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2024-04-22
Project: (220563)

Vimal Lad
Senior Manager, Real Estate Development
Forum 601 Scottsdale LP
181 Bay Street
Toronto, ON M5J 2T3

Dear Vimal Lad:

RE: ALMA GUELPH PHASE 2, 601 SCOTTSDALE DRIVE
TRANSPORTATION IMPACT STUDY AND PARKING STUDY ADDENDUM

In September 2023, Paradigm Transportation Solutions Limited prepared a Transportation Impact Study (TIS) and Parking Study (PS)[1] for Phase 2 of the Alma Guelph development located at 601 Scottsdale Drive in Guelph, Ontario.

The purpose of this letter is to provide an update to the September 2023 TIS and PS (September 2023 study) based on an updated site plan and address comments provided by the City of Guelph in their Pre-Submission Review dated 2023-12-15.

Study Area Roadways

The study area roadways include[2]:

- **Highway 6 (Hanlon Parkway)** is a four-lane, 80 km/h provincial highway. Approximately 45 m north of Stone Road West, the speed limit is 70 km/h. There are no sidewalks provided on either side of the roadway;
- **Stone Road West** is a four-lane, 60 km/h arterial road. East of Scottsdale Drive, sidewalks are provided on both sides of the roadway. West of Scottsdale Drive, a sidewalk is provided on the north side of the roadway;
- **Scottsdale Drive** is a 40 km/h collector road. North of Janefield Avenue, the roadway has a two-lane cross-section. South of Janefield Avenue, the roadway has a four-lane cross-section. Sidewalks are provided on both sides of the roadway; and

[1] Paradigm Transportation Solutions Limited, ALMA Guelph Phase 2 601 Scottsdale Drive, Guelph Transportation Impact Study and Parking Study, (Cambridge: PTSL, 2023).
[2] City of Guelph, *Official Plan Schedule 5: Road & Rail Network,* (Guelph: City of Guelph, 2024).

- **Janefield Avenue** is a two-lane, 40 km/h collector road. Sidewalks are provided on both sides of the roadway;

Alternate Transportation Improvements

Cycling Network

As indicated by City of Guelph Staff, cycling infrastructure is proposed to be installed along:

- Stone Road West between Edinburgh Road South and Highway 6;
- Scottsdale Drive between Kortright Road West and College Avenue; and
- College Avenue between Dundas Lane and Janefield Avenue.

Transit Network

In the September 2023 study, the following Guelph Transit routes were indicated to be within walking distance of the development:

- Route 1 (Edinburgh College);
- Route 2 (College Edinburgh);
- Route 6 (Ironwood);
- Route 8 (Janefield);
- Route 15 (College);
- Route 17 (Woodlawn Watson);
- Route 18 (Watson Woodlawn); and
- Route 50U (Scottsdale).

As indicated by City of Guelph staff, the following Guelph Transit route is also available within walking distance of the development and is described as follows[3]:

- **Route 19 (Hanlon Creek)** operates between Stone Road Mall and the Clair Marketplace plaza. Monday to Saturday, this route operates from 5:40 AM to 12:40 AM with headways generally around 30 minutes. On Sunday, this route operates from 9:15 AM to 7:15 PM with 30-minute headways.

The closest transit stop to the subject site is located on the west side of Scottsdale Drive in front of the subject site and consists only of a sign and post. It is noted that a concrete pad could be added to the bus stop in front of 601 Scottsdale Drive (subject site).

Figure 1 illustrates the existing transit network.

[3] "Guelph Transit schedules and maps," City of Guelph, https://guelph.ca/living/getting-around/bus/schedules/.

Existing Traffic Conditions

Traffic Volumes

In addition to the intersections analysed in the September 2023 TIS, the City of Guelph requested the addition of the intersection of Scottsdale Drive and Janefield Avenue. The traffic data from the Phase 1 TIS was used for this update. The count at this intersection was collected in September 2021 and this data was factored to the year 2024 by applying a 1.5% per year growth rate, which was the background traffic growth rate used in the study. The counts used in the September 2023 TIS were collected in March 2023 and they were also factored up to 2024 using a 1.5% growth rate. The traffic to / from Highway 6 were factored to 2024 using a 1.0% growth rate, which was the background growth rate for MTO volumes used in the study.

No growth rate was applied to the existing traffic (Phase 1) leaving/accessing the Site Driveway.

In/Out counts were also collected by Paradigm in March 2023 at the existing site driveways along Scottsdale Drive to capture the 601 Scottsdale Drive Phase 1 site traffic.

It is noted that the existing northern site driveway for 601 Scottsdale Drive is offset to the north the Scottsdale Drive entrance/exit for Stone Road Mall by approximately 20 m (centreline to centreline).

Volume balancing (by addition) was completed for the 2024 base year condition along Stone Road West and Scottdale Drive.

Figure 2 illustrates the updated base year weekday AM and PM peak hour traffic volumes.

Traffic Operations

The operations of the intersections in the study area were evaluated using the existing lane configurations, traffic controls and the existing traffic peak volumes.

The level of service conditions on the existing road network have been assessed using Synchro 11.

The northbound right-turn storage lengths at the intersection of Highway 6 and Stone Road West were generated using the Geometric Design Guide for Canadian Roads[4].

The through, left-turn, and shared movement queue lengths at the intersection of Highway 6 and Stone Road West were generated using MTO's Traffic Signal Operating & Timing Policy[5].

[4] Transportation Association of Canada, *Geometric Design Guide for Canadian Roads: Section 9.14.4,* (Ottawa: TAC, 2017).
[5] Ontario Ministry of Transportation, *Implementation of the Traffic Signal Operating & Timing Policy # 2010-02,* (Toronto: Queen's Printer for Ontario, 2017).

Table 2 summarizes the existing intersection operations.

Table 3 summarizes the northbound right-turn storage lengths at the intersection of Highway 6 and Stone Road West using the Geometric Design Guide for Canadian Roads.

Table 4 summarizes the through, left-turn, and shared movement queue lengths at the intersection of Highway 6 and Stone Road West using MTO's Traffic Signal Operating & Timing Policy.

The operations of the study area intersections for the existing conditions were the same as noted in the September 2023 TIS, which the additional note that the southbound left-turn movement at Stone Road and Scottsdale Drive is calculated to a have queue length that surpasses its storage length by 4 and 2 m during the AM and PM peak hours.

Appendix A contains the detailed Synchro 11 reports.

TABLE 2: EXISTING TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Highway 6 & Stone Road West	TCS	LOS	E	E	>	**E**	F	D	E	**F**	D	C	C	**C**	E	E	E	**E**	**D**
			Delay	63	69	>	**68**	146	49	56	**100**	42	24	22	**23**	71	58	58	**60**	**50**
			V/C	0.17	0.74	>		1.08	0.14	0.58		0.02	0.61	0.47		0.80	0.88	0.88		
			Q	13	70	>		92	19	74		4	128	93		68	208	217		
			Stor.	65	-	>		35	-	-		160	-	150		195	-	-		
			Avail.	52	-	>		-57	-	-		156	-	57		127	-	-		
	Scottsdale Drive & Stone Road West	TCS	LOS	B	C	C	**B**	B	B	B	**B**	C	C	C	**C**	C	C	C	**C**	**C**
			Delay	12	21	21	**20**	14	16	16	**16**	24	31	32	**30**	25	28	28	**27**	**22**
			V/C	0.15	0.51	0.51		0.33	0.27	0.27		0.20	0.45	0.51		0.36	0.20	0.22		
			Q	8	65	66		14	30	30		16	44	43		24	19	19		
			Stor.	28	-	-		25	-	-		30	-	-		20	-	-		
			Avail.	20	-	-		11	-	-		14	-	-		-4	-	-		
	Scottsdale Drive & Janefield Avenue	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	12		>	**12**					8	0		**3**		0	0	**0**	
			V/C	0.30		>						0.10	0.00				0.00	0.00		
			Q	10		>						2	0				0	0		
	Scottsdale Drive & South Driveway	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	10		>	**10**					8	0		**0**		0	0	**0**	
			V/C	0.01		>						0.00	0.00				0.00	0.00		
			Q	0		>						0	0				0	0		
	Scottsdale Drive & North Driveway/Mall Driveway	TWSC	LOS	<	B	>	**B**	C	B	>	**B**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	12	>	**12**	16	10	>	**13**	8	0	0	**0**	8	0	0	**0**	
			V/C	<	0.01	>		0.03	0.01	>		0.01	0.00	0.00		0.01	0.00	0.00		
			Q	<	0	>		1	0	>		0	0	0		0	0	0		
PM Peak Hour	Highway 6 & Stone Road West	TCS	LOS	E	D	>	**D**	F	D	E	**F**	D	D	C	**D**	E	F	F	**F**	**E**
			Delay	66	52	>	**54**	123	42	57	**83**	53	45	32	**43**	74	85	85	**82**	**67**
			V/C	0.18	0.34	>		1.07	0.28	0.80		0.12	0.87	0.48		0.85	1.02	1.02		
			Q	10	50	>		154	52	134		15	216	96		92	297	309		
			Stor.	65	-	>		35	-	-		160	-	150		195	-	-		
			Avail.	55	-	>		-119	-	-		145	-	54		103	-	-		
	Scottsdale Drive & Stone Road West	TCS	LOS	B	C	C	**C**	B	B	B	**B**	C	C	D	**C**	C	C	C	**C**	**C**
			Delay	15	23	23	**22**	15	20	20	**19**	24	30	37	**32**	26	29	29	**28**	**24**
			V/C	0.24	0.51	0.51		0.56	0.48	0.48		0.26	0.38	0.72		0.40	0.30	0.32		
			Q	12	66	64		28	61	62		21	38	69		22	29	29		
			Stor.	28	-	-		25	-	-		30	-	-		20	-	-		
			Avail.	16	-	-		-3	-	-		9	-	-		-2	-	-		
	Scottsdale Drive & Janefield Avenue	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	12		>	**12**					8	0		**4**		0	0	**0**	
			V/C	0.25		>						0.12	0.00				0.00	0.00		
			Q	8		>						3	0				0	0		
	Scottsdale Drive & South Driveway	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	11		>	**11**					8	0		**0**		0	0	**0**	
			V/C	0.01		>						0.00	0.00				0.00	0.00		
			Q	0		>						0	0				0	0		
	Scottsdale Drive & North Driveway/Mall Driveway	TWSC	LOS	<	B	>	**B**	B	B	>	**B**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	14	>	**14**	15	10	>	**12**	8	0	0	**0**	8	0	0	**1**	
			V/C	<	0.02	>		0.12	0.08	>		0.00	0.00	0.00		0.03	0.00	0.00		
			Q	<	1	>		3	2	>		0	0	0		1	0	0		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared Movement

