Site Access and East Site Access are expected to continue to operate acceptably throughout the horizon period, however, some longer delay (LOS F) is expected at the East Site Access during the AM peak hour.

- The construction of the Bradley Avenue extension, between White Oak Road and Wharncliffe Road, is planned to commence in 2025. Once complete, the extension should reduce traffic volumes on Southdale Road East and White Oak Road through the study area and improve future operations for the critical movements identified.
- The need for a right turn lane on Southdale Road East at Petty Road was considered with respect to the City of London Access Management Guidelines and it was concluded that the turning volumes are not high enough to warrant a right turn lane.
- The proposed site plan provides good internal and external pedestrian connections, and the site has direct access to existing and planned cycling facilities (i.e. bike lanes on White Oak Road and future buffered bike lanes on Southdale Road East), which should help promote active transportation trips.

- Overall, the forecasted site traffic does not introduce any operational problems on the surrounding road network and no road improvements are required to accommodate the proposed development.

## **8 LIMITATIONS**

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All findings and conclusions presented in this Report are based on information as it appeared during the period of the investigation. This Report is not intended to be exhaustive in scope, or to imply a risk-free development. It should be recognized that the passage of time may alter the opinions, conclusions, and/or recommendations provided herein.

The analysis was limited to the documents referenced herein. Strik, Baldinelli, Moniz Ltd. accepts no responsibility for the accuracy of the information provided by others. All opinions, conclusions, and/or recommendations presented in this Report are based on the information available at the time of the review.

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## **Appendix A – Traffic Data**



# Turning Movements Report - AM Period

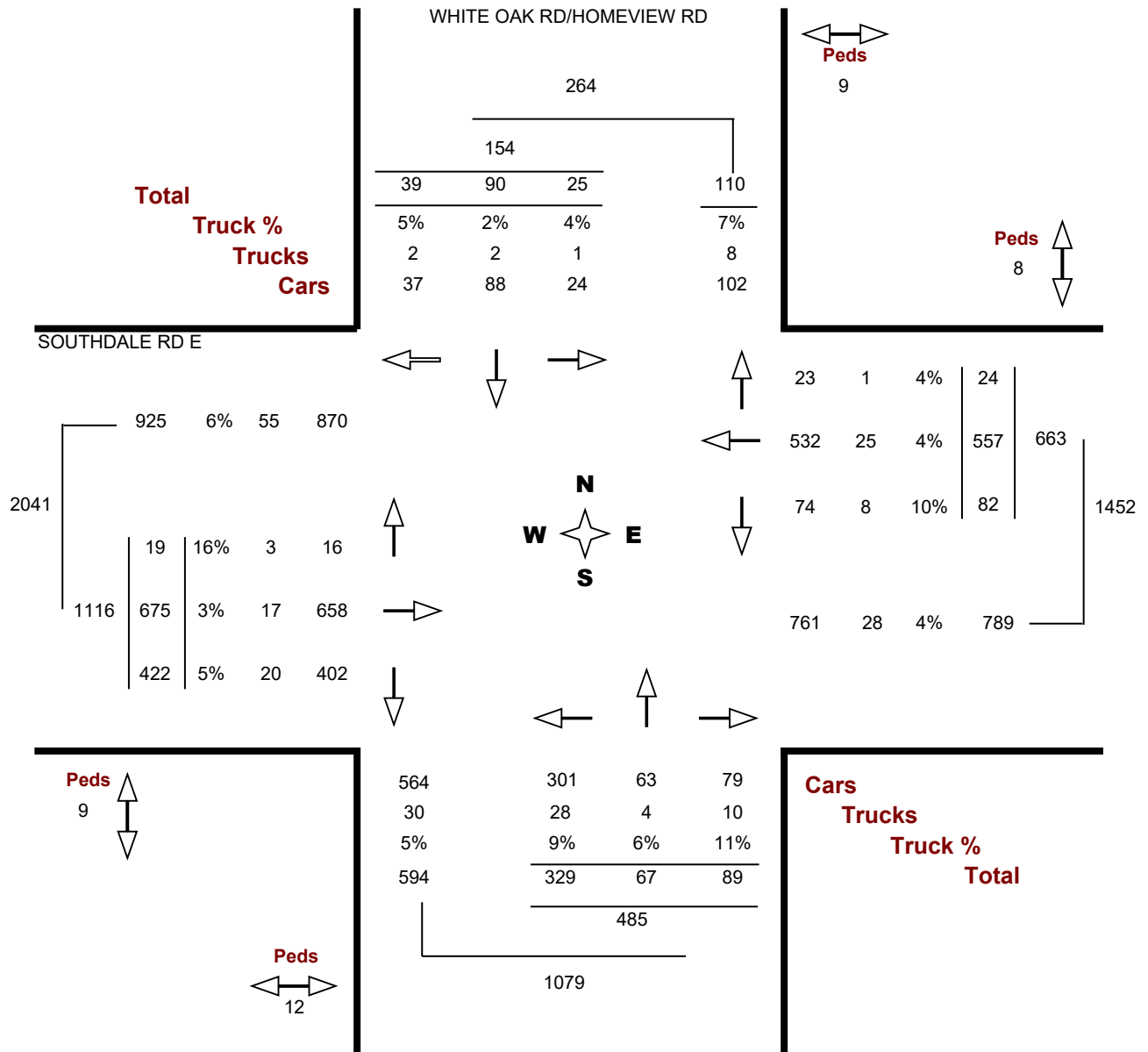
**Location.....** SOUTHDALE RD E @ WHITE OAK RD/HOMEVIEW RD

**Municipality.....** LONDON

**GeoID.....** INT5595

**Count Date.....** Thursday, 29 September, 2022

**Peak Hour.....** 07:45 AM — 08:45 AM





# Turning Movements Report - MD Period

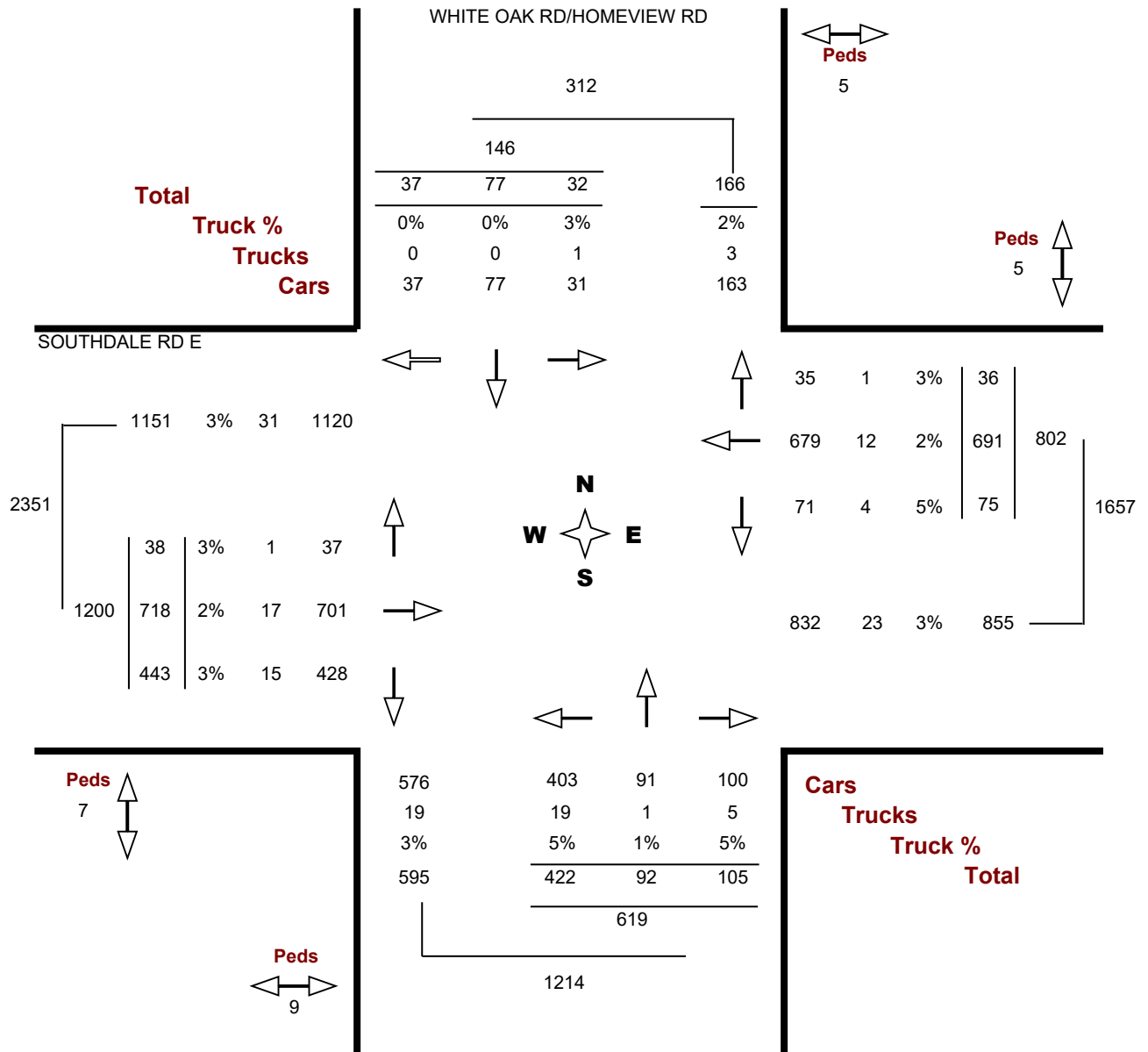
**Location.....** SOUTHDALE RD E @ WHITE OAK RD/HOMEVIEW RD

**Municipality.....** LONDON

**GeoID.....** INT5595

**Count Date.....** Thursday, 29 September, 2022

**Peak Hour.....** 12:15 PM — 01:15 PM





# Turning Movements Report - PM Period

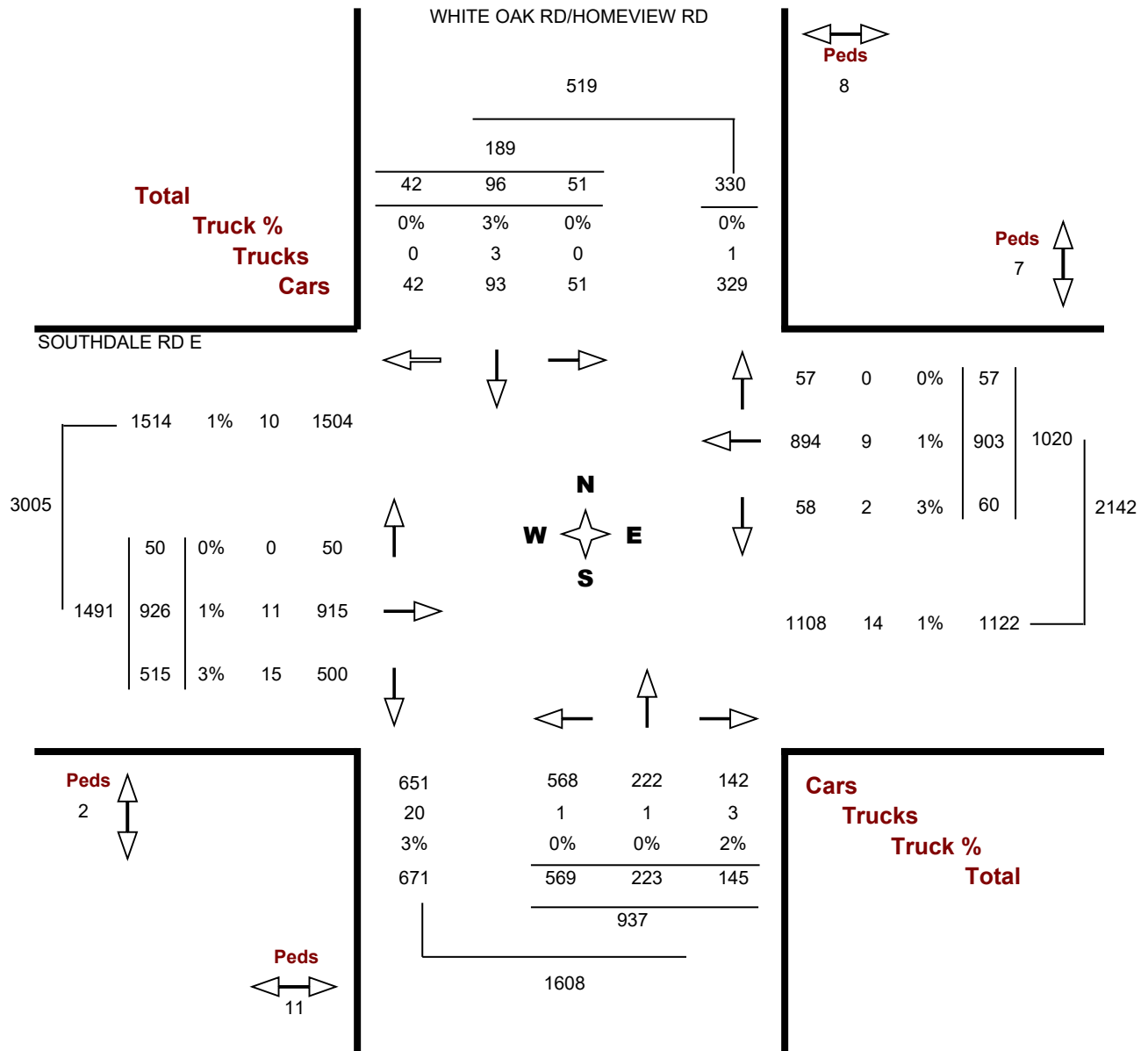
**Location.....** SOUTHDALE RD E @ WHITE OAK RD/HOMEVIEW RD

**Municipality.....** LONDON

**GeoID.....** INT5595

**Count Date.....** Thursday, 29 September, 2022

**Peak Hour.....** 04:30 PM — 05:30 PM



# Petty Rd @ Southdale Rd E

## Morning Peak Diagram

### Specified Period

**From:** 7:00:00

**To:** 9:00:00

### One Hour Peak

**From:** 7:45:00

**To:** 8:45:00

**Municipality:** London  
**Site #:** 000000001  
**Intersection:** Southdale Rd E & Petty Rd  
**TFR File #:** 1  
**Count date:** 1-May-2024

**Weather conditions:**  
 Clear/Dry  
**Person(s) who counted:**  
 Pyramid Traffic Inc

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Southdale Rd E runs W/E

North Leg Total: 118  
 North Entering: 33  
 North Peds: 6  
 Peds Cross:  $\times$

Heavys	0	0	0	0
Trucks	0	0	0	0
Cars	16	0	17	33
Totals	16	0	17	



Heavys	1
Trucks	0
Cars	84
Totals	85

East Leg Total: 2199  
 East Entering: 916  
 East Peds: 0  
 Peds Cross:  $\times$

Heavys	54
Trucks	0
Cars	827
Totals	881



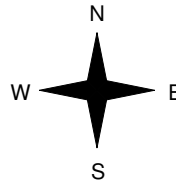
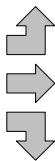
Petty Rd

Cars	50	Trucks	0	Heavys	1	Totals	51
Cars	811	Trucks	0	Heavys	54	Totals	865
Cars	0	Trucks	0	Heavys	0	Totals	0
Cars	861	Trucks	0	Heavys	55	Totals	



Southdale Rd E

Heavys	0
Trucks	0
Cars	34
Totals	34
Heavys	30
Trucks	0
Cars	1204
Totals	1234
Heavys	3
Trucks	0
Cars	61
Totals	64



Southdale Rd E



Cars	1253	Trucks	0	Heavys	30	Totals	1283
------	------	--------	---	--------	----	--------	------

Peds Cross:  $\times$   
 West Peds: 0  
 West Entering: 1332  
 West Leg Total: 2213

Cars	61
Trucks	0
Heavys	3
Totals	64



Cars	0	0	32	32
Trucks	0	0	0	0
Heavys	0	0	0	0
Totals	0	0	32	

Peds Cross:  $\times$   
 South Peds: 3  
 South Entering: 32  
 South Leg Total: 96

## Comments

# Petty Rd @ Southdale Rd E

## Afternoon Peak Diagram

### Specified Period

**From:** 16:00:00

**To:** 18:00:00

### One Hour Peak

**From:** 16:15:00

**To:** 17:15:00

**Municipality:** London  
**Site #:** 000000001  
**Intersection:** Southdale Rd E & Petty Rd  
**TFR File #:** 1  
**Count date:** 1-May-2024

**Weather conditions:**  
 Clear/Dry  
**Person(s) who counted:**  
 Pyramid Traffic Inc

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Southdale Rd E runs W/E

North Leg Total: 390  
 North Entering: 80  
 North Peds: 6  
 Peds Cross:  $\times$

Heavys	0	0	0	0
Trucks	0	0	0	0
Cars	63	2	15	80
Totals	63	2	15	



Heavys	0
Trucks	0
Cars	310
Totals	310

East Leg Total: 3021  
 East Entering: 1597  
 East Peds: 0  
 Peds Cross:  $\times$

Heavys	Trucks	Cars	Totals
10	0	1384	1394

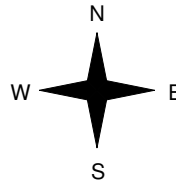


Petty Rd

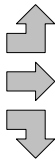
Cars	Trucks	Heavys	Totals
264	0	0	264
1321	0	10	1331
2	0	0	2
1587	0	10	



Southdale Rd E



Heavys	Trucks	Cars	Totals
0	0	46	46
25	0	1356	1381
0	0	61	61
25	0	1463	



Petty Rd

Southdale Rd E



Cars	Trucks	Heavys	Totals
1398	0	26	1424

Peds Cross:  $\times$   
 West Peds: 0  
 West Entering: 1488  
 West Leg Total: 2882

Cars	65	Cars	0	0	27	27
Trucks	0	Trucks	0	0	0	0
Heavys	0	Heavys	0	0	1	1
Totals	65	Totals	0	0	28	



Peds Cross:  $\times$   
 South Peds: 6  
 South Entering: 28  
 South Leg Total: 93

## Comments



# Petty Rd @ Tim Hortons

## Morning Peak Diagram

### Specified Period

**From:** 7:00:00

**To:** 9:00:00

### One Hour Peak

**From:** 7:15:00

**To:** 8:15:00

**Municipality:** London  
**Site #:** 0000000002  
**Intersection:** Petty Rd & Tim Hortons  
**TFR File #:** 2  
**Count date:** 1-May-2024

**Weather conditions:**  
Clear/Dry  
**Person(s) who counted:**  
Pyramid Traffic Inc

**\*\* Non-Signalized Intersection \*\***

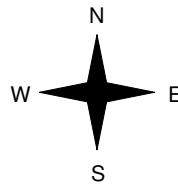
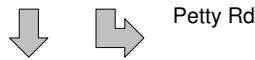
**Major Road:** Petty Rd runs N/S

North Leg Total: 106  
 North Entering: 71  
 North Peds: 0  
 Peds Cross:  $\times$

Heavys	0	0	0
Trucks	0	0	0
Cars	8	63	71
<b>Totals</b>	<b>8</b>	<b>63</b>	

Heavys	1
Trucks	0
Cars	34
<b>Totals</b>	<b>35</b>

East Leg Total: 108  
 East Entering: 34  
 East Peds: 1  
 Peds Cross:  $\times$



	Cars	Trucks	Heavys	Totals
	25	0	1	26
	7	0	1	8
	<b>32</b>	<b>0</b>	<b>2</b>	



	Cars	Trucks	Heavys	Totals
	74	0	0	74

Cars	15
Trucks	0
Heavys	1
<b>Totals</b>	<b>16</b>

Cars	9	11	20
Trucks	0	0	0
Heavys	0	0	0
<b>Totals</b>	<b>9</b>	<b>11</b>	

Peds Cross:  $\times$   
 South Peds: 0  
 South Entering: 20  
 South Leg Total: 36

## Comments

# Petty Rd @ Tim Hortons

## Afternoon Peak Diagram

### Specified Period

**From:** 16:00:00

**To:** 18:00:00

### One Hour Peak

**From:** 16:00:00

**To:** 17:00:00

**Municipality:** London  
**Site #:** 0000000002  
**Intersection:** Petty Rd & Tim Hortons  
**TFR File #:** 2  
**Count date:** 1-May-2024

**Weather conditions:**  
Clear/Dry  
**Person(s) who counted:**  
Pyramid Traffic Inc

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Petty Rd runs N/S

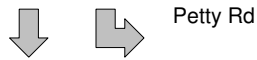
North Leg Total: 94  
 North Entering: 65  
 North Peds: 0  
 Peds Cross:  $\times$

Heavys	0	1	1
Trucks	0	0	0
Cars	28	36	64
<b>Totals</b>	<b>28</b>	<b>37</b>	

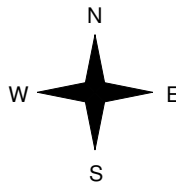


Heavys	1
Trucks	0
Cars	28
<b>Totals</b>	<b>29</b>

East Leg Total: 56  
 East Entering: 15  
 East Peds: 2  
 Peds Cross:  $\times$



Petty Rd



	Cars	Trucks	Heavys	Totals
Upward arrow	8	0	0	8
Downward arrow	7	0	0	7
<b>Totals</b>	<b>15</b>	<b>0</b>	<b>0</b>	

Tim Hortons



Petty Rd



Cars	35	Cars	20	4	24
Trucks	0	Trucks	0	0	0
Heavys	0	Heavys	1	0	1
<b>Totals</b>	<b>35</b>	<b>Totals</b>	<b>21</b>	<b>4</b>	



Peds Cross:  $\times$   
 South Peds: 3  
 South Entering: 25  
 South Leg Total: 60

## Comments

# White Oak Rd @ Tim Hortons

## Morning Peak Diagram

### Specified Period

**From:** 7:00:00

**To:** 9:00:00

### One Hour Peak

**From:** 7:45:00

**To:** 8:45:00

**Municipality:** London  
**Site #:** 000000003  
**Intersection:** White Oak Rd & Tim Hortons  
**TFR File #:** 3  
**Count date:** 1-May-2024

**Weather conditions:**  
Clear/Dry  
**Person(s) who counted:**  
Pyramid Traffic Inc

**\*\* Non-Signalized Intersection \*\***

**Major Road:** White Oak Rd runs N/S

North Leg Total: 1158  
 North Entering: 720  
 North Peds: 0  
 Peds Cross:  $\times$

Heavys	1	16	17
Trucks	0	0	0
Cars	48	655	703
Totals	49	671	



Heavys	31
Trucks	0
Cars	407
Totals	438

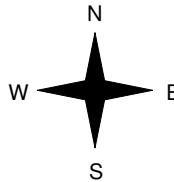
Heavys	Trucks	Cars	Totals
1	0	89	90



White Oak Rd



Tim Hortons



Heavys	Trucks	Cars	Totals
2	0	49	51
0	0	78	78
2	0	127	



White Oak Rd

Peds Cross:  $\times$   
 West Peds: 3  
 West Entering: 129  
 West Leg Total: 219

Cars	733
Trucks	0
Heavys	16
Totals	749



Cars	41	358	399
Trucks	0	0	0
Heavys	0	29	29
Totals	41	387	

Peds Cross:  $\times$   
 South Peds: 0  
 South Entering: 428  
 South Leg Total: 1177

## Comments

# White Oak Rd @ Tim Hortons

## Afternoon Peak Diagram

### Specified Period

**From:** 16:00:00

**To:** 18:00:00

### One Hour Peak

**From:** 16:00:00

**To:** 17:00:00

**Municipality:** London  
**Site #:** 000000003  
**Intersection:** White Oak Rd & Tim Hortons  
**TFR File #:** 3  
**Count date:** 1-May-2024

**Weather conditions:**  
Clear/Dry  
**Person(s) who counted:**  
Pyramid Traffic Inc

**\*\* Non-Signalized Intersection \*\***

**Major Road:** White Oak Rd runs N/S

North Leg Total: 1388  
 North Entering: 687  
 North Peds: 0  
 Peds Cross:  $\times$

Heavys	0	38
Trucks	0	0
Cars	26	623
<b>Totals</b>	<b>26</b>	<b>661</b>

38  
0  
649



Heavys	7
Trucks	0
Cars	694
<b>Totals</b>	<b>701</b>

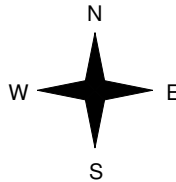
Heavys	0	0	45	Totals
0	0	45	45	



White Oak Rd



Tim Hortons



Heavys	0	0	17	Totals
0	0	17	17	
1	0	46	47	
1	0	63		



White Oak Rd



Peds Cross:  $\times$   
 West Peds: 3  
 West Entering: 64  
 West Leg Total: 109

Cars	669
Trucks	0
Heavys	39
<b>Totals</b>	<b>708</b>



Cars	19	677
Trucks	0	0
Heavys	0	7
<b>Totals</b>	<b>19</b>	<b>684</b>

696  
0  
7

Peds Cross:  $\times$   
 South Peds: 0  
 South Entering: 703  
 South Leg Total: 1411

## Comments



# Signal Timing Report

Printed: 2023-03-19 15:35:22

RunTime:2023-03-19 15:35:22



Intersection ID: **506: Southdale Road/White Oak Road/Homeview Road**

Operator:

Date Modified:

Deployed date:

Date of last edit:

**ADMIN**

**2023-01-29 18:12:26.023**

**2023-01-29 18:12:26.023**

**2023-01-29 18:12:26.023**

A.2 IP address: **10.51.0.205**

Port: **1001**

v 1.01

### A.3 Communications Timeout

COMM TIMEOUT: **4000**

OPERATIONS MODE: **Automatic**

### 1.2 Unit Setup (Excluding Texas)

Unit Param	Units	Val
START UP FLASH	Sec	7
AUTO PED CLR	Enum	disable
RED RV/10	Sec	4.0

### 1.3 Startup

Phase	Units	1	2	3	4	5	6	7	8
[P2] START UP	Enum	phaseNotOn	redClear	phaseNotOn	phaseNotOn	phaseNotOn	redClear	phaseNotOn	phaseNotOn

Phase	Units	9	10	11	12	13	14	15	16
[P2] START UP	Enum	phaseNotOn	phaseNotOn	phaseNotOn	phaseNotOn	phaseNotOn	phaseNotOn	phaseNotOn	phaseNotOn

### 1.4 Channel Setup

Phase	Units	1	2	3	4	5	6	7	8
CS MIN	Phase or Overlap	0	2	0	4	0	6	7	8
CONTROL TYPE	Enum	phaseVehicle	phaseVehicle	phaseVehicle	phaseVehicle	phaseVehicle	phaseVehicle	phaseVehicle	phaseVehicle

Phase	Units	9	10	11	12	13	14	15	16
CS MIN	Phase or Overlap	2	4	6	8	0	0	0	0
CONTROL TYPE	Enum	phasePedestrian	phasePedestrian	phasePedestrian	phasePedestrian	overlap	overlap	overlap	overlap

### 1.6 Logic Gates

Channel Param	Units	1	2	3	4	5	6	7	8
[P2] TYPE*	Enum	3	3	1	1	1	1	1	1
[P2] OUTPUT MODE*	Enum	1	1	1	1	1	1	1	1
[P2] OUTPUT FUNCTION*	Enum	26	4	1	1	1	1	1	1
[P2] OUTPUT FUNCTION INDEX*	Number	1	2	1	1	1	1	1	1
[P2] INPUT 1 INVERT*	Enum	1	0	0	0	0	0	0	0
[P2] INPUT 1 FUNCTION*	Enum	80	80	1	1	1	1	1	1
[P2] INPUT 1 FUNCTION INDEX*	Number	255	20	1	1	1	1	1	1
[P2] INPUT 2 FUNCTION*	Enum	1	80	1	1	1	1	1	1
[P2] INPUT 2 FUNCTION INDEX*	Number	1	21	1	1	1	1	1	1
[P2] INPUT 3 FUNCTION*	Enum	1	80	1	1	1	1	1	1
[P2] INPUT 3 FUNCTION INDEX*	Number	1	22	1	1	1	1	1	1
[P2] INPUT 4 FUNCTION*	Enum	1	1	1	1	1	1	1	1
[P2] INPUT 4 FUNCTION INDEX*	Number	1	1	1	1	1	1	1	1



# Signal Timing Report

## 506: Southdale Road/White Oak Road/Homeview Road

Channel Param	Units	9	10	11	12	13	14	15	16
[P2] TYPE*	Enum	1	1	1	1	1	1	1	1
[P2] OUTPUT MODE*	Enum	1	1	1	1	1	1	1	1
[P2] OUTPUT FUNCTION*	Enum	1	1	1	1	1	1	1	1
[P2] OUTPUT FUNCTION INDEX*	Number	1	1	1	1	1	1	1	1
[P2] INPUT 1 FUNCTION*	Enum	1	1	1	1	1	1	1	1
[P2] INPUT 1 FUNCTION INDEX*	Number	1	1	1	1	1	1	1	1
[P2] INPUT 2 FUNCTION*	Enum	1	1	1	1	1	1	1	1
[P2] INPUT 2 FUNCTION INDEX*	Number	1	1	1	1	1	1	1	1
[P2] INPUT 3 FUNCTION*	Enum	1	1	1	1	1	1	1	1
[P2] INPUT 3 FUNCTION INDEX*	Number	1	1	1	1	1	1	1	1
[P2] INPUT 4 FUNCTION*	Enum	1	1	1	1	1	1	1	1
[P2] INPUT 4 FUNCTION INDEX*	Number	1	1	1	1	1	1	1	1