TABLE 3: EXISTING RIGHT-TURN STORAGE LENGTHS

Intersection	Parameter	Direction/Movement	
		AM Peak Hour	PM Peak Hour
		NBR	NBR
Highway 6 and Stone Road West	Volume (vph)	376	307
	Cycle Length (s)	148.7	148.7
	Design Speed (km/h)	100	100
	Queue (m)	233	191
	Storage (m)	150	150
	Available (m)	-83	-41

Transportation Association of Canada, *Geometric Design Guide for Canadian Roads: Section 9.14.4,* (Ottawa: TAC, 2017).

TABLE 4: EXISTING THROUGH, LEFT-TURN, AND SHARED QUEUE LENGTHS

Analysis Period	Intersection	Parameter	Direction/Movement										
			EBL	EBTR	WBL	WBTR1	WBTR2	NBL	NBT	SBL1	SBL2	SBTR1	SBTR2
AM Peak Hour	Highway 6 and Stone Road West	Volume (vph)	25	140	202	125	83	9	1016	157	105	646	430
		Heavy Vehicle %	4%	2%	5%	4%	4%	11%	12%	3%	3%	10%	10%
		Cycle Length (s)	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7
		Passenger Cars Per Hour	26	143	213	130	87	10	1138	162	109	711	473
		Number of Lanes	1	1	1	1	1	1	2	1	1	1	1
		Arrival Rate (veh/s/lane)	1.1	5.9	8.8	5.4	3.6	0.4	23.5	6.7	4.5	29.4	19.5
		Queue (vehicles)*	3	10	14	9	7	2	32	11	8	35	27
		Queue (m)	23	75	105	68	53	15	240	83	60	263	203
		Storage (m)	65	-	35	-	-	160	-	195	195	-	-
		Available (m)	42	-	-70	-	-	145	-	112	135	-	-
PM Peak Hour	Highway 6 and Stone Road West	Volume (vph)	19	111	337	274	183	33	1229	224	149	785	524
		Heavy Vehicle %	0%	2%	1%	1%	1%	0%	5%	1%	1%	4%	4%
		Cycle Length (s)	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7
		Passenger Cars Per Hour	19	114	341	277	185	33	1291	227	151	817	545
		Number of Lanes	1	1	1	1	1	1	2	1	1	1	1
		Arrival Rate (veh/s/lane)	0.8	4.7	14.1	11.4	7.6	1.4	26.7	9.4	6.2	33.7	22.5
		Queue (vehicles)*	2	9	21	17	12	3	35	15	11	35	30
		Queue (m)	15	68	158	128	90	23	263	113	83	263	225
		Storage (m)	65	-	35	-	-	160	-	195	195	-	-
		Available (m)	50	-	-123	-	-	137	-	82	112	-	-

*Ontario Ministry of Transportation, *Implementation of the Traffic Signal Operating & Timing Policy # 2010-02,* (Toronto: Queen's Printer for Ontario, 2017).

Development Concept

Development Description

Phase 2 is proposed to have the existing off-campus student housing development expanded with an additional 489 units, which is unchanged from the September 2023 TIS. This represents a total of 653 units when combined with the existing 164 units from Phase 1.

Vehicle access is proposed via an all-moves driveway connection to Scottsdale Drive.

The southern driveway for 601 Scottsdale Drive is to be removed and the northern driveway (Site Driveway) is to be the only site access. It is noted that the single Site Driveway and the current Scottsdale Drive entrance/exit for Stone Road Mall must directly algin. Therefore, the single Site Driveway must move approximately 20 m south.

The full build-out is assumed to be completed by 2025.

A total of 191 parking spaces will be provided on-site for both Phase 1 and Phase 2 (0.29 spaces per unit).

The proposed parking supply does not meet City of Guelph zoning requirements as currently planned.

Figure 3 illustrates the current site plan.

Site Trip Generation

The trip generation from the September 2023 TIS remains unchanged with the subject development forecast to generate 32 and 96 AM and PM peak hour trips, respectively, with the inclusion of a 22% trip reduction (15% transit and 7% cycling reductions).

The trip distribution in the September 2023 study and for this addendum is based on Transportation Tomorrow Survey (TTS) 2016 data[6].

Figure 4 illustrates the trip assignment for the site expansion during the AM and PM peak hours.

Site Circulation Review

The site circulation has been updated to reflect the latest site plan update for this addendum using the following design vehicles examined in the September 2023 study:

- Transportation Association of Canada (TAC) Passenger Car (P);
- TAC Light Single Unit (LSU);

[6] Data Management Group, *Transportation Tomorrow Survey 2016,* University of Toronto, 2016, http://www.transportationtomorrow.on.ca/

- TAC Medium Single Unit (MSU);
- TAC Heavy Single Unit (HSU); and
- Fire Truck.

Appendix B contains the vehicle maneuvering diagrams. Generally, there are no conflicts with the site's geometry.

Future Traffic Conditions

The assessment of future traffic conditions contained in this section includes estimates of future background and total traffic volumes, and the analyses for opening year (2025) and for five (2030) and ten (2035) years beyond the full build-out of the development.

Road and Signal Timing Improvements

Under future traffic conditions, this addendum considers the following improvements:

- The reduction of through lanes from four lanes to two lanes (bidirectional) along Scottsdale Drive Between Stone Road West and Janefield Avenue to provide space for auxiliary left-turn lanes and proposed bike lanes;
- The addition of a 20 m northbound left-turn lane along Scottsdale Drive at Janefield Avenue;
- The addition of a 20 m southbound left-turn lane along Scottsdale Drive at the Stone Road Mall entrance/exit; and
- Optimized signal timing splits at the intersections of:
  - Highway 6 at Stone Road West; and
  - Stone Road West at Scottsdale Drive.

Background Traffic Growth

The background growth rates were unchanged from the September 2023 TIS, with 1.5% per year on City of Guelph streets and 1.0% per year on Highway 6, which was confirmed by City and MTO staff during pre-study conference.

No growth rate was again applied to the existing traffic (Phase 1) leaving/accessing the Site Driveway.

Volume balancing (by addition) was also completed for all future conditions along Stone Road West and Scottdale Drive.

No other background developments were identified for inclusion in the background traffic volumes.

2025 Background Traffic Conditions

Figure 5 illustrates the 2025 background traffic volumes. **Table 5** summarizes the results of the 2025 background traffic operations.

Table 6 summarizes the northbound right-turn storage lengths at the intersection of Highway 6 and Stone Road West using the Geometric Design Guide for Canadian Roads.

Table 7 summarizes the through, left-turn, and shared movement queue lengths at the intersection of Highway 6 and Stone Road West using MTO's Traffic Signal Operating & Timing Policy.

Appendix C contains the supporting detailed Synchro 11 reports.

The 2025 background traffic operations are forecast to operate similarly to what was reported in the September 2023 TIS. The added intersection of Scottsdale Drive and Janefield Avenue is forecast to operate well.

TABLE 5: 2025 BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Highway 6 & Stone Road West	TCS	LOS	E	E	>	**E**	F	D	E	**F**	D	C	B	**C**	F	D	D	**D**	**D**
			Delay	66	69	>	**68**	206	51	58	**130**	52	22	20	**22**	84	36	36	**45**	**47**
			V/C	0.20	0.74	>		1.24	0.15	0.64		0.04	0.59	0.46		0.86	0.72	0.72		
			Q	13	71	>		121	20	76		4	123	90		74	166	172		
			Stor.	65	-	>		35	-	-		160	-	150		195	-	-		
			Avail.	52	-	>		-86	-	-		156	-	60		121	-	-		
	Scottsdale Drive & Stone Road West	TCS	LOS	B	C	C	**B**	B	B	B	**B**	C	C	C	**C**	C	C	>	**C**	**C**
			Delay	12	21	21	**20**	14	16	16	**16**	25	31	32	**30**	25	30	>	**28**	**22**
			V/C	0.15	0.52	0.52		0.34	0.27	0.28		0.23	0.43	0.51		0.35	0.42	>		
			Q	8	67	67		14	30	31		17	44	44		24	40	>		
			Stor.	28	-	-		25	-	-		30	-	-		20	-	>		
			Avail.	20	-	-		11	-	-		13	-	-		-4	-	>		
	Scottsdale Drive & Janefield Avenue	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	12		>	**12**					8	0		**3**		0	0	**0**	
			V/C	0.31		>						0.10	0.00				0.00	0.00		
			Q	10		>						3	0				0	0		
			Stor.	-		>						20	-				-	-		
			Avail.	-		>						17	-				-	-		
	Scottsdale Drive & Site Driveway/Mall Driveway	TWSC	LOS	<	B	>	**B**	<	C	B	**B**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	13	>	**13**	<	19	10	**15**	8	0	0	**0**	8	0	0	**0**	
			V/C	<	0.02	>		<	0.04	0.01		0.01	0.00	0.00		0.01	0.00	0.00		
			Q	<	1	>		<	1	0		0	0	0		0	0	0		
			Stor.	<	-	>		<	-	-		-	-	-		20	-	-		
			Avail.	<	-	>		<	-	-		-	-	-		20	-	-		
PM Peak Hour	Highway 6 & Stone Road West	TCS	LOS	E	D	>	**D**	F	D	E	**F**	E	D	C	**D**	F	D	D	**E**	**E**
			Delay	67	51	>	**54**	133	42	58	**87**	65	40	29	**39**	121	44	44	**61**	**58**
			V/C	0.19	0.34	>		1.09	0.29	0.81		0.24	0.84	0.46		1.04	0.84	0.84		
			Q	10	50	>		166	53	137		17	206	93		117	220	230		
			Stor.	65	-	>		35	-	-		160	-	150		195	-	-		
			Avail.	55	-	>		-131	-	-		143	-	57		78	-	-		
	Scottsdale Drive & Stone Road West	TCS	LOS	B	C	C	**C**	B	B	B	**B**	C	C	D	**C**	C	C	>	**C**	**C**
			Delay	15	23	23	**22**	15	20	20	**19**	25	30	37	**32**	25	32	>	**30**	**24**
			V/C	0.24	0.52	0.52		0.56	0.49	0.49		0.33	0.37	0.73		0.31	0.61	>		
			Q	12	68	66		28	62	63		22	38	70		22	63	>		
			Stor.	28	-	-		25	-	-		30	-	-		20	-	>		
			Avail.	16	-	-		-3	-	-		8	-	-		-2	-	>		
	Scottsdale Drive & Janefield Avenue	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	12		>	**12**					8	0		**4**		0	0	**0**	
			V/C	0.25		>						0.12	0.00				0.00	0.00		
			Q	8		>						3	0				0	0		
			Stor.	-		>						20	-				-	-		
			Avail.	-		>						17	-				-	-		
	Scottsdale Drive & Site Driveway/Mall Driveway	TWSC	LOS	<	B	>	**B**	<	C	B	**B**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	14	>	**14**	<	18	11	**14**	8	0	0	**0**	8	0	0	**1**	
			V/C	<	0.03	>		<	0.16	0.09		0.01	0.00	0.00		0.03	0.00	0.00		
			Q	<	1	>		<	4	2		0	0	0		1	0	0		
			Stor.	<	-	>		<	-	-		-	-	-		20	-	-		
			Avail.	<	-	>		<	-	-		-	-	-		19	-	-		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared Movement

TABLE 6: 2025 BACKGROUND RIGHT-TURN STORAGE LENGTHS

Intersection	Parameter	Direction/Movement	
		AM Peak Hour	PM Peak Hour
		NBR	NBR
Highway 6 and Stone Road West	Volume (vph)	381	311
	Cycle Length (s)	148.7	148.7
	Design Speed (km/h)	100	100
	Queue (m)	237	193
	Storage (m)	150	150
	Available (m)	-87	-43

Transportation Association of Canada, *Geometric Design Guide for Canadian Roads: Section 9.14.4,* (Ottawa: TAC, 2017).

TABLE 7: 2025 BACKGROUND THROUGH, LEFT-TURN, AND SHARED QUEUE LENGTHS

Analysis Period	Intersection	Parameter	Direction/Movement										
			EBL	EBTR	WBL	WBTR1	WBTR2	NBL	NBT	SBL1	SBL2	SBTR1	SBTR2
AM Peak Hour	Highway 6 and Stone Road West	Volume (vph)	25	142	205	127	85	9	1026	160	106	652	435
		Heavy Vehicle %	4%	2%	5%	4%	4%	11%	12%	3%	3%	10%	10%
		Cycle Length (s)	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7
		Passenger Cars Per Hour	26	145	216	133	89	10	1150	165	110	718	479
		Number of Lanes	1	1	1	1	1	1	2	1	1	1	1
		Arrival Rate (veh/s/lane)	1.1	6.0	8.9	5.5	3.7	0.4	23.8	6.8	4.5	29.7	19.8
		Queue (vehicles)*	3	10	14	10	7	2	32	11	8	35	27
		Queue (m)	23	75	105	75	53	15	240	83	60	263	203
		Storage (m)	65	-	35	-	-	160	-	195	195	-	-
		Available (m)	42	-	-70	-	-	145	-	112	135	-	-
PM Peak Hour	Highway 6 and Stone Road West	Volume (vph)	19	112	341	278	186	33	1241	227	152	793	529
		Heavy Vehicle %	0%	2%	1%	1%	1%	0%	5%	1%	1%	4%	4%
		Cycle Length (s)	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7
		Passenger Cars Per Hour	19	115	345	281	188	33	1304	230	154	825	551
		Number of Lanes	1	1	1	1	1	1	2	1	1	1	1
		Arrival Rate (veh/s/lane)	0.8	4.8	14.3	11.6	7.8	1.4	26.9	9.5	6.4	34.1	22.8
		Queue (vehicles)*	2	9	21	17	13	3	35	15	11	35	31
		Queue (m)	15	68	158	128	98	23	263	113	83	263	233
		Storage (m)	65	-	35	-	-	160	-	195	195	-	-
		Available (m)	50	-	-123	-	-	137	-	82	112	-	-

*Ontario Ministry of Transportation, *Implementation of the Traffic Signal Operating & Timing Policy # 2010-02,* (Toronto: Queen's Printer for Ontario, 2017).

2025 Total Traffic Conditions

Figure 6 illustrates the 2025 total traffic volumes, including trips generated by the subject development. **Table 8** summarizes the results of the 2025 total traffic operations.

Table 9 summarizes the northbound right-turn storage lengths at the intersection of Highway 6 and Stone Road West using the Geometric Design Guide for Canadian Roads.

Table 10 summarizes the through, left-turn, and shared movement queue lengths at the intersection of Highway 6 and Stone Road West using MTO's Traffic Signal Operating & Timing Policy.

The 2025 total traffic operations are forecast to operate similarly to what was reported in the September 2023 TIS. The added intersection of Scottsdale Drive and Janefield Avenue is forecast to operate well.

Appendix D contains the supporting detailed Synchro 11 reports.