Channel Param	Units	17	18	19	20	21	22	23	24
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Channel Param	Units	25	26	27	28	29	30	31	32
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### 2.1.1 Phase Timings Set 1

Phase	Units	1	2	3	4	5	6	7	8
SET 1 - WALK	Sec	0	25	0	7	0	25	0	7
SET 1 - PED CLR	Sec	0	17	0	21	0	17	0	21
SET 1 - MIN GRN	Sec	0	7	0	7	0	7	5	7
SET 1 - PASS/10	Sec	0.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
SET 1 - MAX 1	Sec	0	42	0	28	0	42	25	28
SET 1 - MAX 2	Sec	0	42	0	28	0	42	25	28
SET 1 - YEL/10	Sec	0.0	3.7	0.0	3.3	0.0	3.7	3.0	3.3
SET 1 - RED/10	Sec	0.0	2.4	0.0	2.9	0.0	2.4	1.0	2.9

Phase	Units	9	10	11	12	13	14	15	16
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### 2.2.1 Phase Options Set 1

Phase	Units	1	2	3	4	5	6	7	8
[P2] SET 1 - OPTIONS*	Bit	Non Lock Det	Non-Actuated 1	Non Lock Det	Non Lock Det	Non Lock Det	Non-Actuated 1	Non Lock Det	Non Lock Det
[P2] SET 1 - OPTIONS 2*	Bit	16	0	16	0	16	0	16	0

Phase	Units	9	10	11	12	13	14	15	16
[P2] SET 1 - OPTIONS*	Bit	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det



# Signal Timing Report

## 506: Southdale Road/White Oak Road/Homeview Road

### 2.1.2 Phase Timings Set 2

Phase	Units	1	2	3	4	5	6	7	8
SET 2 - WALK	Sec	0	25	0	7	0	25	0	7
SET 2 - PED CLR	Sec	0	17	0	21	0	17	0	21
SET 2 - MIN GRN	Sec	0	7	0	7	0	7	5	7
SET 2 - PASS/10	Sec	0.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
SET 2 - MAX 1	Sec	0	42	0	28	0	42	25	28
SET 2 - MAX 2	Sec	0	42	0	28	0	42	25	28
SET 2 - YEL/10	Sec	0.0	3.7	0.0	3.3	0.0	3.7	3.0	3.3
SET 2 - RED/10	Sec	0.0	2.4	0.0	2.9	0.0	2.4	1.0	2.9
Phase	Units	9	10	11	12	13	14	15	16

### 2.2.2 Phase Options Set 2

Phase	Units	1	2	3	4	5	6	7	8
[P2]SET 2 - OPTIONS*	Bit	Non Lock Det	Non-Actuated 1	Non Lock Det	Non Lock Det	Non Lock Det	Non-Actuated 1	Non Lock Det	Non Lock Det
[P2]SET 2 - OPTIONS 2*	Bit	16	0	16	0	16	0	16	0
Phase	Units	9	10	11	12	13	14	15	16
[P2]SET 2 - OPTIONS*	Bit	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det

### 2.1.3 Phase Timings Set 3

Phase	Units	1	2	3	4	5	6	7	8
SET 3 - WALK	Sec	0	25	0	7	0	25	0	7
SET 3 - PED CLR	Sec	0	17	0	21	0	17	0	21
SET 3 - MIN GRN	Sec	0	7	0	7	0	7	5	7
SET 3 - PASS/10	Sec	0.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
SET 3 - MAX 1	Sec	0	42	0	28	0	42	25	28
SET 3 - MAX 2	Sec	0	42	0	28	0	42	25	28
SET 3 - YEL/10	Sec	0.0	3.7	0.0	3.3	0.0	3.7	3.0	3.3
SET 3 - RED/10	Sec	0.0	2.4	0.0	2.9	0.0	2.4	1.0	2.9
Phase	Units	9	10	11	12	13	14	15	16

### 2.2.3 Phase Options Set 3

Phase	Units	1	2	3	4	5	6	7	8
[P2] SET 3 - OPTIONS*	Bit	Non Lock Det	Non-Actuated 1	Non Lock Det	Non Lock Det	Non Lock Det	Non-Actuated 1	Non Lock Det	Non Lock Det
[P2] SET 3 - OPTIONS 2*	Bit	16	0	16	0	16	0	16	0
Phase	Units	9	10	11	12	13	14	15	16
[P2] SET 3 - OPTIONS*	Bit	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det



# Signal Timing Report

## 506: Southdale Road/White Oak Road/Homeview Road

### 2.1.4 Phase Timings Set 4

Phase	Units	1	2	3	4	5	6	7	8
SET 4 - WALK	Sec	0	25	0	7	0	25	0	7
SET 4 - PED CLR	Sec	0	17	0	21	0	17	0	21
SET 4 - MIN GRN	Sec	0	7	0	7	0	7	5	7
SET 4 - PASS/10	Sec	0.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
SET 4 - MAX 1	Sec	0	42	0	28	0	42	25	28
SET 4 - MAX 2	Sec	0	42	0	28	0	42	25	28
SET 4 - YEL/10	Sec	0.0	3.7	0.0	3.3	0.0	3.7	3.0	3.3
SET 4 - RED/10	Sec	0.0	2.4	0.0	2.9	0.0	2.4	1.0	2.9

Phase	Units	9	10	11	12	13	14	15	16
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### 2.2.4 Phase Options Set 4

Phase	Units	1	2	3	4	5	6	7	8
[P2] SET 4 - OPTIONS*	Bit	Non Lock Det	Non-Actuated 1	Non Lock Det	Non Lock Det	Non Lock Det	Non-Actuated 1	Non Lock Det	Non Lock Det
[P2] SET 4 - OPTIONS 2*	Bit	16	0	16	0	16	0	16	0

Phase	Units	9	10	11	12	13	14	15	16
[P2] SET 4 - OPTIONS*	Bit	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det	Non Lock Det

### 2.3.1 Phase Sequence Set 1

Phase	Units	1	2	3	4	5	6	7	8
[P2] SEQUENCE 1	Phase (.)	(2,4)	(6,7,8)	()	()	()	()	()	()

Phase	Units	9	10	11	12	13	14	15	16
-------	-------	---	----	----	----	----	----	----	----

### 2.3.2 Phase Sequence Set 2

Phase	Units	1	2	3	4	5	6	7	8
[P2] SEQUENCE 2	Phase (.)	(2,4)	(6,7,8)	()	()	()	()	()	()

Phase	Units	9	10	11	12	13	14	15	16
-------	-------	---	----	----	----	----	----	----	----

### 2.4 Phase Enable and Rings

Phase	Units	1	2	3	4	5	6	7	8
[P2] RING	Ring	0	1	0	1	0	2	2	2

Phase	Units	9	10	11	12	13	14	15	16
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### 2.5 Phase Concurrency

Phase	Units	1	2	3	4	5	6	7	8
[P2] PHASE CONCURRENCY	Phase (.)	()	(6)	()	(7,8)	()	(2)	(4)	(4)

Overlap	Units	9	10	11	12	13	14	15	16
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### 3.1.1 Vehicle Overlap Set

Overlap	Units	1	2	3	4	5	6	7	8
[P2] TYPE	Enum	normal	normal	normal	normal	normal	normal	normal	normal





# Signal Timing Report

## 506: Southdale Road/White Oak Road/Homeview Road

Overlap	Units	9	10	11	12	13	14	15	16
[P2] TYPE	Enum	normal	normal	normal	normal	normal	normal	normal	normal

### 4.1.1 Vehicle Detector Set 1

Veh Detector	Units	1	2	3	4	5	6	7	8
OPTIONS	Bit	Passage	Passage	Passage	Passage	Passage	Passage	Passage	Passage

Veh Detector	Units	9	10	11	12	13	14	15	16
--------------	-------	---	----	----	----	----	----	----	----

Veh Detector	Units	17	18	19	20	21	22	23	24
OPTIONS	Bit	0	0	0	0	0	0	0	Volume
MAX PR	Min	0	0	0	0	0	0	0	60
ER CNTS	Counts/Min	0	0	0	0	0	0	0	100

Veh Detector	Units	25	26	27	28	29	30	31	32
OPTIONS	Bit	0	Volume	0	0	0	0	Volume	0
NO ACT	Min	0	0	0	0	0	0	60	0
MAX PR	Min	0	60	0	0	0	0	60	0
ER CNTS	Counts/Min	0	100	0	0	0	0	100	0

Veh Detector	Units	33	34	35	36	37	38	39	40
OPTIONS	Bit	Volume	0	0	0	0	0	0	Volume
NO ACT	Min	60	0	0	0	0	0	0	0
MAX PR	Min	60	0	0	0	0	0	0	60
ER CNTS	Counts/Min	100	0	0	0	0	0	0	100

Veh Detector	Units	41	42	43	44	45	46	47	48
OPTIONS	Bit	0	0	0	0	Volume	0	Volume	0
NO ACT	Min	0	0	0	0	60	0	60	0
MAX PR	Min	0	0	0	0	60	0	60	0
ER CNTS	Counts/Min	0	0	0	0	100	0	100	0

Veh Detector	Units	49	50	51	52	53	54	55	56
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Veh Detector	Units	57	58	59	60	61	62	63	64
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Veh Detector	Units	65	66	67	68	69	70	71	72
--------------	-------	----	----	----	----	----	----	----	----

Veh Detector	Units	73	74	75	76	77	78	79	80
--------------	-------	----	----	----	----	----	----	----	----

Veh Detector	Units	81	81	83	84	85	86	87	88
--------------	-------	----	----	----	----	----	----	----	----

Veh Detector	Units	89	90	91	92	93	94	95	96
--------------	-------	----	----	----	----	----	----	----	----

Veh Detector	Units	97	98	99	100	101	102	103	104
--------------	-------	----	----	----	-----	-----	-----	-----	-----

Veh Detector	Units	105	106	107	108	109	110	111	112
--------------	-------	-----	-----	-----	-----	-----	-----	-----	-----

Veh Detector	Units	113	114	115	116	117	118	119	120
--------------	-------	-----	-----	-----	-----	-----	-----	-----	-----



# Signal Timing Report

## 506: Southdale Road/White Oak Road/Homeview Road

Veh Detector	Units	121	122	123	124	125	126	127	128
--------------	-------	-----	-----	-----	-----	-----	-----	-----	-----

### 4.2.1 Pedestrian Detector Set 1

Ped Detector	Units	1	2	3	4	5	6	7	8
--------------	-------	---	---	---	---	---	---	---	---

MAX PR	Min	0	0	0	60	0	0	0	60
--------	-----	---	---	---	----	---	---	---	----

Ped Detector	Units	9	10	11	12	13	14	15	16
--------------	-------	---	----	----	----	----	----	----	----

### 4.2.1 Pedestrian Detector Set 2

Ped Detector	Units	1	2	3	4	5	6	7	8
--------------	-------	---	---	---	---	---	---	---	---

MAX PR	Min	0	0	0	60	0	0	0	60
--------	-----	---	---	---	----	---	---	---	----

Ped Detector	Units	9	10	11	12	13	14	15	16
--------------	-------	---	----	----	----	----	----	----	----

### 4.3.1 Vehicle Detector Diagnostics Set 1

Veh Detector	Units	1	2	3	4	5	6	7	8
--------------	-------	---	---	---	---	---	---	---	---

OPTIONS	Bit	Passage	Passage	Passage	Passage	Passage	Passage	Passage	Passage
---------	-----	---------	---------	---------	---------	---------	---------	---------	---------

### 4.3.2 Vehicle Detector Diagnostics Set 2

Veh Detector	Units	9	10	11	12	13	14	15	16
--------------	-------	---	----	----	----	----	----	----	----

### 4.4.1 Pedestrian Detector Diagnostics Set 1

Ped Detector	Units	1	2	3	4	5	6	7	8
--------------	-------	---	---	---	---	---	---	---	---

MAX PR	Min	0	0	0	60	0	0	0	60
--------	-----	---	---	---	----	---	---	---	----

Ped Detector	Units	9	10	11	12	13	14	15	16
--------------	-------	---	----	----	----	----	----	----	----

### 5.1 Coordination Constants

Coord Param	Units	Val
-------------	-------	-----

CORRECTION MODE	Enum	shortway
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MAXIMUM MODE	Enum	maxInhibit
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COORD FORCE MODE	Enum	fixed
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### 5.2 Patterns

Coord Pattern	Units	1	2	3	4	5	6	7	8
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CYCLE TIME	Sec	120	0	120	0	120	0	0	0
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OFFSET TIME	Sec	38	0	48	0	40	0	0	0
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SPLIT	Split	1	2	3	4	5	6	7	8
-------	-------	---	---	---	---	---	---	---	---

SEQUENCE	Sequence	1	1	1	1	1	1	1	1
----------	----------	---	---	---	---	---	---	---	---

CORRECTION MODE*	Enum	1	1	1	1	1	1	1	1
------------------	------	---	---	---	---	---	---	---	---

MAXIMUM MODE*	Enum	1	1	1	1	1	1	1	1
---------------	------	---	---	---	---	---	---	---	---

COORD FORCE MODE *	Enum	1	1	1	1	1	1	1	1
--------------------	------	---	---	---	---	---	---	---	---

PERMIT STRATEGY*	Enum	1	1	1	1	1	1	1	1
------------------	------	---	---	---	---	---	---	---	---

OMIT STRATEGY*	Enum	1	1	1	1	1	1	1	1
----------------	------	---	---	---	---	---	---	---	---

NO EARLY RETURN*	Enum	1	1	1	1	1	1	1	1
------------------	------	---	---	---	---	---	---	---	---

TIMING SET*	Number	2	1	3	1	4	1	1	1
-------------	--------	---	---	---	---	---	---	---	---

PHASE OPTION SET*	Number	2	1	3	1	4	1	1	1
-------------------	--------	---	---	---	---	---	---	---	---



# Signal Timing Report

## 506: Southdale Road/White Oak Road/Homeview Road

Coord Pattern	Units	9	10	11	12	13	14	15	16
CYCLE TIME	Sec	0	0	120	0	0	0	0	0
SPLIT	Split	9	10	11	12	13	14	15	16
SEQUENCE	Sequence	1	1	1	1	1	1	1	1
CORRECTION MODE*	Enum	1	1	1	1	1	1	1	1
MAXIMUM MODE*	Enum	1	1	1	1	1	1	1	1
COORD FORCE MODE *	Enum	1	1	1	1	1	1	1	1
PERMIT STRATEGY*	Enum	1	1	1	1	1	1	1	1
OMIT STRATEGY*	Enum	1	1	1	1	1	1	1	1
NO EARLY RETURN*	Enum	1	1	1	1	1	1	1	1
TIMING SET*	Number	1	1	3	1	1	1	1	1
PHASE OPTION SET*	Number	1	2	2	2	2	2	2	1

Coord Pattern	Units	17	18	19	20	21	22	23	24
SPLIT	Split	17	18	19	20	21	22	1	1
SEQUENCE	Sequence	1	1	1	1	1	1	1	1
CORRECTION MODE*	Enum	1	1	1	1	1	1	1	1
MAXIMUM MODE*	Enum	1	1	1	1	1	1	1	1
COORD FORCE MODE *	Enum	1	1	1	1	1	1	1	1
PERMIT STRATEGY*	Enum	1	1	1	1	1	1	1	1
OMIT STRATEGY*	Enum	1	1	1	1	1	1	1	1
NO EARLY RETURN*	Enum	1	1	1	1	1	1	1	1
TIMING SET*	Number	1	1	1	1	1	1	1	1
PHASE OPTION SET*	Number	1	1	1	1	1	1	1	1
DETECTOR RESET*	Enum	0	0	0	0	0	1	0	0
MAX 2 PHASES*	Bit	0	0	0	0	170	0	0	0

Coord Pattern	Units	25	26	27	28	29	30	31	32
SPLIT	Split	1	1	1	1	1	1	1	1
SEQUENCE	Sequence	1	1	1	1	1	1	1	1
CORRECTION MODE*	Enum	1	1	1	1	1	1	1	1
MAXIMUM MODE*	Enum	1	1	1	1	1	1	1	1
COORD FORCE MODE *	Enum	1	1	1	1	1	1	1	1
PERMIT STRATEGY*	Enum	1	1	1	1	1	1	1	1
OMIT STRATEGY*	Enum	1	1	1	1	1	1	1	1
NO EARLY RETURN*	Enum	1	1	1	1	1	1	1	1
TIMING SET*	Number	1	1	1	1	1	1	1	1
PHASE OPTION SET*	Number	1	1	1	1	1	1	1	1



# Signal Timing Report

## 506: Southdale Road/White Oak Road/Homeview Road

### 5.3 Coordination Split

Coord Split	Units	1	2	3	4	5	6	7	8
SPLIT 1 - MODE	Enum	none	8	none	none	none	8	none	none
SPLIT 1 - TIME	Sec	0	56	0	64	0	56	28	36
SPLIT 1 - COORD	Enum	false	true	false	false	false	true	false	false
SPLIT 2 - MODE	Enum	none	8	none	none	none	none	none	none
SPLIT 3 - MODE	Enum	none	8	none	none	none	8	none	none
SPLIT 3 - TIME	Sec	0	50	0	70	0	50	34	36
SPLIT 3 - COORD	Enum	false	true	false	false	false	true	false	false
SPLIT 4 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 5 - MODE	Enum	none	8	none	none	none	8	none	none
SPLIT 5 - TIME	Sec	0	52	0	68	0	52	32	36
SPLIT 5 - COORD	Enum	false	true	false	false	false	true	false	false
SPLIT 6 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 7 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 8 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 9 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 10 - MODE	Enum	none	8	none	none	none	8	none	none
SPLIT 11 - MODE	Enum	none	8	none	none	none	8	none	none
SPLIT 11 - TIME	Sec	0	54	0	66	0	54	30	36
SPLIT 10 - TIME	Enum	false	true	false	false	false	true	false	false
SPLIT 12 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 13 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 14 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 15 - MODE	Enum	none	8	none	none	none	8	none	none
SPLIT 16 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 17 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 18 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 19 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 20 - MODE	Enum	none	maxVehAndPedR	none	none	none	maxVehAndPedR	none	none
SPLIT 21 - MODE	Enum	none	maxVehAndPedR	none	none	none	maxVehAndPedR	phaseOmitted	none
SPLIT 22 - MODE	Enum	none	maxVehAndPedR	none	none	none	maxVehAndPedR	none	none
SPLIT 23 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 24 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 25 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 26 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 27 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 28 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 29 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 30 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 31 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 32 - MODE	Enum	none	none	none	none	none	none	none	none



# Signal Timing Report

## 506: Southdale Road/White Oak Road/Homeview Road

Coord Split	Units	9	10	11	12	13	14	15	16
SPLIT 1 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 2 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 3 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 4 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 5 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 6 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 7 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 8 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 9 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 10 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 11 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 12 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 13 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 14 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 15 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 16 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 17 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 18 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 19 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 20 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 21 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 22 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 23 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 24 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 25 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 26 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 27 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 28 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 29 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 30 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 31 - MODE	Enum	none	none	none	none	none	none	none	none
SPLIT 32 - MODE	Enum	none	none	none	none	none	none	none	none

### 6.3.2 Daylight Saving Time – Schedule

TB DST	Units	Val
BEGIN MONTH	Enum	absolute
BEGIN OCCURRENCE	Enum	first
BEGIN DOW	Enum	sunday
BEGIN DOM	Date	13
BEGIN SECONDS	Sec	9943200
END MONTH	Enum	1
END OCCURRENCE	Enum	1
END DOW	Enum	1



# Signal Timing Report

## 506: Southdale Road/White Oak Road/Homeview Road

TB DST	Units	Val
END DOM	Date	1
END SECONDS	Sec	25668000
ADJUSTMENT	Sec	3600

### 6.5.1 TB Dayplan

TB Dayplan	Units	1	2	3	4	5	6	7	8
PLAN 1 HOUR	Hour	0	9	20	0	0	0	0	0
PLAN 1 MINUTE	Min	1	0	0	0	0	0	0	0
PLAN 1 ACTION	Number	21	11	21	0	0	0	0	0
PLAN 2 HOUR	Hour	0	6	9	15	18	22	0	0
PLAN 2 MINUTE	Min	1	30	30	30	30	0	0	0
PLAN 2 ACTION	Number	21	1	3	5	3	21	0	0
PLAN 7 HOUR	Hour	0	7	22	0	0	0	0	0
PLAN 7 MINUTE	Min	1	0	0	0	0	0	0	0
PLAN 7 ACTION	Number	21	11	21	0	0	0	0	0

TB Dayplan	Units	9	10	11	12	13	14	15	16
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TB Dayplan	Units	17	18	19	20	21	22	23	24
------------	-------	----	----	----	----	----	----	----	----

TB Dayplan	Units	25	26	27	28	29	30	31	32
------------	-------	----	----	----	----	----	----	----	----

### 6.6.1 Action Parameters

TB Action	Units	1	2	3	4	5	6	7	8
PATTERN	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	Pattern 8

TB Action	Units	9	10	11	12	13	14	15	16
PATTERN	Enum	Pattern 9	Pattern 10	Pattern 11	Pattern 12	Pattern 13	Pattern 14	Pattern 15	Pattern 16

TB Action	Units	17	18	19	20	21	22	23	24
PATTERN	Enum	Pattern 17	Pattern 18	Pattern 19	Pattern 20	Pattern 21	Pattern 22	Interconnect	Interconnect

TB Action	Units	25	26	27	28	29	30	31	32
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# Signal Timing Report

506: Southdale Road/White Oak Road/Homeview Road

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RunTime:2023-03-19 15:35:31

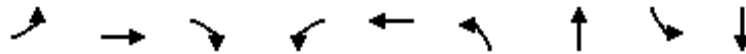
## 7.1 - 7.3 Preempt

Preempt Param	Units	1	2	3	4	5	6	7	8
CONTROL	Bit	Non-Locking	0	0	Non-Locking	0	0		
MIN GRN	Sec	255	255	255	255	255	255		
MIN WALK	Sec	0	0	255	255	255	255		
ENTER PED CLR	Sec	255	255	255	255	255	255		
MIN DWELL	Sec	20	20	0	0	0	0		
MAX PR	Sec	120	120	0	0	0	0		
[P2] DWELL PHASE	Phase (.)	(2,6)	(4,8)	()	()	()	()	()	()
[P2] EXIT PHASES	Phase (.)	(4,8)	(2,6)	()	()	()	()	()	()
ENTER YELLOW CHANGE	Sec	25.5	25.5	25.5	25.5	25.5	25.5		
ENTER RED CLEAR	Sec	25.5	25.5	25.5	25.5	25.5	25.5		
TRACK YELLOW CHANGE	Sec	0.0	0.0	25.5	25.5	25.5	25.5		
TRACK RED CLEAR	Sec	0.0	0.0	25.5	25.5	25.5	25.5		

## **Appendix B – Synchro Output Reports - Existing Traffic**



1: White Oak Rd/Homeview Rd & Southdale Rd E



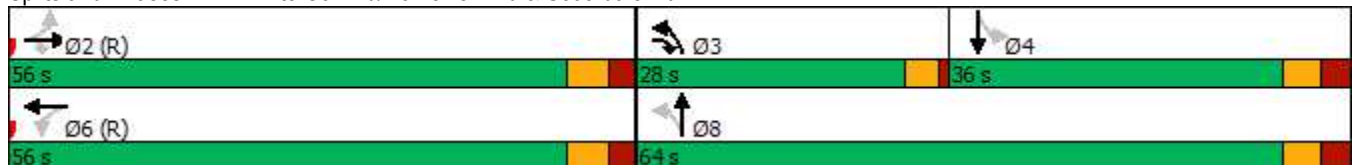
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↘	↑↑	↗	↘	↑↑	↘	↗	↘	↗
Traffic Volume (vph)	19	716	548	82	557	320	67	25	90
Future Volume (vph)	19	716	548	82	557	320	67	25	90
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases		2	3		6	3	8		4
Permitted Phases	2		2	6		8		4	
Detector Phase	2	2	3	6	6	3	8	4	4
Switch Phase									
Minimum Initial (s)	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	7.0
Minimum Split (s)	48.1	48.1	24.0	48.1	48.1	24.0	34.2	34.2	34.2
Total Split (s)	56.0	56.0	28.0	56.0	56.0	28.0	64.0	36.0	36.0
Total Split (%)	46.7%	46.7%	23.3%	46.7%	46.7%	23.3%	53.3%	30.0%	30.0%
Yellow Time (s)	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	1.0	2.4	2.4	1.0	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	4.0	6.1	6.1	4.0	6.2	6.2	6.2
Lead/Lag			Lead			Lead		Lag	Lag
Lead-Lag Optimize?			Yes			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	66.9	66.9	92.0	66.9	66.9	43.0	40.8	13.8	13.8
Actuated g/C Ratio	0.56	0.56	0.77	0.56	0.56	0.36	0.34	0.12	0.12
v/c Ratio	0.06	0.39	0.46	0.30	0.32	0.79	0.26	0.20	0.64
Control Delay	14.9	16.6	1.5	19.4	15.6	44.2	16.4	49.3	57.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	16.6	1.5	19.4	15.6	44.2	16.4	49.3	57.4
LOS	B	B	A	B	B	D	B	D	E
Approach Delay		10.1			16.1		35.7		56.1
Approach LOS		B			B		D		E

Intersection Summary

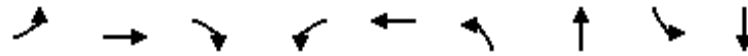
Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 38 (32%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 19.0  
 Intersection Capacity Utilization 88.8%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service E

Splits and Phases: 1: White Oak Rd/Homeview Rd & Southdale Rd E



## 1: White Oak Rd/Homeview Rd &amp; Southdale Rd E


























Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	21	778	596	89	631	348	153	27	140
v/c Ratio	0.06	0.39	0.46	0.30	0.32	0.79	0.26	0.20	0.64
Control Delay	14.9	16.6	1.5	19.4	15.6	44.2	16.4	49.3	57.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	16.6	1.5	19.4	15.6	44.2	16.4	49.3	57.4
Queue Length 50th (m)	2.2	53.3	0.0	10.9	40.8	64.9	14.5	5.8	28.0
Queue Length 95th (m)	7.0	74.8	7.6	25.3	58.7	87.3	28.0	14.2	46.6
Internal Link Dist (m)		112.4			211.2		53.2		84.1
Turn Bay Length (m)	70.0		50.0	100.0		50.0		50.0	
Base Capacity (vph)	345	1976	1306	296	1944	449	809	300	452
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.39	0.46	0.30	0.32	0.78	0.19	0.09	0.31

## Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 1: White Oak Rd/Homeview Rd & Southdale Rd E




















2024 AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (vph)	19	716	548	82	557	24	320	67	74	25	90	39
Future Volume (vph)	19	716	548	82	557	24	320	67	74	25	90	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	4.0	6.1	6.1		4.0	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1565	3544	1513	1651	3483		1669	1611		1740	1770	
Flt Permitted	0.38	1.00	1.00	0.31	1.00		0.41	1.00		0.66	1.00	
Satd. Flow (perm)	620	3544	1513	532	3483		728	1611		1209	1770	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	778	596	89	605	26	348	73	80	27	98	42
RTOR Reduction (vph)	0	0	149	0	2	0	0	42	0	0	15	0
Lane Group Flow (vph)	21	778	447	89	629	0	348	111	0	27	125	0
Confl. Peds. (#/hr)	9		12	12		9	9		8	8		9
Heavy Vehicles (%)	16%	3%	5%	10%	4%	4%	9%	6%	11%	4%	2%	5%
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2	3		6		3	8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	66.9	66.9	89.9	66.9	66.9		40.8	40.8		13.8	13.8	
Effective Green, g (s)	66.9	66.9	89.9	66.9	66.9		40.8	40.8		13.8	13.8	
Actuated g/C Ratio	0.56	0.56	0.75	0.56	0.56		0.34	0.34		0.12	0.12	
Clearance Time (s)	6.1	6.1	4.0	6.1	6.1		4.0	6.2		6.2	6.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	345	1975	1133	296	1941		427	547		139	203	
v/s Ratio Prot		0.22	c0.08		0.18		c0.16	0.07			0.07	
v/s Ratio Perm	0.03		0.22	0.17			c0.12			0.02		
v/c Ratio	0.06	0.39	0.39	0.30	0.32		0.81	0.20		0.19	0.62	
Uniform Delay, d1	12.2	15.1	5.4	14.1	14.3		33.3	28.1		48.1	50.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.6	0.2	2.6	0.4		11.4	0.2		0.7	5.5	
Delay (s)	12.5	15.6	5.6	16.7	14.8		44.7	28.3		48.8	56.0	
Level of Service	B	B	A	B	B		D	C		D	E	
Approach Delay (s)		11.3			15.0			39.7			54.8	
Approach LOS		B			B			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			20.0			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			120.0	Sum of lost time (s)			16.3					
Intersection Capacity Utilization			88.8%	ICU Level of Service			E					
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
 2: Petty Rd/Private Access Road & Southdale Rd E