TABLE 8: 2025 TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Highway 6 & Stone Road West	TCS	LOS	E	E	>	**E**	F	D	E	**F**	D	C	C	**C**	F	D	D	**D**	**D**
			Delay	63	69	>	**68**	156	49	56	**104**	52	23	22	**23**	84	38	38	**47**	**45**
			V/C	0.18	0.74	>		1.11	0.14	0.60		0.04	0.61	0.47		0.86	0.74	0.74		
			Q	13	72	>		98	20	75		4	128	94		74	171	178		
			Stor.	65	-	>		35	-	-		160	-	150		195	-	-		
			Avail.	52	-	>		-63	-	-		156	-	56		121	-	-		
	Scottsdale Drive & Stone Road West	TCS	LOS	B	C	C	**B**	B	B	B	**B**	C	C	C	**C**	C	C	>	**C**	**C**
			Delay	12	21	21	**20**	14	17	17	**16**	25	31	32	**30**	25	30	>	**28**	**22**
			V/C	0.16	0.52	0.52		0.34	0.28	0.28		0.23	0.43	0.51		0.36	0.44	>		
			Q	9	67	67		14	31	32		17	44	44		25	43	>		
			Stor.	28	-	-		25	-	-		30	-	-		20	-	>		
			Avail.	19	-	-		11	-	-		13	-	-		-5	-	>		
	Scottsdale Drive & Janefield Avenue	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	12		>	**12**					8	0		**3**		0	0	**0**	
			V/C	0.31		>						0.11	0.00				0.00	0.00		
			Q	10		>						3	0				0	0		
			Stor.	-		>						20	-				-	-		
			Avail.	-		>						17	-				-	-		
	Scottsdale Drive & Site Driveway/Mall Driveway	TWSC	LOS	<	B	>	**B**	<	C	B	**C**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	14	>	**14**	<	20	10	**16**	8	0	0	**0**	8	0	0	**0**	
			V/C	<	0.08	>		<	0.04	0.01		0.02	0.00	0.00		0.01	0.00	0.00		
			Q	<	2	>		<	1	0		1	0	0		0	0	0		
			Stor.	<	-	>		<	-	-		-	-	-		20	-	-		
			Avail.	<	-	>		<	-	-		-	-	-		20	-	-		
PM Peak Hour	Highway 6 & Stone Road West	TCS	LOS	E	D	>	**D**	F	D	E	**F**	E	D	C	**D**	F	D	D	**E**	**E**
			Delay	67	51	>	**53**	142	42	58	**92**	66	42	31	**40**	107	44	44	**58**	**58**
			V/C	0.19	0.34	>		1.12	0.29	0.82		0.25	0.86	0.48		0.99	0.84	0.84		
			Q	10	51	>		176	54	140		17	211	98		112	220	230		
			Stor.	65	-	>		35	-	-		160	-	150		195	-	-		
			Avail.	55	-	>		-141	-	-		143	-	52		83	-	-		
	Scottsdale Drive & Stone Road West	TCS	LOS	B	C	C	**C**	B	C	C	**B**	C	C	D	**C**	C	C	>	**C**	**C**
			Delay	15	24	24	**22**	15	21	21	**19**	25	30	37	**32**	25	33	>	**31**	**24**
			V/C	0.29	0.53	0.53		0.57	0.50	0.50		0.34	0.37	0.73		0.34	0.65	>		
			Q	14	68	66		28	64	64		22	38	70		24	68	>		
			Stor.	28	-	-		25	-	-		30	-	-		20	-	>		
			Avail.	14	-	-		-3	-	-		8	-	-		-4	-	>		
	Scottsdale Drive & Janefield Avenue	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	13		>	**13**					8	0		**3**		0	0	**0**	
			V/C	0.26		>						0.12	0.00				0.00	0.00		
			Q	8		>						3	0				0	0		
			Stor.	-		>						20	-				-	-		
			Avail.	-		>						17	-				-	-		
	Scottsdale Drive & Site Driveway/Mall Driveway	TWSC	LOS	<	C	>	**C**	<	C	B	**C**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	18	>	**18**	<	22	11	**16**	8	0	0	**1**	8	0	0	**1**	
			V/C	<	0.20	>		<	0.19	0.09		0.03	0.00	0.00		0.03	0.00	0.00		
			Q	<	5	>		<	5	2		1	0	0		1	0	0		
			Stor.	<	-	>		<	-	-		-	-	-		20	-	-		
			Avail.	<	-	>		<	-	-		-	-	-		19	-	-		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared Movement

TABLE 9: 2025 TOTAL RIGHT-TURN STORAGE LENGTHS

Intersection	Parameter	Direction/Movement	
		AM Peak Hour	PM Peak Hour
		NBR	NBR
Highway 6 and Stone Road West	Volume (vph)	384	320
	Cycle Length (s)	148.7	148.7
	Design Speed (km/h)	100	100
	Queue (m)	238	199
	Storage (m)	150	150
	Available (m)	-88	-49

Transportation Association of Canada, *Geometric Design Guide for Canadian Roads: Section 9.14.4,* (Ottawa: TAC, 2017).

TABLE 10: 2025 TOTAL THROUGH, LEFT-TURN, AND SHARED QUEUE LENGTHS

Analysis Period	Intersection	Parameter	Direction/Movement										
			EBL	EBTR	WBL	WBTR1	WBTR2	NBL	NBT	SBL1	SBL2	SBTR1	SBTR2
AM Peak Hour	Highway 6 and Stone Road West	Volume (vph)	25	143	208	129	86	9	1026	160	107	652	435
		Heavy Vehicle %	4%	2%	5%	4%	4%	11%	12%	3%	3%	10%	10%
		Cycle Length (s)	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7
		Passenger Cars Per Hour	26	146	219	135	90	10	1150	165	111	718	479
		Number of Lanes	1	1	1	1	1	1	2	1	1	1	1
		Arrival Rate (veh/s/lane)	1.1	6.0	9.0	5.6	3.7	0.4	23.8	6.8	4.6	29.7	19.8
		Queue (vehicles)*	3	10	14	10	7	2	32	11	8	35	27
		Queue (m)	23	75	105	75	53	15	240	83	60	263	203
		Storage (m)	65	-	35	-	-	160	-	195	195	-	-
		Available (m)	42	-	-70	-	-	145	-	112	135	-	-
PM Peak Hour	Highway 6 and Stone Road West	Volume (vph)	19	114	351	283	189	33	1241	230	154	793	529
		Heavy Vehicle %	0%	2%	1%	1%	1%	0%	5%	1%	1%	4%	4%
		Cycle Length (s)	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7
		Passenger Cars Per Hour	19	117	355	286	191	33	1304	233	156	825	551
		Number of Lanes	1	1	1	1	1	1	2	1	1	1	1
		Arrival Rate (veh/s/lane)	0.8	4.8	14.7	11.8	7.9	1.4	26.9	9.6	6.4	34.1	22.8
		Queue (vehicles)*	2	9	21	18	13	3	35	15	11	35	31
		Queue (m)	15	68	158	135	98	23	263	113	83	263	233
		Storage (m)	65	-	35	-	-	160	-	195	195	-	-
		Available (m)	50	-	-123	-	-	137	-	82	112	-	-

*Ontario Ministry of Transportation, *Implementation of the Traffic Signal Operating & Timing Policy # 2010-02,* (Toronto: Queen's Printer for Ontario, 2017).

2030 Background Traffic Conditions

Figure 7 illustrates the 2030 background traffic volumes. **Table 11** summarizes the results of the 2030 background traffic operations.

Table 12 summarizes the northbound right-turn storage lengths at the intersection of Highway 6 and Stone Road West using the Geometric Design Guide for Canadian Roads.

Table 13 summarizes the through, left-turn, and shared movement queue lengths at the intersection of Highway 6 and Stone Road West using MTO's Traffic Signal Operating & Timing Policy.

The 2030 background traffic operations are forecast to operate similarly to what was reported in the September 2023 TIS. The added intersection of Scottsdale Drive and Janefield Avenue is forecast to operate well.

Appendix E contains the supporting detailed Synchro 11 reports.