2024 AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	1234	64	0	865	51	0	0	32	17	0	16
Future Volume (Veh/h)	34	1234	64	0	865	51	0	0	32	17	0	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	37	1356	70	0	951	56	0	0	35	19	0	18
Pedestrians								3			6	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					137							
pX, platoon unblocked	0.91						0.91	0.91		0.91	0.91	0.91
vC, conflicting volume	1013			1429			1962	2481	716	1709	2460	482
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	820			1429			1860	2431	716	1583	2407	236
tC, single (s)	4.1			4.1			7.5	6.5	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			100	100	90	67	100	97
cM capacity (veh/h)	741			481			39	28	367	58	29	699
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	37	904	522	476	476	56	35	37				
Volume Left	37	0	0	0	0	0	0	19				
Volume Right	0	0	70	0	0	56	35	18				
cSH	741	1700	1700	1700	1700	1700	367	105				
Volume to Capacity	0.05	0.53	0.31	0.28	0.28	0.03	0.10	0.35				
Queue Length 95th (m)	1.2	0.0	0.0	0.0	0.0	0.0	2.4	10.6				
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	0.0	15.8	56.7				
Lane LOS	B						C	F				
Approach Delay (s)	0.3			0.0			15.8	56.7				
Approach LOS							C	F				
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			52.8%	ICU Level of Service	A							
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 3: Petty Rd & West Site Access

2024 AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	8	26	9	11	63	8
Future Volume (Veh/h)	8	26	9	11	63	8
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	9	31	11	13	74	9
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	176	18			25	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	176	18			25	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	97			95	
cM capacity (veh/h)	780	1053			1601	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	40	24	83			
Volume Left	9	0	74			
Volume Right	31	13	0			
cSH	976	1700	1601			
Volume to Capacity	0.04	0.01	0.05			
Queue Length 95th (m)	1.0	0.0	1.1			
Control Delay (s)	8.8	0.0	6.6			
Lane LOS	A		A			
Approach Delay (s)	8.8	0.0	6.6			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			6.1			
Intersection Capacity Utilization			20.6%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

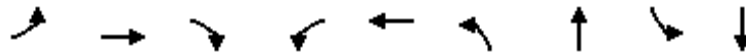
## 4: White Oak Rd & East Site Access

2024 AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	51	78	41	410	671	49
Future Volume (Veh/h)	51	78	41	410	671	49
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	54	83	44	436	714	52
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						77
pX, platoon unblocked	0.94	0.94	0.94			
vC, conflicting volume	1023	717	769			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	991	665	721			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	75	78	95			
cM capacity (veh/h)	215	381	833			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	137	189	291	714	52	
Volume Left	54	44	0	0	0	
Volume Right	83	0	0	0	52	
cSH	292	833	1700	1700	1700	
Volume to Capacity	0.47	0.05	0.17	0.42	0.03	
Queue Length 95th (m)	17.9	1.3	0.0	0.0	0.0	
Control Delay (s)	27.8	2.6	0.0	0.0	0.0	
Lane LOS	D	A				
Approach Delay (s)	27.8	1.0		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			3.1			
Intersection Capacity Utilization			57.4%	ICU Level of Service	B	
Analysis Period (min)			15			

1: White Oak Rd/Homeview Rd & Southdale Rd E

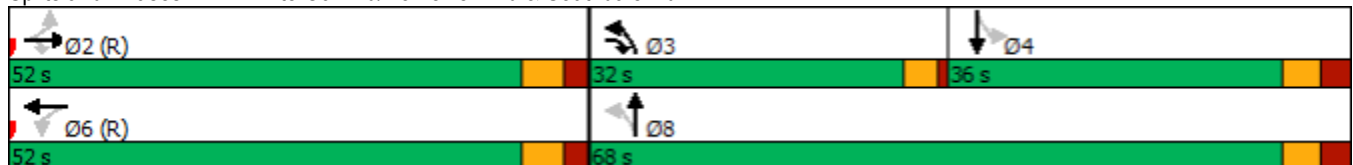


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↘	↖	↗	↖	↗	↖	↗
Traffic Volume (vph)	50	893	515	76	1084	469	205	51	96
Future Volume (vph)	50	893	515	76	1084	469	205	51	96
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases		2	3		6	3	8		4
Permitted Phases	2		2	6		8		4	
Detector Phase	2	2	3	6	6	3	8	4	4
Switch Phase									
Minimum Initial (s)	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	7.0
Minimum Split (s)	48.1	48.1	24.0	48.1	48.1	24.0	34.2	34.2	34.2
Total Split (s)	52.0	52.0	32.0	52.0	52.0	32.0	68.0	36.0	36.0
Total Split (%)	43.3%	43.3%	26.7%	43.3%	43.3%	26.7%	56.7%	30.0%	30.0%
Yellow Time (s)	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	1.0	2.4	2.4	1.0	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	4.0	6.1	6.1	4.0	6.2	6.2	6.2
Lead/Lag			Lead			Lead		Lag	Lag
Lead-Lag Optimize?			Yes			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	61.9	61.9	91.6	61.9	61.9	48.0	45.8	14.2	14.2
Actuated g/C Ratio	0.52	0.52	0.76	0.52	0.52	0.40	0.38	0.12	0.12
v/c Ratio	0.42	0.52	0.42	0.39	0.66	0.92	0.54	0.45	0.65
Control Delay	33.1	21.1	1.4	26.8	24.3	53.2	28.6	59.8	57.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	21.1	1.4	26.8	24.3	53.2	28.6	59.8	57.6
LOS	C	C	A	C	C	D	C	E	E
Approach Delay		14.6			24.4		42.7		58.2
Approach LOS		B			C		D		E

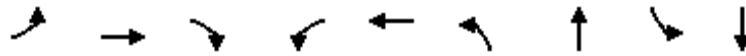
Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 40 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.92  
 Intersection Signal Delay: 26.3  
 Intersection Capacity Utilization 94.2%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service F

Splits and Phases: 1: White Oak Rd/Homeview Rd & Southdale Rd E



## 1: White Oak Rd/Homeview Rd &amp; Southdale Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	960	554	82	1227	504	376	55	148
v/c Ratio	0.42	0.52	0.42	0.39	0.66	0.92	0.54	0.45	0.65
Control Delay	33.1	21.1	1.4	26.8	24.3	53.2	28.6	59.8	57.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	21.1	1.4	26.8	24.3	53.2	28.6	59.8	57.6
Queue Length 50th (m)	7.6	76.2	0.0	11.4	108.4	96.5	61.6	12.3	29.9
Queue Length 95th (m)	23.3	104.2	7.5	28.7	146.2	#124.3	83.5	24.5	48.9
Internal Link Dist (m)		112.4			211.2		53.2		84.1
Turn Bay Length (m)	70.0		50.0	100.0		50.0		50.0	
Base Capacity (vph)	129	1864	1314	208	1851	552	929	255	456
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.52	0.42	0.39	0.66	0.91	0.40	0.22	0.32

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



HCM Signalized Intersection Capacity Analysis  
 1: White Oak Rd/Homeview Rd & Southdale Rd E

2024 PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑	↗	↖	↑↑		↖	↗		↖	↗	
Traffic Volume (vph)	50	893	515	76	1084	57	469	205	145	51	96	42
Future Volume (vph)	50	893	515	76	1084	57	469	205	145	51	96	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	4.0	6.1	6.1		4.0	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1822	3614	1547	1766	3583		1824	1771		1815	1788	
Flt Permitted	0.13	1.00	1.00	0.22	1.00		0.40	1.00		0.54	1.00	
Satd. Flow (perm)	251	3614	1547	406	3583		764	1771		1028	1788	
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)	54	960	554	82	1166	61	504	220	156	55	103	45
RTOR Reduction (vph)	0	0	141	0	2	0	0	21	0	0	15	0
Lane Group Flow (vph)	54	960	413	82	1225	0	504	355	0	55	133	0
Confl. Peds. (#/hr)	8		11	11		8	2		7	7		2
Heavy Vehicles (%)	0%	1%	3%	3%	1%	0%	0%	0%	2%	0%	3%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2	3		6		3	8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	61.9	61.9	89.5	61.9	61.9		45.8	45.8		14.2	14.2	
Effective Green, g (s)	61.9	61.9	89.5	61.9	61.9		45.8	45.8		14.2	14.2	
Actuated g/C Ratio	0.52	0.52	0.75	0.52	0.52		0.38	0.38		0.12	0.12	
Clearance Time (s)	6.1	6.1	4.0	6.1	6.1		4.0	6.2		6.2	6.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	129	1864	1153	209	1848		535	675		121	211	
v/s Ratio Prot		0.27	0.08		c0.34		c0.22	0.20			0.07	
v/s Ratio Perm	0.21		0.18	0.20			c0.14			0.05		
v/c Ratio	0.42	0.52	0.36	0.39	0.66		0.94	0.53		0.45	0.63	
Uniform Delay, d1	17.9	19.2	5.3	17.6	21.4		32.3	28.7		49.3	50.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.7	1.0	0.2	5.5	1.9		25.2	0.7		2.7	6.0	
Delay (s)	27.6	20.2	5.5	23.1	23.3		57.4	29.4		52.0	56.4	
Level of Service	C	C	A	C	C		E	C		D	E	
Approach Delay (s)		15.2			23.2			45.5			55.2	
Approach LOS		B			C			D			E	




















Intersection Summary		
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.80	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 16.3
Intersection Capacity Utilization	94.2%	ICU Level of Service F
Analysis Period (min)	15	

c Critical Lane Group

# HCM Unsignalized Intersection Capacity Analysis

## 2: Petty Rd/Private Access Road & Southdale Rd E

2024 PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	1414	61	0	1331	264	0	0	28	15	0	63
Future Volume (Veh/h)	46	1414	61	0	1331	264	0	0	28	15	0	63
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	48	1473	64	0	1386	275	0	0	29	16	0	66
Pedestrians								6			6	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					137							
pX, platoon unblocked	0.76						0.76	0.76		0.76	0.76	0.76
vC, conflicting volume	1667			1543			2366	3274	774	2224	3031	699
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1256			1543			2171	3358	774	1986	3041	0
tC, single (s)	4.1			4.1			7.5	6.5	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			100			100	100	91	31	100	92
cM capacity (veh/h)	426			434			17	5	335	23	9	829
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	48	982	555	693	693	275	29	82				
Volume Left	48	0	0	0	0	0	0	16				
Volume Right	0	0	64	0	0	275	29	66				
cSH	426	1700	1700	1700	1700	1700	335	107				
Volume to Capacity	0.11	0.58	0.33	0.41	0.41	0.16	0.09	0.76				
Queue Length 95th (m)	2.9	0.0	0.0	0.0	0.0	0.0	2.1	31.8				
Control Delay (s)	14.5	0.0	0.0	0.0	0.0	0.0	16.8	105.5				
Lane LOS	B						C	F				
Approach Delay (s)	0.4			0.0			16.8	105.5				
Approach LOS							C	F				
Intersection Summary												
Average Delay			2.9									
Intersection Capacity Utilization		59.1%		ICU Level of Service						B		
Analysis Period (min)		15										

# HCM Unsignalized Intersection Capacity Analysis

## 3: Petty Rd & West Site Access

2024 PM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	8	20	4	37	28
Future Volume (Veh/h)	7	8	20	4	37	28
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	9	10	25	5	47	35
Pedestrians	2		3			
Lane Width (m)	3.7		3.7			
Walking Speed (m/s)	1.1		1.1			
Percent Blockage	0		0			
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	162	30			32	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	162	30			32	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			97	
cM capacity (veh/h)	806	1037			1590	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	19	30	82			
Volume Left	9	0	47			
Volume Right	10	5	0			
cSH	913	1700	1590			
Volume to Capacity	0.02	0.02	0.03			
Queue Length 95th (m)	0.5	0.0	0.7			
Control Delay (s)	9.0	0.0	4.3			
Lane LOS	A		A			
Approach Delay (s)	9.0	0.0	4.3			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			4.0			
Intersection Capacity Utilization			20.2%		ICU Level of Service	A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

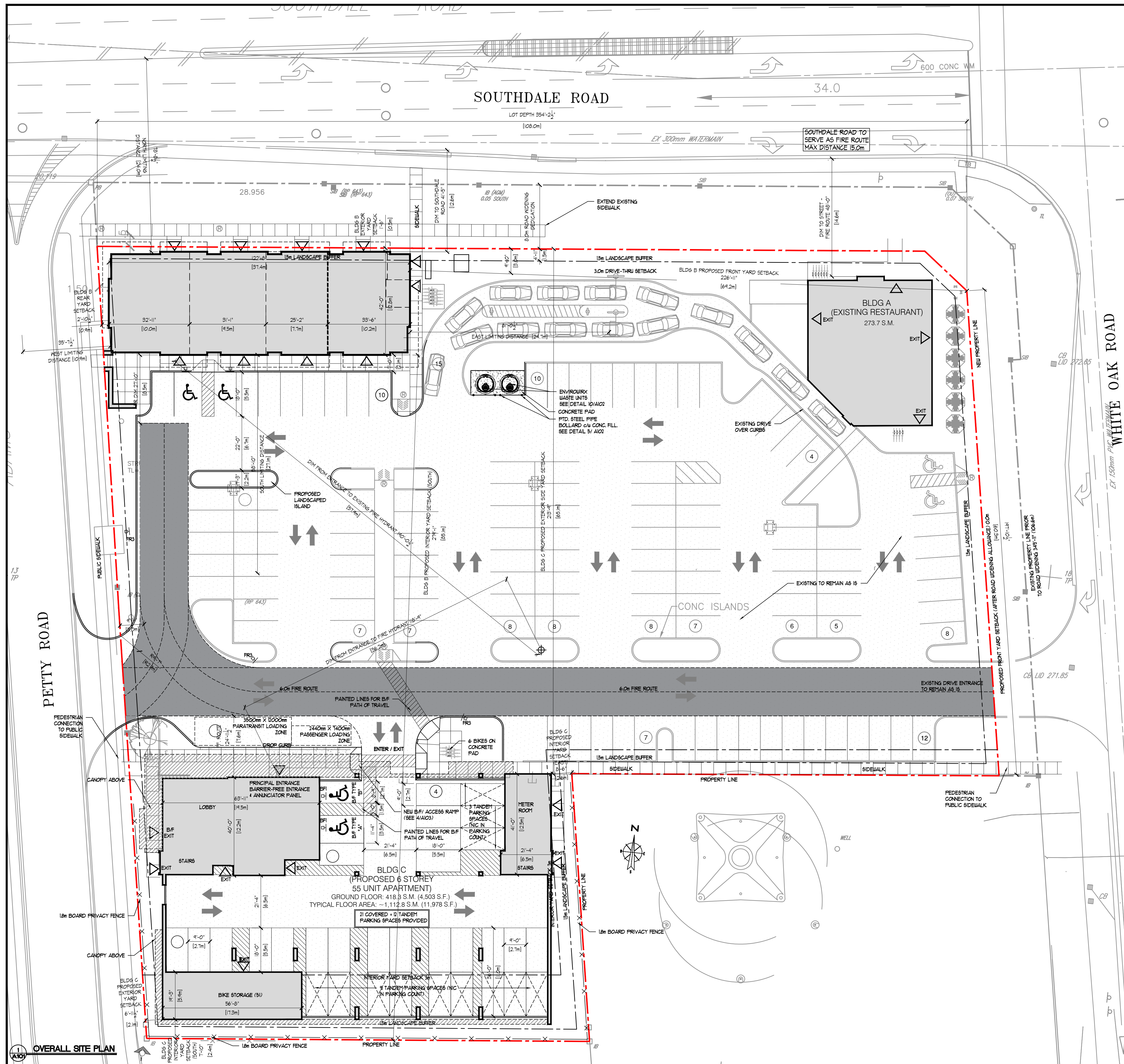
## 4: White Oak Rd & East Site Access

2024 PM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	47	19	802	661	26
Future Volume (Veh/h)	17	47	19	802	661	26
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	18	51	20	862	711	28
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					77	
pX, platoon unblocked	0.93	0.93	0.93			
vC, conflicting volume	1185	714	742			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1160	651	682			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	87	98			
cM capacity (veh/h)	173	384	850			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	69	307	575	711	28	
Volume Left	18	20	0	0	0	
Volume Right	51	0	0	0	28	
cSH	291	850	1700	1700	1700	
Volume to Capacity	0.24	0.02	0.34	0.42	0.02	
Queue Length 95th (m)	6.9	0.5	0.0	0.0	0.0	
Control Delay (s)	21.2	0.9	0.0	0.0	0.0	
Lane LOS	C	A				
Approach Delay (s)	21.2	0.3		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			46.3%	ICU Level of Service	A	
Analysis Period (min)			15			

## **Appendix C – Site Plan**



### site data

- EXISTING GROSS SITE AREA: 10,054 s.m.
- NET SITE AREA BASED ON NEW PROPERTY LINES: 8,829 s.m.
- BUILDING AREA:
  - EXISTING BUILDING A: 263 s.m.
  - PROPOSED BUILDING B: 467.3 s.m.
  - PROPOSED BUILDING C: 1,458.6 s.m.
  - BUILDING AREA (406.9 s.m. GROUND FLOOR AREA)**
  - TOTAL: 2,188.9 s.m.
- ASPHALT AREA: 5,604 s.m.