TABLE 11: 2030 BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Highway 6 & Stone Road West	TCS	LOS	E	E	>	**E**	F	D	E	**F**	D	C	C	**C**	F	D	D	**D**	**D**
			Delay	66	69	>	**68**	242	50	58	**147**	53	24	22	**23**	92	38	38	**48**	**51**
			V/C	0.22	0.76	>		1.33	0.16	0.66		0.04	0.64	0.50		0.90	0.75	0.75		
			Q	14	76	>		141	21	80		4	136	100		82	178	185		
			Stor.	65	-	>		35	-	-		160	-	150		195	-	-		
			Avail.	51	-	>		-106	-	-		156	-	50		113	-	-		
	Scottsdale Drive & Stone Road West	TCS	LOS	B	C	C	**C**	B	B	B	**B**	C	C	C	**C**	C	C	>	**C**	**C**
			Delay	12	22	22	**21**	15	17	17	**16**	25	31	32	**30**	25	30	>	**28**	**23**
			V/C	0.17	0.57	0.57		0.39	0.30	0.30		0.25	0.46	0.54		0.39	0.44	>		
			Q	9	73	74		16	33	34		18	48	47		26	44	>		
			Stor.	28	-	-		25	-	-		30	-	-		20	-	>		
			Avail.	19	-	-		9	-	-		12	-	-		-6	-	>		
	Scottsdale Drive & Janefield Avenue	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	13		>	**13**					8	0		**3**		0	0	**0**	
			V/C	0.34		>						0.12	0.00				0.00	0.00		
			Q	11		>						3	0				0	0		
			Stor.	-		>						20	-				-	-		
			Avail.	-		>						17	-				-	-		
	Scottsdale Drive & Site Driveway/Mall Driveway	TWSC	LOS	<	B	>	**B**	<	C	B	**C**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	13	>	**13**	<	20	11	**16**	8	0	0	**0**	8	0	0	**0**	
			V/C	<	0.03	>		<	0.04	0.01		0.01	0.00	0.00		0.01	0.00	0.00		
			Q	<	1	>		<	1	0		0	0	0		0	0	0		
			Stor.	<	-	>		<	-	-		-	-	-		20	-	-		
			Avail.	<	-	>		<	-	-		-	-	-		20	-	-		
PM Peak Hour	Highway 6 & Stone Road West	TCS	LOS	E	D	>	**D**	F	D	E	**F**	E	D	C	**D**	F	D	D	**E**	**E**
			Delay	68	50	>	**52**	162	41	61	**100**	68	48	32	**45**	122	46	46	**64**	**64**
			V/C	0.22	0.34	>		1.17	0.30	0.84		0.32	0.91	0.51		1.05	0.87	0.87		
			Q	10	54	>		200	57	150		19	236	104		125	237	247		
			Stor.	65	-	>		35	-	-		160	-	150		195	-	-		
			Avail.	55	-	>		-165	-	-		141	-	46		70	-	-		
	Scottsdale Drive & Stone Road West	TCS	LOS	B	C	C	**C**	B	C	C	**C**	C	C	D	**C**	C	C	>	**C**	**C**
			Delay	16	26	26	**25**	18	22	22	**21**	25	29	39	**33**	24	33	>	**30**	**26**
			V/C	0.28	0.59	0.60		0.64	0.54	0.54		0.36	0.39	0.76		0.33	0.63	>		
			Q	14	76	74		33	70	70		23	41	76		23	68	>		
			Stor.	28	-	-		25	-	-		30	-	-		20	-	>		
			Avail.	14	-	-		-8	-	-		7	-	-		-3	-	>		
	Scottsdale Drive & Janefield Avenue	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	13		>	**13**					8	0		**4**		0	0	**0**	
			V/C	0.29		>						0.13	0.00				0.00	0.00		
			Q	9		>						3	0				0	0		
			Stor.	-		>						20	-				-	-		
			Avail.	-		>						17	-				-	-		
	Scottsdale Drive & Site Driveway/Mall Driveway	TWSC	LOS	<	C	>	**C**	<	C	B	**B**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	15	>	**15**	<	20	11	**15**	8	0	0	**0**	8	0	0	**1**	
			V/C	<	0.04	>		<	0.17	0.09		0.01	0.00	0.00		0.03	0.00	0.00		
			Q	<	1	>		<	4	2		0	0	0		1	0	0		
			Stor.	<	-	>		<	-	-		-	-	-		20	-	-		
			Avail.	<	-	>		<	-	-		-	-	-		19	-	-		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared Movement

TABLE 12: 2030 BACKGROUND RIGHT-TURN STORAGE LENGTHS

Intersection	Parameter	Direction/Movement	
		AM Peak Hour	PM Peak Hour
		NBR	NBR
Highway 6 and Stone Road West	Volume (vph)	410	334
	Cycle Length (s)	148.7	148.7
	Design Speed (km/h)	100	100
	Queue (m)	255	207
	Storage (m)	150	150
	Available (m)	-105	-57

Transportation Association of Canada, *Geometric Design Guide for Canadian Roads: Section 9.14.4,* (Ottawa: TAC, 2017).

TABLE 13: 2030 BACKGROUND THROUGH, LEFT-TURN, AND SHARED QUEUE LENGTHS

Analysis Period	Intersection	Parameter	Direction/Movement										
			EBL	EBTR	WBL	WBTR1	WBTR2	NBL	NBT	SBL1	SBL2	SBTR1	SBTR2
AM Peak Hour	Highway 6 and Stone Road West	Volume (vph)	27	154	220	137	91	10	1079	171	114	685	457
		Heavy Vehicle %	4%	2%	5%	4%	4%	11%	12%	3%	3%	10%	10%
		Cycle Length (s)	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7
		Passenger Cars Per Hour	29	158	231	143	95	12	1209	177	118	754	503
		Number of Lanes	1	1	1	1	1	1	2	1	1	1	1
		Arrival Rate (veh/s/lane)	1.2	6.5	9.5	5.9	3.9	0.5	25.0	7.3	4.9	31.1	20.8
		Queue (vehicles)*	3	11	15	10	7	2	33	12	9	35	28
		Queue (m)	23	83	113	75	53	15	248	90	68	263	210
		Storage (m)	65	-	35	-	-	160	-	195	195	-	-
		Available (m)	42	-	-78	-	-	145	-	105	127	-	-
PM Peak Hour	Highway 6 and Stone Road West	Volume (vph)	20	123	367	301	200	35	1305	244	162	833	556
		Heavy Vehicle %	0%	2%	1%	1%	1%	0%	5%	1%	1%	4%	4%
		Cycle Length (s)	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7
		Passenger Cars Per Hour	20	126	371	305	202	35	1371	247	164	867	579
		Number of Lanes	1	1	1	1	1	1	2	1	1	1	1
		Arrival Rate (veh/s/lane)	0.8	5.2	15.3	12.6	8.3	1.4	28.3	10.2	6.8	35.8	23.9
		Queue (vehicles)*	2	9	22	19	13	3	35	16	11	35	32
		Queue (m)	15	68	165	143	98	23	263	120	83	263	240
		Storage (m)	65	-	35	-	-	160	-	195	195	-	-
		Available (m)	50	-	-130	-	-	137	-	75	112	-	-

*Ontario Ministry of Transportation, *Implementation of the Traffic Signal Operating & Timing Policy # 2010-02,* (Toronto: Queen's Printer for Ontario, 2017).

2030 Total Traffic Conditions

Figure 8 illustrates the 2030 total traffic volumes, including trips generated by the subject development. **Table 14** summarizes the results of the 2030 total traffic operations.

Table 15 summarizes the northbound right-turn storage lengths at the intersection of Highway 6 and Stone Road West using the Geometric Design Guide for Canadian Roads.

Table 16 summarizes the through, left-turn, and shared movement queue lengths at the intersection of Highway 6 and Stone Road West using MTO's Traffic Signal Operating & Timing Policy.

The 2030 total traffic operations are forecast to operate similarly to what was reported in the September 2023 TIS. The added intersection of Scottsdale Drive and Janefield Avenue is forecast to operate well.

Appendix F contains the supporting detailed Synchro 11 reports.

TABLE 14: 2030 TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Highway 6 & Stone Road West	TCS	LOS	E	E	>	**E**	F	D	E	**F**	D	C	C	**C**	F	D	D	**D**	**D**
			Delay	66	69	>	**68**	249	50	58	**151**	53	24	22	**24**	86	38	38	**47**	**52**
			V/C	0.22	0.76	>		1.35	0.16	0.66		0.04	0.64	0.51		0.87	0.75	0.75		
			Q	14	76	>		145	22	81		4	136	102		80	178	185		
			Stor.	65	-	>		35	-	-		160	-	150		195	-	-		
			Avail.	51	-	>		-110	-	-		156	-	48		115	-	-		
	Scottsdale Drive & Stone Road West	TCS	LOS	B	C	C	**C**	B	B	B	**B**	C	C	C	**C**	C	C	>	**C**	**C**
			Delay	12	22	22	**21**	15	17	17	**17**	25	31	32	**30**	25	30	>	**28**	**23**
			V/C	0.18	0.57	0.57		0.39	0.30	0.31		0.25	0.46	0.54		0.40	0.46	>		
			Q	10	73	74		16	34	34		18	48	47		27	46	>		
			Stor.	28	-	-		25	-	-		30	-	-		20	-	>		
			Avail.	18	-	-		9	-	-		12	-	-		-7	-	>		
	Scottsdale Drive & Janefield Avenue	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	13		>	**13**					8	0		**3**		0	0	**0**	
			V/C	0.35		>						0.12	0.00				0.00	0.00		
			Q	12		>						3	0				0	0		
			Stor.	-		>						20	-				-	-		
			Avail.	-		>						17	-				-	-		
	Scottsdale Drive & Site Driveway/Mall Driveway	TWSC	LOS	<	B	>	**B**	<	C	B	**C**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	15	>	**15**	<	22	11	**16**	8	0	0	**0**	8	0	0	**0**	
			V/C	<	0.09	>		<	0.05	0.01		0.02	0.00	0.00		0.01	0.00	0.00		
			Q	<	2	>		<	2	0		1	0	0		0	0	0		
			Stor.	<	-	>		<	-	-		-	-	-		20	-	-		
			Avail.	<	-	>		<	-	-		-	-	-		20	-	-		
PM Peak Hour	Highway 6 & Stone Road West	TCS	LOS	E	D	>	**D**	F	D	E	**F**	E	D	C	**D**	F	D	D	**E**	**E**
			Delay	68	50	>	**53**	164	41	60	**101**	68	50	33	**47**	127	48	48	**66**	**65**
			V/C	0.22	0.35	>		1.18	0.30	0.84		0.31	0.92	0.53		1.06	0.88	0.89		
			Q	10	56	>		202	58	152		19	238	107		128	242	252		
			Stor.	65	-	>		35	-	-		160	-	150		195	-	-		
			Avail.	55	-	>		-167	-	-		141	-	43		67	-	-		
	Scottsdale Drive & Stone Road West	TCS	LOS	B	C	C	**C**	B	C	C	**C**	C	C	D	**C**	C	C	>	**C**	**C**
			Delay	16	26	26	**25**	18	22	22	**21**	25	29	39	**33**	24	34	>	**31**	**26**
			V/C	0.34	0.59	0.60		0.64	0.55	0.55		0.38	0.39	0.76		0.36	0.68	>		
			Q	16	76	74		33	71	71		23	41	76		26	73	>		
			Stor.	28	-	-		25	-	-		30	-	-		20	-	>		
			Avail.	12	-	-		-8	-	-		7	-	-		-6	-	>		
	Scottsdale Drive & Janefield Avenue	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	13		>	**13**					8	0		**3**		0	0	**0**	
			V/C	0.30		>						0.13	0.00				0.00	0.00		
			Q	10		>						4	0				0	0		
			Stor.	-		>						20	-				-	-		
			Avail.	-		>						16	-				-	-		
	Scottsdale Drive & Site Driveway/Mall Driveway	TWSC	LOS	<	C	>	**C**	<	C	B	**C**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	19	>	**19**	<	24	11	**17**	8	0	0	**1**	8	0	0	**1**	
			V/C	<	0.22	>		<	0.21	0.09		0.03	0.00	0.00		0.03	0.00	0.00		
			Q	<	6	>		<	6	2		1	0	0		1	0	0		
			Stor.	<	-	>		<	-	-		-	-	-		20	-	-		
			Avail.	<	-	>		<	-	-		-	-	-		19	-	-		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared Movement

TABLE 15: 2030 TOTAL RIGHT-TURN STORAGE LENGTHS

Intersection	Parameter	Direction/Movement	
		AM Peak Hour	PM Peak Hour
		NBR	NBR
Highway 6 and Stone Road West	Volume (vph)	413	343
	Cycle Length (s)	148.7	148.7
	Design Speed (km/h)	100	100
	Queue (m)	256	213
	Storage (m)	150	150
	Available (m)	-106	-63

Transportation Association of Canada, *Geometric Design Guide for Canadian Roads: Section 9.14.4,* (Ottawa: TAC, 2017).

TABLE 16: 2030 TOTAL THROUGH, LEFT-TURN, AND SHARED QUEUE LENGTHS

Analysis Period	Intersection	Parameter	Direction/Movement										
			EBL	EBTR	WBL	WBTR1	WBTR2	NBL	NBT	SBL1	SBL2	SBTR1	SBTR2
AM Peak Hour	Highway 6 and Stone Road West	Volume (vph)	27	155	223	139	92	10	1079	172	114	685	457
		Heavy Vehicle %	4%	2%	5%	4%	4%	11%	12%	3%	3%	10%	10%
		Cycle Length (s)	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7
		Passenger Cars Per Hour	29	159	235	145	96	12	1209	178	118	754	503
		Number of Lanes	1	1	1	1	1	1	2	1	1	1	1
		Arrival Rate (veh/s/lane)	1.2	6.6	9.7	6.0	4.0	0.5	25.0	7.4	4.9	31.1	20.8
		Queue (vehicles)*	3	11	15	10	7	2	33	12	9	35	28
		Queue (m)	23	83	113	75	53	15	248	90	68	263	210
		Storage (m)	65	-	35	-	-	160	-	195	195	-	-
		Available (m)	42	-	-78	-	-	145	-	105	127	-	-
PM Peak Hour	Highway 6 and Stone Road West	Volume (vph)	20	125	377	305	204	35	1305	247	164	833	556
		Heavy Vehicle %	0%	2%	1%	1%	1%	0%	5%	1%	1%	4%	4%
		Cycle Length (s)	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7
		Passenger Cars Per Hour	20	128	381	309	207	35	1371	250	166	867	579
		Number of Lanes	1	1	1	1	1	1	2	1	1	1	1
		Arrival Rate (veh/s/lane)	0.8	5.3	15.7	12.8	8.6	1.4	28.3	10.3	6.9	35.8	23.9
		Queue (vehicles)*	2	9	22	19	14	3	35	16	11	35	32
		Queue (m)	15	68	165	143	105	23	263	120	83	263	240
		Storage (m)	65	-	35	-	-	160	-	195	195	-	-
		Available (m)	50	-	-130	-	-	137	-	75	112	-	-

*Ontario Ministry of Transportation, *Implementation of the Traffic Signal Operating & Timing Policy # 2010-02,* (Toronto: Queen's Printer for Ontario, 2017).

2035 Background Traffic Conditions

Figure 9 (attached) illustrates the 2035 background traffic volumes. **Table 17** summarizes the results of the 2035 background traffic operations.

Table 18 summarizes the northbound right-turn storage lengths at the intersection of Highway 6 and Stone Road West using the Geometric Design Guide for Canadian Roads.

Table 19 summarizes the through, left-turn, and shared movement queue lengths at the intersection of Highway 6 and Stone Road West using MTO's Traffic Signal Operating & Timing Policy.

The 2035 background traffic operations are forecast to operate similarly to what was reported in the September 2023 TIS. The added intersection of Scottsdale Drive and Janefield Avenue is forecast to operate well.

Appendix G contains the supporting detailed Synchro 11 reports.

TABLE 17: 2035 BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Highway 6 & Stone Road West	TCS	LOS	E	E	>	**E**	F	D	E	**F**	D	C	C	**C**	F	D	D	**D**	**E**
			Delay	67	68	>	**68**	329	50	58	**190**	54	26	24	**25**	91	39	38	**49**	**58**
			V/C	0.24	0.78	>		1.53	0.17	0.70		0.04	0.68	0.55		0.90	0.78	0.78		
			Q	14	82	>		180	23	86		4	148	111		87	189	196		
			Stor.	65	-	>		35	-	-		160	-	150		195	-	-		
			Avail.	51	-	>		-145	-	-		156	-	39		108	-	-		
	Scottsdale Drive & Stone Road West	TCS	LOS	B	C	C	**C**	B	B	B	**B**	C	C	C	**C**	C	C	>	**C**	**C**
			Delay	13	24	24	**23**	16	18	18	**17**	24	31	32	**30**	25	30	>	**28**	**24**
			V/C	0.19	0.62	0.62		0.45	0.33	0.33		0.27	0.49	0.57		0.43	0.48	>		
			Q	10	81	82		17	37	38		20	52	52		28	48	>		
			Stor.	28	-	-		25	-	-		30	-	-		20	-	>		
			Avail.	18	-	-		8	-	-		10	-	-		-8	-	>		
	Scottsdale Drive & Janefield Avenue	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	14		>	**14**					8	0		**3**		0	0	**0**	
			V/C	0.39		>						0.13	0.00				0.00	0.00		
			Q	14		>						3	0				0	0		
			Stor.	-		>						20	-				-	-		
			Avail.	-		>						17	-				-	-		
	Scottsdale Drive & Site Driveway/Mall Driveway	TWSC	LOS	<	B	>	**B**	<	C	B	**C**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	14	>	**14**	<	22	11	**17**	8	0	0	**0**	8	0	0	**0**	
			V/C	<	0.03	>		<	0.05	0.02		0.01	0.00	0.00		0.01	0.00	0.00		
			Q	<	1	>		<	2	0		0	0	0		0	0	0		
			Stor.	<	-	>		<	-	-		-	-	-		20	-	-		
			Avail.	<	-	>		<	-	-		-	-	-		20	-	-		
PM Peak Hour	Highway 6 & Stone Road West	TCS	LOS	E	D	>	**D**	F	D	E	**F**	E	E	D	**E**	F	D	D	**E**	**E**
			Delay	69	49	>	**52**	173	40	62	**105**	71	63	35	**58**	149	55	54	**76**	**74**
			V/C	0.24	0.36	>		1.21	0.32	0.86		0.38	0.99	0.57		1.13	0.93	0.93		
			Q	11	58	>		218	61	161		20	279	116		143	268	280		
			Stor.	65	-	>		35	-	-		160	-	150		195	-	-		
			Avail.	54	-	>		-183	-	-		140	-	34		52	-	-		
	Scottsdale Drive & Stone Road West	TCS	LOS	B	C	C	**C**	C	C	C	**C**	C	C	D	**C**	C	C	>	**C**	**C**
			Delay	17	30	30	**28**	22	24	24	**23**	25	29	41	**34**	24	34	>	**31**	**28**
			V/C	0.33	0.67	0.67		0.72	0.59	0.59		0.39	0.41	0.79		0.36	0.67	>		
			Q	16	87	85		40	77	78		25	44	83		25	73	>		
			Stor.	28	-	-		25	-	-		30	-	-		20	-	>		
			Avail.	12	-	-		-15	-	-		5	-	-		-5	-	>		
	Scottsdale Drive & Janefield Avenue	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	14		>	**14**					8	0		**4**		0	0	**0**	
			V/C	0.32		>						0.14	0.00				0.00	0.00		
			Q	10		>						4	0				0	0		
			Stor.	-		>						20	-				-	-		
			Avail.	-		>						16	-				-	-		
	Scottsdale Drive & Site Driveway/Mall Driveway	TWSC	LOS	<	C	>	**C**	<	C	B	**C**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	16	>	**16**	<	22	11	**16**	8	0	0	**0**	8	0	0	**1**	
			V/C	<	0.04	>		<	0.19	0.09		0.01	0.00	0.00		0.03	0.00	0.00		
			Q	<	1	>		<	5	2		0	0	0		1	0	0		
			Stor.	<	-	>		<	-	-		-	-	-		20	-	-		
			Avail.	<	-	>		<	-	-		-	-	-		19	-	-		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared Movement

TABLE 18: 2035 BACKGROUND RIGHT-TURN STORAGE LENGTHS

Intersection	Parameter	Direction/Movement	
		AM Peak Hour	PM Peak Hour
		NBR	NBR
Highway 6 and Stone Road West	Volume (vph)	439	360
	Cycle Length (s)	148.7	148.7
	Design Speed (km/h)	100	100
	Queue (m)	272	224
	Storage (m)	150	150
	Available (m)	-122	-74

Transportation Association of Canada, *Geometric Design Guide for Canadian Roads: Section 9.14.4,* (Ottawa: TAC, 2017).