ITEM	A	Z-1 REQUIREMENTS	PROPOSED
4. ZONES		NSA4 (6)	NSA4 (6)
5. LOT AREA (m2) / LOT DEPTH (m) MIN		MINIMUM 40.0m	10,054 s.m. /109m
6. LOT FRONTAGE (MIN.)		40.0m	60.3m
7. FRONT YARD (m)		0.0	BLDG B: 69.166m
8. EXTERIOR SIDE YARD - PETTY ROAD (m) MIN			BLDG B: 0.877m BLDG C: 2.1m
9. INTERIOR YARD (m) MIN.		3.0 m	BLDG B (SOUTH): 85.040m BLDG C (EAST): 2.6 SPACES BLDG C (SOUTH): 2.4m
10. EXTERIOR SIDE YARD - SOUTHDAL (MIN.)		0.0 m	BLDG B: 0.454m BLDG C: 65.1m
11. LOT COVERAGE MAX. (ON GROSS SITE)		30% MAX.	22% BEFORE RW 25% AFTER RW
12. LANDSCAPED OPEN SPACE (% MIN.)		15% MIN.	33% BEFORE RW 24% AFTER RW
13. HEIGHT (MAX.)		12.0 m MAX.	BLDG B: ~7.04m BLDG C: 6 STOREYS ~ 23.5m
14. PARKING REQ.		PARKING AREA STANDARD 3- RESTAURANT (FASTFOOD/TAKEOUT) = 1 PER 20sqm EXISTING TIM HORTONS = 263sqm/20 = 14 SPACES PROPOSED REST. = 467.3m/20 = 24 SPACES PROPOSED APARTMENT @ 0.5 SPACES/UNIT = 28 SPACES	TOTAL PROPOSED = 157 SPACES INCL: - TYPE A B/F = 3 SPACES - TYPE B B/F = 3 SPACES - PASSENGER LOADING = 2 SPACES - TYP. SURFACE PARKING = 130 SPACES - TYP. COVERED PARKING = 19 SPACES  TOTAL REQUIRED = 66 SPACES INCL: 1+3% B/F PARKING SPACES = 6 SPACES
15. BICYCLE PARKING		NON-RESIDENTIAL REQ'D BICYCLE @ 3 SPACES + 0.3 SPACES / 100 sqm GFA = 6 SPACES RESIDENTIAL SHORT TERM @ 0.1 = 6 SPACES LONG TERM @ 0.9 = 49 SPACES	NON-RESIDENTIAL = 14 SHORT TERM BICYCLES RESIDENTIAL = 6 SHORT TERM BICYCLES = 51 LONG TERM BICYCLES
16. PARKING SETBACK		3m FOR FRONT AND EXTERIOR YARDS	3m
17. GROSS FLOOR AREA (MAX.)		500 s.m. MAX. FOR EACH RESTAURANT	EXISTING BLDG A: 263 s.m. PROPOSED BLDG B: 467.3 s.m. PROPOSED BLDG C: 6,198.5 s.m.

### LEGEND

- FIRE ACCESS ROUTE
- BICYCLE RACK
- ASPHALT PAVING
- CONC. SIDEWALK
- PROPOSED BUILDING
- FIRE FIGHTER/BARRIER FREE ENTRY
- PRINCIPAL/FIRE FIGHTER/BARRIER FREE ENTRY
- POLE LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE
- SOFFIT MOUNTED LIGHT FIXTURE
- FIRE ROUTE SIGN
- SOUND ATTENUATION BARRIER/PRIVACY FENCE
- CHAIN LINK FENCE

### LEGAL DESCRIPTION

NOTE:  
THE PURPOSE OF THIS DRAWING IS TO SHOW THE GENERAL LOCATION OF THE BUILDINGS, FIRE ROUTES, PARKING, SETBACKS, LIMITING DISTANCES, GARBAGE ENCLOSURES, SITE SIGNAGE AND THE GENERAL LOCATION AND ARRANGEMENT OF LANDSCAPED AREAS. IT'S INTENDED USE IS FOR BUILDING PERMIT AND SITE PLAN APPROVAL SUBMISSION ONLY.

THIS DRAWING CONTAINS INFORMATION PROVIDED BY OTHERS, IT MAY NOT BE COMPLETE OR CURRENT, AND IS COMPILED HERE FOR GENERAL COORDINATION AND CONVENIENCE ONLY.

FOR ALL CONSTRUCTION PURPOSES, REFER TO THE MOST UP TO DATE COPY OF CONSTRUCTION DOCUMENTS PREPARED BY OTHER CONSULTANTS, I.E. SURVEYS, SOILS REPORTS, SITE SERVING, GRADING, SITE LIGHTING, LANDSCAPE AND OTHER CONSULTANT DRAWINGS AND SPECIFICATIONS.

OTHER THAN FOR COMPLIANCE WITH THE ARCHITECTURAL CONCEPT, THE ARCHITECT HAS NOT REVIEWED THE DETAILS OR DESIGNS OF OTHERS AND ACCEPTS NO LIABILITY WHATSOEVER FOR INFORMATION PROVIDED BY OTHERS.

**KEY SITE PLAN**  
SCALE NTS

Project No: 1176  
 Status: AS NOTED  
 Dwn/Chkd. By: RA/PA  
 Date: AUG 15, 2021

Dwg. No: **A101**

OVERALL SITE PLAN  
 PROPOSED BLDG B  
 91 SOUTHDAL RD  
 LONDON, ON

AGAR ARCHITECT  
 philip agar architect inc.  
 513 queens avenue, london, on n6b 1y3  
 tel: 519-452-7366 info@agar-archi.com

YORK DEVELOPMENTS

12 inch

## **Appendix D – Synchro Output Reports - 2030 Background Traffic**

Timings  
1: White Oak Rd/Homeview Rd & Southdale Rd E

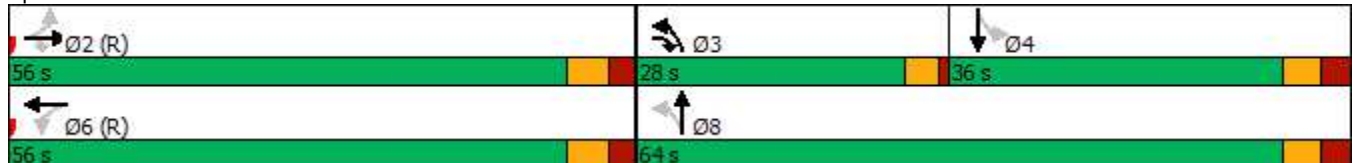
2034 AM Background Traffic

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	22	811	618	104	625	370	78	29	105
Future Volume (vph)	22	811	618	104	625	370	78	29	105
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases		2	3		6	3	8		4
Permitted Phases	2		2	6		8		4	
Detector Phase	2	2	3	6	6	3	8	4	4
Switch Phase									
Minimum Initial (s)	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	7.0
Minimum Split (s)	48.1	48.1	24.0	48.1	48.1	24.0	34.2	34.2	34.2
Total Split (s)	56.0	56.0	28.0	56.0	56.0	28.0	64.0	36.0	36.0
Total Split (%)	46.7%	46.7%	23.3%	46.7%	46.7%	23.3%	53.3%	30.0%	30.0%
Yellow Time (s)	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	1.0	2.4	2.4	1.0	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	4.0	6.1	6.1	4.0	6.2	6.2	6.2
Lead/Lag			Lead			Lead		Lag	Lag
Lead-Lag Optimize?			Yes			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	64.9	64.9	90.6	64.9	64.9	45.0	42.8	15.2	15.2
Actuated g/C Ratio	0.54	0.54	0.76	0.54	0.54	0.38	0.36	0.13	0.13
v/c Ratio	0.08	0.46	0.53	0.47	0.38	0.90	0.29	0.21	0.68
Control Delay	16.2	18.6	2.5	27.0	17.2	55.5	18.3	48.3	58.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.2	18.6	2.5	27.0	17.2	55.5	18.3	48.3	58.2
LOS	B	B	A	C	B	E	B	D	E
Approach Delay		11.7			18.6		44.1		56.6
Approach LOS		B			B		D		E

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 38 (32%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.90  
 Intersection Signal Delay: 22.1  
 Intersection Capacity Utilization 92.3%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service F

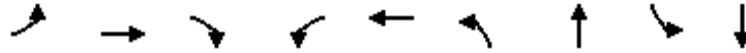
Splits and Phases: 1: White Oak Rd/Homeview Rd & Southdale Rd E





Queues  
1: White Oak Rd/Homeview Rd & Southdale Rd E

2034 AM Background Traffic
























Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	24	882	672	113	709	402	176	32	162
v/c Ratio	0.08	0.46	0.53	0.47	0.38	0.90	0.29	0.21	0.68
Control Delay	16.2	18.6	2.5	27.0	17.2	55.5	18.3	48.3	58.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.2	18.6	2.5	27.0	17.2	55.5	18.3	48.3	58.2
Queue Length 50th (m)	2.6	64.5	5.3	15.8	48.6	76.6	18.9	6.9	33.1
Queue Length 95th (m)	8.1	90.4	17.1	38.1	69.6	#100.4	32.9	15.7	52.6
Internal Link Dist (m)		112.4			211.2		53.2		84.1
Turn Bay Length (m)	70.0		50.0	100.0		50.0		50.0	
Base Capacity (vph)	297	1916	1280	241	1886	449	807	294	453
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.46	0.53	0.47	0.38	0.90	0.22	0.11	0.36

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 1: White Oak Rd/Homeview Rd & Southdale Rd E




















2034 AM Background Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	811	618	104	625	28	370	78	84	29	105	44
Future Volume (vph)	22	811	618	104	625	28	370	78	84	29	105	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	4.0	6.1	6.1		4.0	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1567	3544	1513	1652	3483		1670	1613		1741	1772	
Flt Permitted	0.33	1.00	1.00	0.26	1.00		0.38	1.00		0.65	1.00	
Satd. Flow (perm)	549	3544	1513	448	3483		661	1613		1184	1772	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	882	672	113	679	30	402	85	91	32	114	48
RTOR Reduction (vph)	0	0	145	0	2	0	0	38	0	0	15	0
Lane Group Flow (vph)	24	882	527	113	707	0	402	138	0	32	147	0
Confl. Peds. (#/hr)	9		12	12		9	9		8	8		9
Heavy Vehicles (%)	16%	3%	5%	10%	4%	4%	9%	6%	11%	4%	2%	5%
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2	3		6		3	8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	64.9	64.9	88.5	64.9	64.9		42.8	42.8		15.2	15.2	
Effective Green, g (s)	64.9	64.9	88.5	64.9	64.9		42.8	42.8		15.2	15.2	
Actuated g/C Ratio	0.54	0.54	0.74	0.54	0.54		0.36	0.36		0.13	0.13	
Clearance Time (s)	6.1	6.1	4.0	6.1	6.1		4.0	6.2		6.2	6.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	296	1916	1115	242	1883		434	575		149	224	
v/s Ratio Prot		0.25	c0.09		0.20		c0.18	0.09			0.08	
v/s Ratio Perm	0.04		0.26	0.25			c0.15			0.03		
v/c Ratio	0.08	0.46	0.47	0.47	0.38		0.93	0.24		0.21	0.66	
Uniform Delay, d1	13.2	16.8	6.3	16.9	15.9		33.4	27.2		47.0	49.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.8	0.3	6.3	0.6		25.6	0.2		0.7	6.8	
Delay (s)	13.8	17.6	6.7	23.3	16.4		59.1	27.4		47.8	56.7	
Level of Service	B	B	A	C	B		E	C		D	E	
Approach Delay (s)		12.9			17.4			49.4			55.2	
Approach LOS		B			B			D			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			23.3			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				16.3		
Intersection Capacity Utilization			92.3%			ICU Level of Service				F		
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
 2: Petty Rd/Private Access Road & Southdale Rd E










2034 AM Background Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	1384	88	0	981	58	0	0	47	20	0	19
Future Volume (Veh/h)	39	1384	88	0	981	58	0	0	47	20	0	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	43	1521	97	0	1078	64	0	0	52	22	0	21
Pedestrians								3			6	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					137							
pX, platoon unblocked	0.89						0.89	0.89		0.89	0.89	0.89
vC, conflicting volume	1148			1621			2218	2806	812	1930	2791	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	922			1621			2123	2783	812	1800	2766	246
tC, single (s)	4.1			4.1			7.5	6.5	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			100			100	100	84	39	100	97
cM capacity (veh/h)	664			406			24	16	317	36	16	674
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	43	1014	604	539	539	64	52	43				
Volume Left	43	0	0	0	0	0	0	22				
Volume Right	0	0	97	0	0	64	52	21				
cSH	664	1700	1700	1700	1700	1700	317	67				
Volume to Capacity	0.06	0.60	0.36	0.32	0.32	0.04	0.16	0.64				
Queue Length 95th (m)	1.6	0.0	0.0	0.0	0.0	0.0	4.4	21.3				
Control Delay (s)	10.8	0.0	0.0	0.0	0.0	0.0	18.6	127.6				
Lane LOS	B						C	F				
Approach Delay (s)	0.3			0.0			18.6	127.6				
Approach LOS							C	F				
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utilization			57.7%	ICU Level of Service	B							
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis











## 3: Petty Rd & West Site Access

2034 AM Background Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	42	9	18	87	9
Future Volume (Veh/h)	13	42	9	18	87	9
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	15	49	11	21	102	11
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	238	22			33	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	238	22			33	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	95			94	
cM capacity (veh/h)	706	1048			1590	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	64	32	113			
Volume Left	15	0	102			
Volume Right	49	21	0			
cSH	941	1700	1590			
Volume to Capacity	0.07	0.02	0.06			
Queue Length 95th (m)	1.7	0.0	1.6			
Control Delay (s)	9.1	0.0	6.7			
Lane LOS	A		A			
Approach Delay (s)	9.1	0.0	6.7			
Approach LOS	A					
Intersection Summary						
Average Delay			6.4			
Intersection Capacity Utilization			22.0%	ICU Level of Service	A	
Analysis Period (min)			15			

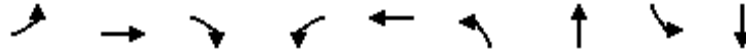
HCM Unsignalized Intersection Capacity Analysis  
4: White Oak Rd & East Site Access

2034 AM Background Traffic

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	71	97	59	460	753	73
Future Volume (Veh/h)	71	97	59	460	753	73
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	76	103	63	489	801	78
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					77	
pX, platoon unblocked	0.92	0.92	0.92			
vC, conflicting volume	1174	804	882			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1146	743	828			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	53	69	92			
cM capacity (veh/h)	162	332	745			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	179	226	326	801	78	
Volume Left	76	63	0	0	0	
Volume Right	103	0	0	0	78	
cSH	229	745	1700	1700	1700	
Volume to Capacity	0.78	0.08	0.19	0.47	0.05	
Queue Length 95th (m)	42.7	2.1	0.0	0.0	0.0	
Control Delay (s)	60.4	3.6	0.0	0.0	0.0	
Lane LOS	F	A				
Approach Delay (s)	60.4	1.5		0.0		
Approach LOS	F					
Intersection Summary						
Average Delay			7.2			
Intersection Capacity Utilization			73.9%	ICU Level of Service	D	
Analysis Period (min)			15			



1: White Oak Rd/Homeview Rd & Southdale Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	61	1090	624	109	1380	582	428	62	175
v/c Ratio	0.78	0.61	0.48	0.72	0.77	1.05	0.59	0.47	0.69
Control Delay	87.0	24.3	1.9	54.3	29.2	83.6	30.0	58.7	58.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.0	24.3	1.9	54.3	29.2	83.6	30.0	58.7	58.3
Queue Length 50th (m)	11.4	94.1	2.6	19.4	135.0	~118.0	74.5	13.7	36.0
Queue Length 95th (m)	#40.6	128.2	12.7	#56.1	181.8	#168.5	97.3	26.5	56.2
Internal Link Dist (m)		112.4			211.2		53.2		84.1
Turn Bay Length (m)	70.0		50.0	100.0		50.0		50.0	
Base Capacity (vph)	78	1797	1299	152	1783	552	922	243	457
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.61	0.48	0.72	0.77	1.05	0.46	0.26	0.38

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis  
 1: White Oak Rd/Homeview Rd & Southdale Rd E

2034 PM Background Traffic




















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	1014	580	101	1218	65	541	234	164	58	114	48
Future Volume (vph)	57	1014	580	101	1218	65	541	234	164	58	114	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	4.0	6.1	6.1		4.0	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1823	3614	1547	1767	3583		1824	1773		1816	1790	
Flt Permitted	0.08	1.00	1.00	0.16	1.00		0.36	1.00		0.51	1.00	
Satd. Flow (perm)	157	3614	1547	307	3583		683	1773		981	1790	
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)	61	1090	624	109	1310	70	582	252	176	62	123	52
RTOR Reduction (vph)	0	0	152	0	3	0	0	13	0	0	15	0
Lane Group Flow (vph)	61	1090	472	109	1377	0	582	415	0	62	160	0
Confl. Peds. (#/hr)	8		11	11		8	2		7	7		2
Heavy Vehicles (%)	0%	1%	3%	3%	1%	0%	0%	0%	2%	0%	3%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2	3		6		3	8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	59.7	59.7	87.7	59.7	59.7		48.0	48.0		16.0	16.0	
Effective Green, g (s)	59.7	59.7	87.7	59.7	59.7		48.0	48.0		16.0	16.0	
Actuated g/C Ratio	0.50	0.50	0.73	0.50	0.50		0.40	0.40		0.13	0.13	
Clearance Time (s)	6.1	6.1	4.0	6.1	6.1		4.0	6.2		6.2	6.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	78	1797	1130	152	1782		539	709		130	238	
v/s Ratio Prot		0.30	0.10		0.38		c0.25	0.23			0.09	
v/s Ratio Perm	c0.39		0.21	0.36			c0.18			0.06		
v/c Ratio	0.78	0.61	0.42	0.72	0.77		1.08	0.59		0.48	0.67	
Uniform Delay, d1	24.8	21.7	6.3	23.6	24.6		32.0	28.2		48.1	49.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	53.6	1.5	0.3	25.1	3.3		62.1	1.2		2.7	7.3	
Delay (s)	78.4	23.2	6.5	48.6	27.9		94.0	29.5		50.9	56.8	
Level of Service	E	C	A	D	C		F	C		D	E	
Approach Delay (s)		19.2			29.5			66.7			55.3	
Approach LOS		B			C			E			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			35.1			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				16.3		
Intersection Capacity Utilization			100.2%			ICU Level of Service				G		
Analysis Period (min)			15									

c Critical Lane Group



HCM Unsignalized Intersection Capacity Analysis  
2: Petty Rd/Private Access Road & Southdale Rd E

2034 PM Background Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	1587	87	0	1508	298	0	0	46	17	0	71
Future Volume (Veh/h)	52	1587	87	0	1508	298	0	0	46	17	0	71
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	54	1653	91	0	1571	310	0	0	48	18	0	74
Pedestrians								6			6	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					137							
pX, platoon unblocked	0.70						0.70	0.70		0.70	0.70	0.70
vC, conflicting volume	1887			1750			2672	3700	878	2512	3435	792
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1411			1750			2532	3999	878	2303	3621	0
tC, single (s)	4.1			4.1			7.5	6.5	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	84			100			100	100	83	0	100	90
cM capacity (veh/h)	341			361			8	2	286	11	3	760
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	54	1102	642	786	786	310	48	92				
Volume Left	54	0	0	0	0	0	0	18				
Volume Right	0	0	91	0	0	310	48	74				
cSH	341	1700	1700	1700	1700	1700	286	52				
Volume to Capacity	0.16	0.65	0.38	0.46	0.46	0.18	0.17	1.77				
Queue Length 95th (m)	4.2	0.0	0.0	0.0	0.0	0.0	4.5	67.6				
Control Delay (s)	17.5	0.0	0.0	0.0	0.0	0.0	20.1	541.2				
Lane LOS	C						C	F				
Approach Delay (s)	0.5			0.0			20.1	541.2				
Approach LOS							C	F				
Intersection Summary												
Average Delay				13.5								
Intersection Capacity Utilization			65.3%			ICU Level of Service			C			
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 3: Petty Rd & West Site Access











2034 PM Background Traffic



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	25	22	11	62	30
Future Volume (Veh/h)	14	25	22	11	62	30
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	18	32	28	14	78	38
Pedestrians	2		3			
Lane Width (m)	3.7		3.7			
Walking Speed (m/s)	1.1		1.1			
Percent Blockage	0		0			
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	234	37			44	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	234	37			44	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	97			95	
cM capacity (veh/h)	718	1028			1574	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	50	42	116			
Volume Left	18	0	78			
Volume Right	32	14	0			
cSH	889	1700	1574			
Volume to Capacity	0.06	0.02	0.05			
Queue Length 95th (m)	1.4	0.0	1.2			
Control Delay (s)	9.3	0.0	5.1			
Lane LOS	A		A			
Approach Delay (s)	9.3	0.0	5.1			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			5.1			
Intersection Capacity Utilization			21.7%	ICU Level of Service		A
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
4: White Oak Rd & East Site Access

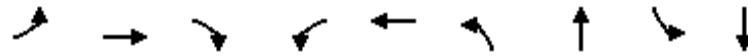
2034 PM Background Traffic

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	37	65	37	902	742	53
Future Volume (Veh/h)	37	65	37	902	742	53
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	40	70	40	970	798	57
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					77	
pX, platoon unblocked	0.90	0.90	0.90			
vC, conflicting volume	1366	801	858			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1352	726	789			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	67	79	95			
cM capacity (veh/h)	123	335	756			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	110	363	647	798	57	
Volume Left	40	40	0	0	0	
Volume Right	70	0	0	0	57	
cSH	206	756	1700	1700	1700	
Volume to Capacity	0.54	0.05	0.38	0.47	0.03	
Queue Length 95th (m)	21.3	1.3	0.0	0.0	0.0	
Control Delay (s)	41.0	1.7	0.0	0.0	0.0	
Lane LOS	E	A				
Approach Delay (s)	41.0	0.6		0.0		
Approach LOS	E					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			64.7%	ICU Level of Service	C	
Analysis Period (min)			15			

## **Appendix E – Synchro Output Reports - 2030 Total Traffic**

Timings  
1: White Oak Rd/Homeview Rd & Southdale Rd E

2034 AM Total Traffic

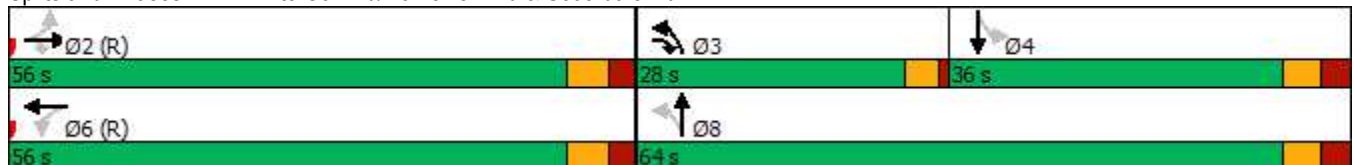


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↘	↑↑	↗	↘	↑↑	↘	↗	↘	↗
Traffic Volume (vph)	23	816	618	106	625	375	78	29	105
Future Volume (vph)	23	816	618	106	625	375	78	29	105
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases		2	3		6	3	8		4
Permitted Phases	2		2	6		8		4	
Detector Phase	2	2	3	6	6	3	8	4	4
Switch Phase									
Minimum Initial (s)	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	7.0
Minimum Split (s)	48.1	48.1	24.0	48.1	48.1	24.0	34.2	34.2	34.2
Total Split (s)	56.0	56.0	28.0	56.0	56.0	28.0	64.0	36.0	36.0
Total Split (%)	46.7%	46.7%	23.3%	46.7%	46.7%	23.3%	53.3%	30.0%	30.0%
Yellow Time (s)	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	1.0	2.4	2.4	1.0	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	4.0	6.1	6.1	4.0	6.2	6.2	6.2
Lead/Lag			Lead			Lead		Lag	Lag
Lead-Lag Optimize?			Yes			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	64.8	64.8	90.6	64.8	64.8	45.1	42.9	15.2	15.2
Actuated g/C Ratio	0.54	0.54	0.76	0.54	0.54	0.38	0.36	0.13	0.13
v/c Ratio	0.08	0.46	0.53	0.48	0.38	0.91	0.29	0.21	0.68
Control Delay	16.3	18.6	2.5	27.5	17.3	57.1	18.4	48.3	58.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	18.6	2.5	27.5	17.3	57.1	18.4	48.3	58.2
LOS	B	B	A	C	B	E	B	D	E
Approach Delay		11.8			18.7		45.4		56.6
Approach LOS		B			B		D		E

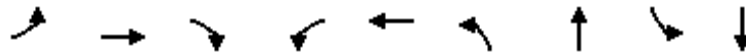
Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 38 (32%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 22.4  
 Intersection Capacity Utilization 92.6%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service F

Splits and Phases: 1: White Oak Rd/Homeview Rd & Southdale Rd E



1: White Oak Rd/Homeview Rd & Southdale Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	25	887	672	115	709	408	176	32	162
v/c Ratio	0.08	0.46	0.53	0.48	0.38	0.91	0.29	0.21	0.68
Control Delay	16.3	18.6	2.5	27.5	17.3	57.1	18.4	48.3	58.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	18.6	2.5	27.5	17.3	57.1	18.4	48.3	58.2
Queue Length 50th (m)	2.7	65.1	5.3	16.2	48.6	78.2	19.1	6.9	33.1
Queue Length 95th (m)	8.4	91.0	17.1	39.4	69.6	#102.9	33.2	15.7	52.6
Internal Link Dist (m)		112.4			211.2		53.2		84.1
Turn Bay Length (m)	70.0		50.0	100.0		50.0		50.0	
Base Capacity (vph)	296	1914	1280	239	1884	450	806	294	453
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.46	0.53	0.48	0.38	0.91	0.22	0.11	0.36

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 1: White Oak Rd/Homeview Rd & Southdale Rd E

2034 AM Total Traffic

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	816	618	106	625	28	375	78	84	29	105	44
Future Volume (vph)	23	816	618	106	625	28	375	78	84	29	105	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	4.0	6.1	6.1		4.0	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1567	3544	1513	1652	3483		1670	1613		1741	1772	
Flt Permitted	0.33	1.00	1.00	0.26	1.00		0.38	1.00		0.65	1.00	
Satd. Flow (perm)	549	3544	1513	444	3483		664	1613		1184	1772	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	887	672	115	679	30	408	85	91	32	114	48
RTOR Reduction (vph)	0	0	145	0	2	0	0	37	0	0	15	0
Lane Group Flow (vph)	25	887	527	115	707	0	408	139	0	32	147	0
Confl. Peds. (#/hr)	9		12	12		9	9		8	8		9
Heavy Vehicles (%)	16%	3%	5%	10%	4%	4%	9%	6%	11%	4%	2%	5%
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2	3		6		3	8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	64.8	64.8	88.4	64.8	64.8		42.9	42.9		15.3	15.3	
Effective Green, g (s)	64.8	64.8	88.4	64.8	64.8		42.9	42.9		15.3	15.3	
Actuated g/C Ratio	0.54	0.54	0.74	0.54	0.54		0.36	0.36		0.13	0.13	
Clearance Time (s)	6.1	6.1	4.0	6.1	6.1		4.0	6.2		6.2	6.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	296	1913	1114	239	1880		435	576		150	225	
v/s Ratio Prot		0.25	0.09		0.20		c0.18	0.09			0.08	
v/s Ratio Perm	0.05		0.26	c0.26			c0.15			0.03		
v/c Ratio	0.08	0.46	0.47	0.48	0.38		0.94	0.24		0.21	0.65	
Uniform Delay, d1	13.3	16.9	6.4	17.2	15.9		33.7	27.1		47.0	49.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.8	0.3	6.8	0.6		27.8	0.2		0.7	6.7	
Delay (s)	13.9	17.7	6.7	23.9	16.5		61.5	27.3		47.7	56.5	
Level of Service	B	B	A	C	B		E	C		D	E	
Approach Delay (s)		13.0			17.5			51.2			55.0	
Approach LOS		B			B			D			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			23.7			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.3			
Intersection Capacity Utilization			92.6%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
 2: Petty Rd/Private Access Road & Southdale Rd E