TABLE 19: 2035 BACKGROUND THROUGH, LEFT-TURN, AND SHARED QUEUE LENGTHS

Analysis Period	Intersection	Parameter	Direction/Movement										
			EBL	EBTR	WBL	WBTR1	WBTR2	NBL	NBT	SBL1	SBL2	SBTR1	SBTR2
AM Peak Hour	Highway 6 and Stone Road West	Volume (vph)	28	169	236	148	98	10	1134	184	122	721	480
		Heavy Vehicle %	4%	2%	5%	4%	4%	11%	12%	3%	3%	10%	10%
		Cycle Length (s)	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7
		Passenger Cars Per Hour	30	173	248	154	102	12	1271	190	126	794	528
		Number of Lanes	1	1	1	1	1	1	2	1	1	1	1
		Arrival Rate (veh/s/lane)	1.2	7.1	10.2	6.4	4.2	0.5	26.2	7.8	5.2	32.8	21.8
		Queue (vehicles)*	3	12	16	11	8	2	35	13	9	35	30
		Queue (m)	23	90	120	83	60	15	263	98	68	263	225
		Storage (m)	65	-	35	-	-	160	-	195	195	-	-
		Available (m)	42	-	-85	-	-	145	-	97	127	-	-
PM Peak Hour	Highway 6 and Stone Road West	Volume (vph)	21	133	393	325	217	37	1371	262	175	876	584
		Heavy Vehicle %	0%	2%	1%	1%	1%	0%	5%	1%	1%	4%	4%
		Cycle Length (s)	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7
		Passenger Cars Per Hour	21	136	397	329	220	37	1440	265	177	912	608
		Number of Lanes	1	1	1	1	1	1	2	1	1	1	1
		Arrival Rate (veh/s/lane)	0.9	5.6	16.4	13.6	9.1	1.5	29.7	10.9	7.3	37.7	25.1
		Queue (vehicles)*	3	10	23	20	14	4	35	17	12	35	33
		Queue (m)	23	75	173	150	105	30	263	128	90	263	248
		Storage (m)	65	-	35	-	-	160	-	195	195	-	-
		Available (m)	42	-	-138	-	-	130	-	67	105	-	-

*Ontario Ministry of Transportation, *Implementation of the Traffic Signal Operating & Timing Policy # 2010-02,* (Toronto: Queen's Printer for Ontario, 2017).

2035 Total Traffic Conditions

Figure 10 (attached) illustrates the 2035 total traffic volumes, including trips generated by the subject development. **Table 20** summarizes the results of the 2035 total traffic operations.

Table 21 summarizes the northbound right-turn storage lengths at the intersection of Highway 6 and Stone Road West using the Geometric Design Guide for Canadian Roads.

Table 22 summarizes the through, left-turn, and shared movement queue lengths at the intersection of Highway 6 and Stone Road West using MTO's Traffic Signal Operating & Timing Policy.

The 2035 total traffic operations are forecast to operate similarly to what was reported in the September 2023 TIS. The added intersection of Scottsdale Drive and Janefield Avenue is forecast to operate well.

Appendix H contains the supporting detailed Synchro 11 reports.

TABLE 20: 2035 TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Highway 6 & Stone Road West	TCS	LOS	E	E	>	**E**	F	D	E	**F**	D	C	C	**C**	F	D	D	**D**	**E**
			Delay	68	68	>	**68**	337	50	59	**194**	54	26	24	**25**	92	39	38	**49**	**59**
			V/C	0.24	0.78	>		1.55	0.18	0.70		0.04	0.68	0.55		0.91	0.78	0.78		
			Q	14	82	>		184	24	86		4	148	112		87	189	196		
			Stor.	65	-	>		35	-	-		160	-	150		195	-	-		
			Avail.	51	-	>		-149	-	-		156	-	38		108	-	-		
	Scottsdale Drive & Stone Road West	TCS	LOS	B	C	C	**C**	B	B	B	**B**	C	C	C	**C**	C	C	>	**C**	**C**
			Delay	13	24	24	**23**	16	18	18	**17**	25	31	32	**30**	26	30	>	**28**	**24**
			V/C	0.20	0.62	0.62		0.45	0.33	0.33		0.27	0.49	0.57		0.44	0.49	>		
			Q	10	81	82		17	38	38		20	52	52		29	50	>		
			Stor.	28	-	-		25	-	-		30	-	-		20	-	>		
			Avail.	18	-	-		8	-	-		10	-	-		-9	-	>		
	Scottsdale Drive & Janefield Avenue	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	14		>	**14**					8	0		**3**		0	0	**0**	
			V/C	0.39		>						0.13	0.00				0.00	0.00		
			Q	14		>						3	0				0	0		
			Stor.	-		>						20	-				-	-		
			Avail.	-		>						17	-				-	-		
	Scottsdale Drive & Site Driveway/Mall Driveway	TWSC	LOS	<	C	>	**C**	<	C	B	**C**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	16	>	**16**	<	24	11	**18**	8	0	0	**0**	8	0	0	**0**	
			V/C	<	0.09	>		<	0.05	0.02		0.02	0.00	0.00		0.01	0.00	0.00		
			Q	<	2	>		<	2	0		1	0	0		0	0	0		
			Stor.	<	-	>		<	-	-		-	-	-		20	-	-		
			Avail.	<	-	>		<	-	-		-	-	-		20	-	-		
PM Peak Hour	Highway 6 & Stone Road West	TCS	LOS	E	D	>	**D**	F	D	E	**F**	E	E	D	**E**	F	D	D	**E**	**E**
			Delay	70	49	>	**52**	182	40	63	**109**	71	65	36	**59**	154	55	54	**78**	**76**
			V/C	0.24	0.36	>		1.23	0.32	0.87		0.39	1.00	0.59		1.14	0.93	0.93		
			Q	11	58	>		229	61	164		20	283	120		146	268	280		
			Stor.	65	-	>		35	-	-		160	-	150		195	-	-		
			Avail.	54	-	>		-194	-	-		140	-	30		49	-	-		
	Scottsdale Drive & Stone Road West	TCS	LOS	B	C	C	**C**	C	C	C	**C**	C	C	D	**C**	C	D	>	**C**	**C**
			Delay	18	30	30	**28**	22	24	24	**23**	25	29	41	**34**	24	35	>	**32**	**28**
			V/C	0.39	0.67	0.67		0.72	0.60	0.60		0.41	0.41	0.79		0.39	0.72	>		
			Q	18	87	85		40	79	80		25	44	83		27	79	>		
			Stor.	28	-	-		25	-	-		30	-	-		20	-	>		
			Avail.	10	-	-		-15	-	-		5	-	-		-7	-	>		
	Scottsdale Drive & Janefield Avenue	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	14		>	**14**					8	0		**3**		0	0	**0**	
			V/C	0.34		>						0.14	0.00				0.00	0.00		
			Q	11		>						4	0				0	0		
			Stor.	-		>						20	-				-	-		
			Avail.	-		>						16	-				-	-		
	Scottsdale Drive & Site Driveway/Mall Driveway	TWSC	LOS	<	C	>	**C**	<	D	B	**C**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	21	>	**21**	<	27	11	**18**	9	0	0	**1**	8	0	0	**1**	
			V/C	<	0.24	>		<	0.24	0.09		0.03	0.00	0.00		0.03	0.00	0.00		
			Q	<	7	>		<	7	2		1	0	0		1	0	0		
			Stor.	<	-	>		<	-	-		-	-	-		20	-	-		
			Avail.	<	-	>		<	-	-		-	-	-		19	-	-		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared Movement

TABLE 21: 2035 TOTAL RIGHT-TURN STORAGE LENGTHS

Intersection	Parameter	Direction/Movement	
		AM Peak Hour	PM Peak Hour
		NBR	NBR
Highway 6 and Stone Road West	Volume (vph)	442	369
	Cycle Length (s)	148.7	148.7
	Design Speed (km/h)	100	100
	Queue (m)	274	229
	Storage (m)	150	150
	Available (m)	-124	-79

Transportation Association of Canada, *Geometric Design Guide for Canadian Roads: Section 9.14.4,* (Ottawa: TAC, 2017).