2034 AM Total Traffic

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	1384	90	0	986	58	0	0	53	20	0	19
Future Volume (Veh/h)	39	1384	90	0	986	58	0	0	53	20	0	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	43	1521	99	0	1084	64	0	0	58	22	0	21
Pedestrians								3			6	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					137							
pX, platoon unblocked	0.89						0.89	0.89		0.89	0.89	0.89
vC, conflicting volume	1154			1623			2222	2814	813	1936	2799	548
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	928			1623			2127	2791	813	1807	2774	248
tC, single (s)	4.1			4.1			7.5	6.5	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			100			100	100	82	36	100	97
cM capacity (veh/h)	660			405			24	16	316	35	16	672
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	43	1014	606	542	542	64	58	43				
Volume Left	43	0	0	0	0	0	0	22				
Volume Right	0	0	99	0	0	64	58	21				
cSH	660	1700	1700	1700	1700	1700	316	64				
Volume to Capacity	0.07	0.60	0.36	0.32	0.32	0.04	0.18	0.67				
Queue Length 95th (m)	1.6	0.0	0.0	0.0	0.0	0.0	5.0	22.0				
Control Delay (s)	10.8	0.0	0.0	0.0	0.0	0.0	18.9	135.4				
Lane LOS	B						C	F				
Approach Delay (s)	0.3			0.0			18.9	135.4				
Approach LOS							C	F				
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			57.8%	ICU Level of Service	B							
Analysis Period (min)			15									













HCM Unsignalized Intersection Capacity Analysis  
 3: Petty Rd & West Site Access

2034 AM Total Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	48	9	18	89	9
Future Volume (Veh/h)	13	48	9	18	89	9
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	15	56	11	21	105	11
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	244	22			33	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	244	22			33	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	95			93	
cM capacity (veh/h)	699	1048			1590	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	71	32	116			
Volume Left	15	0	105			
Volume Right	56	21	0			
cSH	948	1700	1590			
Volume to Capacity	0.07	0.02	0.07			
Queue Length 95th (m)	1.8	0.0	1.6			
Control Delay (s)	9.1	0.0	6.8			
Lane LOS	A		A			
Approach Delay (s)	9.1	0.0	6.8			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			6.5			
Intersection Capacity Utilization			22.4%	ICU Level of Service		A
Analysis Period (min)			15			

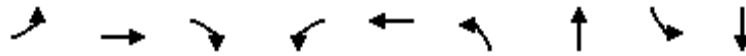
HCM Unsignalized Intersection Capacity Analysis  
4: White Oak Rd & East Site Access

2034 AM Total Traffic

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	76	101	60	460	753	75
Future Volume (Veh/h)	76	101	60	460	753	75
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	81	107	64	489	801	80
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						77
pX, platoon unblocked	0.92	0.92	0.92			
vC, conflicting volume	1176	804	884			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1148	743	830			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	50	68	91			
cM capacity (veh/h)	161	332	743			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	188	227	326	801	80	
Volume Left	81	64	0	0	0	
Volume Right	107	0	0	0	80	
cSH	228	743	1700	1700	1700	
Volume to Capacity	0.83	0.09	0.19	0.47	0.05	
Queue Length 95th (m)	47.7	2.1	0.0	0.0	0.0	
Control Delay (s)	67.7	3.6	0.0	0.0	0.0	
Lane LOS	F	A				
Approach Delay (s)	67.7	1.5		0.0		
Approach LOS	F					
Intersection Summary						
Average Delay	8.3					
Intersection Capacity Utilization	74.5%			ICU Level of Service	D	
Analysis Period (min)	15					

Timings  
1: White Oak Rd/Homeview Rd & Southdale Rd E

2034 PM Total Traffic

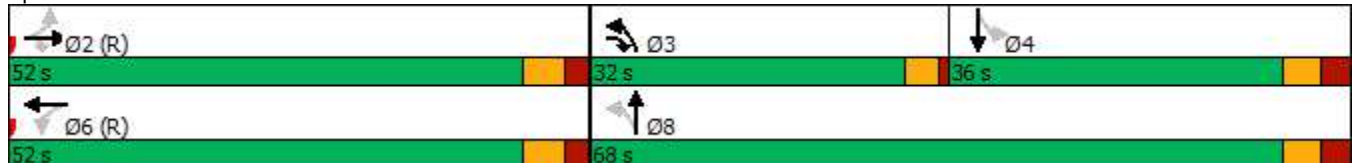


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↗	↖	↕	↗	↕	↖	↗
Traffic Volume (vph)	57	1017	580	106	1218	544	234	58	115
Future Volume (vph)	57	1017	580	106	1218	544	234	58	115
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases		2	3		6	3	8		4
Permitted Phases	2		2	6		8		4	
Detector Phase	2	2	3	6	6	3	8	4	4
Switch Phase									
Minimum Initial (s)	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	7.0
Minimum Split (s)	48.1	48.1	24.0	48.1	48.1	24.0	34.2	34.2	34.2
Total Split (s)	52.0	52.0	32.0	52.0	52.0	32.0	68.0	36.0	36.0
Total Split (%)	43.3%	43.3%	26.7%	43.3%	43.3%	26.7%	56.7%	30.0%	30.0%
Yellow Time (s)	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	1.0	2.4	2.4	1.0	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	4.0	6.1	6.1	4.0	6.2	6.2	6.2
Lead/Lag			Lead			Lead		Lag	Lag
Lead-Lag Optimize?			Yes			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	59.6	59.6	89.7	59.6	59.6	50.3	48.1	16.1	16.1
Actuated g/C Ratio	0.50	0.50	0.75	0.50	0.50	0.42	0.40	0.13	0.13
v/c Ratio	0.78	0.61	0.48	0.76	0.77	1.06	0.59	0.47	0.69
Control Delay	87.1	24.3	2.0	59.9	29.2	85.3	30.0	58.6	58.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.1	24.3	2.0	59.9	29.2	85.3	30.0	58.6	58.4
LOS	F	C	A	E	C	F	C	E	E
Approach Delay		18.6			31.5		61.9		58.5
Approach LOS		B			C		E		E

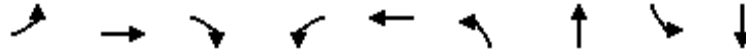
Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 40 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.06  
 Intersection Signal Delay: 34.7  
 Intersection LOS: C  
 Intersection Capacity Utilization 100.4%  
 ICU Level of Service G  
 Analysis Period (min) 15

Splits and Phases: 1: White Oak Rd/Homeview Rd & Southdale Rd E



## 1: White Oak Rd/Homeview Rd &amp; Southdale Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	61	1094	624	114	1380	585	428	62	176
v/c Ratio	0.78	0.61	0.48	0.76	0.77	1.06	0.59	0.47	0.69
Control Delay	87.1	24.3	2.0	59.9	29.2	85.3	30.0	58.6	58.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.1	24.3	2.0	59.9	29.2	85.3	30.0	58.6	58.4
Queue Length 50th (m)	11.4	94.8	2.7	21.0	135.3	~119.4	74.3	13.7	36.2
Queue Length 95th (m)	#40.6	129.1	12.9	#59.6	182.2	#170.5	97.1	26.5	56.4
Internal Link Dist (m)		112.4			211.2		53.2		84.1
Turn Bay Length (m)	70.0		50.0	100.0		50.0		50.0	
Base Capacity (vph)	78	1796	1298	150	1782	552	922	243	457
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.61	0.48	0.76	0.77	1.06	0.46	0.26	0.39

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis  
 1: White Oak Rd/Homeview Rd & Southdale Rd E




















2034 PM Total Traffic

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	1017	580	106	1218	65	544	234	164	58	115	48
Future Volume (vph)	57	1017	580	106	1218	65	544	234	164	58	115	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	4.0	6.1	6.1		4.0	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1823	3614	1547	1767	3583		1824	1773		1816	1790	
Flt Permitted	0.08	1.00	1.00	0.16	1.00		0.35	1.00		0.51	1.00	
Satd. Flow (perm)	157	3614	1547	304	3583		681	1773		981	1790	
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)	61	1094	624	114	1310	70	585	252	176	62	124	52
RTOR Reduction (vph)	0	0	152	0	3	0	0	13	0	0	15	0
Lane Group Flow (vph)	61	1094	472	114	1377	0	585	415	0	62	161	0
Confl. Peds. (#/hr)	8		11	11		8	2		7	7		2
Heavy Vehicles (%)	0%	1%	3%	3%	1%	0%	0%	0%	2%	0%	3%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2	3		6		3	8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	59.6	59.6	87.6	59.6	59.6		48.1	48.1		16.1	16.1	
Effective Green, g (s)	59.6	59.6	87.6	59.6	59.6		48.1	48.1		16.1	16.1	
Actuated g/C Ratio	0.50	0.50	0.73	0.50	0.50		0.40	0.40		0.13	0.13	
Clearance Time (s)	6.1	6.1	4.0	6.1	6.1		4.0	6.2		6.2	6.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	77	1794	1129	150	1779		539	710		131	240	
v/s Ratio Prot		0.30	0.10		0.38		c0.25	0.23			0.09	
v/s Ratio Perm	c0.39		0.21	0.38			c0.18			0.06		
v/c Ratio	0.79	0.61	0.42	0.76	0.77		1.09	0.59		0.47	0.67	
Uniform Delay, d1	25.1	21.8	6.3	24.4	24.7		31.9	28.1		48.0	49.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	55.8	1.6	0.3	29.8	3.4		63.9	1.2		2.7	7.2	
Delay (s)	80.9	23.4	6.5	54.2	28.1		95.8	29.4		50.7	56.6	
Level of Service	F	C	A	D	C		F	C		D	E	
Approach Delay (s)		19.4			30.1			67.7			55.1	
Approach LOS		B			C			E			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			35.6				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			16.3		
Intersection Capacity Utilization			100.4%				ICU Level of Service			G		
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
 2: Petty Rd/Private Access Road & Southdale Rd E










2034 PM Total Traffic

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	52	1587	91	0	1511	298	0	0	49	17	0	71	
Future Volume (Veh/h)	52	1587	91	0	1511	298	0	0	49	17	0	71	
Sign Control	Free			Free			Stop			Stop			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Hourly flow rate (vph)	54	1653	95	0	1574	310	0	0	51	18	0	74	
Pedestrians							6			6			
Lane Width (m)							3.7			3.7			
Walking Speed (m/s)							1.1			1.1			
Percent Blockage							1			1			
Right turn flare (veh)													
Median type	None				None								
Median storage (veh)													
Upstream signal (m)	137												
pX, platoon unblocked	0.70							0.70	0.70			0.70	0.70
vC, conflicting volume	1890				1754				2676	3704	880	2514	3442
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1414				1754				2536	4007	880	2306	3632
tC, single (s)	4.1				4.1				7.5	6.5	7.0	7.5	6.5
tC, 2 stage (s)													
tF (s)	2.2				2.2				3.5	4.0	3.3	3.5	4.0
p0 queue free %	84				100				100	100	82	0	100
cM capacity (veh/h)	340				360				8	2	285	11	3
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	54	1102	646	787	787	310	51	92					
Volume Left	54	0	0	0	0	0	0	18					
Volume Right	0	0	95	0	0	310	51	74					
cSH	340	1700	1700	1700	1700	1700	285	51					
Volume to Capacity	0.16	0.65	0.38	0.46	0.46	0.18	0.18	1.81					
Queue Length 95th (m)	4.2	0.0	0.0	0.0	0.0	0.0	4.9	68.3					
Control Delay (s)	17.6	0.0	0.0	0.0	0.0	0.0	20.4	559.4					
Lane LOS	C						C		F				
Approach Delay (s)	0.5				0.0				20.4	559.4			
Approach LOS							C		F				
Intersection Summary													
Average Delay	14.0												
Intersection Capacity Utilization	65.5%			ICU Level of Service					C				
Analysis Period (min)	15												

# HCM Unsignalized Intersection Capacity Analysis

## 3: Petty Rd & West Site Access












2034 PM Total Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	28	22	11	66	30
Future Volume (Veh/h)	14	28	22	11	66	30
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	18	35	28	14	84	38
Pedestrians	2		3			
Lane Width (m)	3.7		3.7			
Walking Speed (m/s)	1.1		1.1			
Percent Blockage	0		0			
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	246	37			44	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	246	37			44	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	97			95	
cM capacity (veh/h)	704	1028			1574	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	53	42	122			
Volume Left	18	0	84			
Volume Right	35	14	0			
cSH	889	1700	1574			
Volume to Capacity	0.06	0.02	0.05			
Queue Length 95th (m)	1.4	0.0	1.3			
Control Delay (s)	9.3	0.0	5.2			
Lane LOS	A		A			
Approach Delay (s)	9.3	0.0	5.2			
Approach LOS	A					
Intersection Summary						
Average Delay			5.2			
Intersection Capacity Utilization			21.9%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 4: White Oak Rd & East Site Access

2034 PM Total Traffic

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 		
Traffic Volume (veh/h)	40	68	40	902	742	59
Future Volume (Veh/h)	40	68	40	902	742	59
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	43	73	43	970	798	63
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						77
pX, platoon unblocked	0.90	0.90	0.90			
vC, conflicting volume	1372	801	864			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1358	725	795			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	64	78	94			
cM capacity (veh/h)	121	335	751			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	116	366	647	798	63	
Volume Left	43	43	0	0	0	
Volume Right	73	0	0	0	63	
cSH	202	751	1700	1700	1700	
Volume to Capacity	0.57	0.06	0.38	0.47	0.04	
Queue Length 95th (m)	23.8	1.4	0.0	0.0	0.0	
Control Delay (s)	44.4	1.8	0.0	0.0	0.0	
Lane LOS	E	A				
Approach Delay (s)	44.4	0.7		0.0		
Approach LOS	E					
Intersection Summary						
Average Delay	2.9					
Intersection Capacity Utilization	67.4%			ICU Level of Service	C	
Analysis Period (min)	15					