TABLE 22: 2035 TOTAL THROUGH, LEFT-TURN, AND SHARED QUEUE LENGTHS

Analysis Period	Intersection	Parameter	Direction/Movement										
			EBL	EBTR	WBL	WBTR1	WBTR2	NBL	NBT	SBL1	SBL2	SBTR1	SBTR2
AM Peak Hour	Highway 6 and Stone Road West	Volume (vph)	28	170	239	149	100	10	1134	184	123	721	480
		Heavy Vehicle %	4%	2%	5%	4%	4%	11%	12%	3%	3%	10%	10%
		Cycle Length (s)	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7
		Passenger Cars Per Hour	30	174	251	155	104	12	1271	190	127	794	528
		Number of Lanes	1	1	1	1	1	1	2	1	1	1	1
		Arrival Rate (veh/s/lane)	1.2	7.2	10.4	6.4	4.3	0.5	26.2	7.8	5.2	32.8	21.8
		Queue (vehicles)*	3	12	16	11	8	2	35	13	9	35	30
		Queue (m)	23	90	120	83	60	15	263	98	68	263	225
		Storage (m)	65	-	35	-	-	160	-	195	195	-	-
		Available (m)	42	-	-85	-	-	145	-	97	127	-	-
PM Peak Hour	Highway 6 and Stone Road West	Volume (vph)	21	135	403	330	220	37	1371	265	177	876	584
		Heavy Vehicle %	0%	2%	1%	1%	1%	0%	5%	1%	1%	4%	4%
		Cycle Length (s)	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7
		Passenger Cars Per Hour	21	138	408	334	223	37	1440	268	179	912	608
		Number of Lanes	1	1	1	1	1	1	2	1	1	1	1
		Arrival Rate (veh/s/lane)	0.9	5.7	16.9	13.8	9.2	1.5	29.7	11.1	7.4	37.7	25.1
		Queue (vehicles)*	3	10	24	20	14	4	35	17	12	35	33
		Queue (m)	23	75	180	150	105	30	263	128	90	263	248
		Storage (m)	65	-	35	-	-	160	-	195	195	-	-
		Available (m)	42	-	-145	-	-	130	-	67	105	-	-

*Ontario Ministry of Transportation, *Implementation of the Traffic Signal Operating & Timing Policy # 2010-02,* (Toronto: Queen's Printer for Ontario, 2017).

Remedial Measures

Left-Turn Lane Warrant

The intersection of Scottsdale Drive at the Site Driveway was assessed to determine if the projected traffic volumes warrant installation of left-turn lanes. The warrants for left-turn lanes follow the requirements in the Ministry of Transportation's (MTO) Geometric Design Standards[7]. A design speed of 60 km/h was used for Scottsdale Drive.

As the section of Scottsdale Drive is planned to be converted to a two-lane road with centre left-turn lane and bike lanes, the analysis for the left-turn lane warrant has been updated to use the two-lane warrant, as opposed to the four-lane warrant used in the September 2023 TIS.

The percentages of left-turning vehicles in the approaching volume were rounded to the nearest 5%, as nomographs are only provided for 5% increments. This apparent requirement is due to the nature of the warrant procedure that assumes a minimum of 5% of left turning vehicles in the advancing volume.

Table 23 summarizes the left-turn lane warrant for the intersection of Scottsdale Drive and the Site Driveway. The warrant analysis suggests that a northbound left-turn lane is not warranted.

TABLE 23: LEFT-TURN LANE WARRANT SUMMARY – SITE DRIVEWAY

Roadway	Scottsdale Drive	
Intersection	Site Driveway	
Approach Direction	Northbound	
Design Speed	60 km/h	
Horizon	Total 2035	
Peak Hour	AM	PM
Advancing Volume	320	389
Opposing Volume	287	391
Left Turning Traffic	14	30
% of Left Turning Traffic	4%	8%
Figure Used*	9A-7	9A-7
Warranted	No	No
Storage Length Required	-	-

*Ontario Ministry of Transportation, *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads,* (Toronto: Queens Printer for Ontario, 2020).

Figure 11 illustrates the left-turn lane nomographs.

[7] Ontario Ministry of Transportation, *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads,* (Toronto: Queen's Printer for Ontario, 2020).

Critical Movements

Highway 6 at Stone Road West

Similar to the September 2023 TIS, the intersection of Highway 6 and Stone Road West is forecast to have queue lengths that exceed the available storage under existing conditions. As noted in the September 2023 TIS, the intersection is to be converted to a full interchange as identified in the Hanlon Expressway Environmental Assessment. Therefore, no additional roadway improvements are suggested for the intersection of Highway 6 and Stone Road West.

Stone Road West at Scottsdale Drive

The results of the analysis of the intersection of Stone Road West and Scottsdale drive remains unchanged from the September 2023 TIS. The westbound left-turn queue exceeds the existing storage length, however the subject development does not contribute to this queue length. The southbound left-turn queue is forecast to exceed the storage length and it is recommended that the storage length be extended from 20 metres to 30 metres. The subject development contributes 1 metre to this queue length. The planned conversion of Scottsdale Drive to include a continuous centre left-turn lane may resolve this issue with adequate storage length.

Parking Study

Proposed Parking Supply

A total of 191 vehicle parking spaces will be provided on-site for Phases 1 and 2 (0.29 spaces per unit).

A total of 382 bicycle parking spaces will be provided on-site for Phases 1 and 2 (0.58 spaces per unit) inclusive of the following:

- 40 short-term parking spaces (0.06 spaces per unit); and
- 342 long-term parking spaces (0.52 spaces per unit).

Vehicle Parking Demand

In the September 2023 TIS, Phase 1 on the development was surveyed to determine the parking demand. The results of the survey indicted that the observed parking demand was 0.18 spaces per unit, which is lower than the proposed rate of 0.29 spaces per unit. It is noted that as of March 2024, 35 parking spaces were leased, which is a lease rate of 0.21 spaces per unit.

As also noted in the September 2023 study, a comparison with the Northdale Neighbourhood in the City of Waterloo was made. That special zoning area of the City of Waterloo requires a

minimum parking rate of 0.25 spaces per bedroom (which would calculate to 164 spaces for ALMA Phases 1 and 2)[8].

In addition to the rates noted above, the subject development plans to undertake a number of Transportation Demand Management measures as noted in Chapter 7 of the September 2023 TIS. It is notable that:

- the residents of the subject development will be students attending the University of Guelph, which is located directly east via Stone Road.
- the subject development is located in a high supply area for transit, including Routes 15, 17, and 18 which provide a direct route on Stone Road to the University. Students of the University of Guelph all have transit passes included with their tuition.
- Secure on-site bike storage will allow residents to be able to use cycling as a mode to travel to the University.
- The parking spaces available on site will be sold separately from the cost of units meaning that parking allocation will not exceed supply.

The Official Plan Amendment specifies the density to be 300 units per hectare and the parking rate to be 0.28 spaces per unit. 300 units per hectare would increase the number of units by 12, and if the number of parking spaces remains the same as in the proposed plan, the parking rate would remain relatively unchanged rounded to 0.29 spaces per unit. A parking rate of 0.28 would still meet the justification reasons set out in this addendum.

Conclusions and Recommendations

Conclusions

Based on the investigations carried out, it is concluded that:

- **Traffic Operations:** The results of the traffic operations analyses are not significantly different from the results of the September 2023 TIS. The additional intersection of Scottsdale Drive and Janefield Avenue was forecast to operate within acceptable parameters.
- **Trip Generation:** No change to the trip generation from the September 2023 TIS. The development is forecast to generate 32 and 96 new trips during the AM and PM peak hours, respectively;
- **Left-Turn Lanes:** Similar to the results of the September 2023 TIS, at the intersection of Stone Road and Scottsdale Drive, the westbound left-turn queue is forecast to exceed the existing storage length by 15 m under future conditions regardless of whether the subject development is built. The southbound left-turn lane is forecast to exceed the existing storage length by 9 m under future traffic conditions, of which 1 m are attributable to the subject development. The planned redesign of Scottsdale Drive to

[8] City of Waterloo Zoning Bylaw 2018-050, Section 7

include two through lanes, a continuous centre left-turn lane and bike lanes would likely provide adequate storage length for the southbound left-turn lane;

- **Parking:** The proposed parking rate of 0.29 spaces per unit should be approved based on the observed parking demand from Phase 1, the comparison to similar student areas in the nearby City of Waterloo, and the high potential for usage of Transportation Demand Management measures such as easily-accessible transit, bicycling opportunities, and availability control.

  The proposed OPA density of 300 units per hectare and the parking rate of 0.28 spaces per unit would still meet the justification reasons set out in this addendum.

Recommendations

Based on the findings of this study, it is recommended that the proposed development be approved with the proposed parking supply along with TDM measures discussed in the September 2023 study.

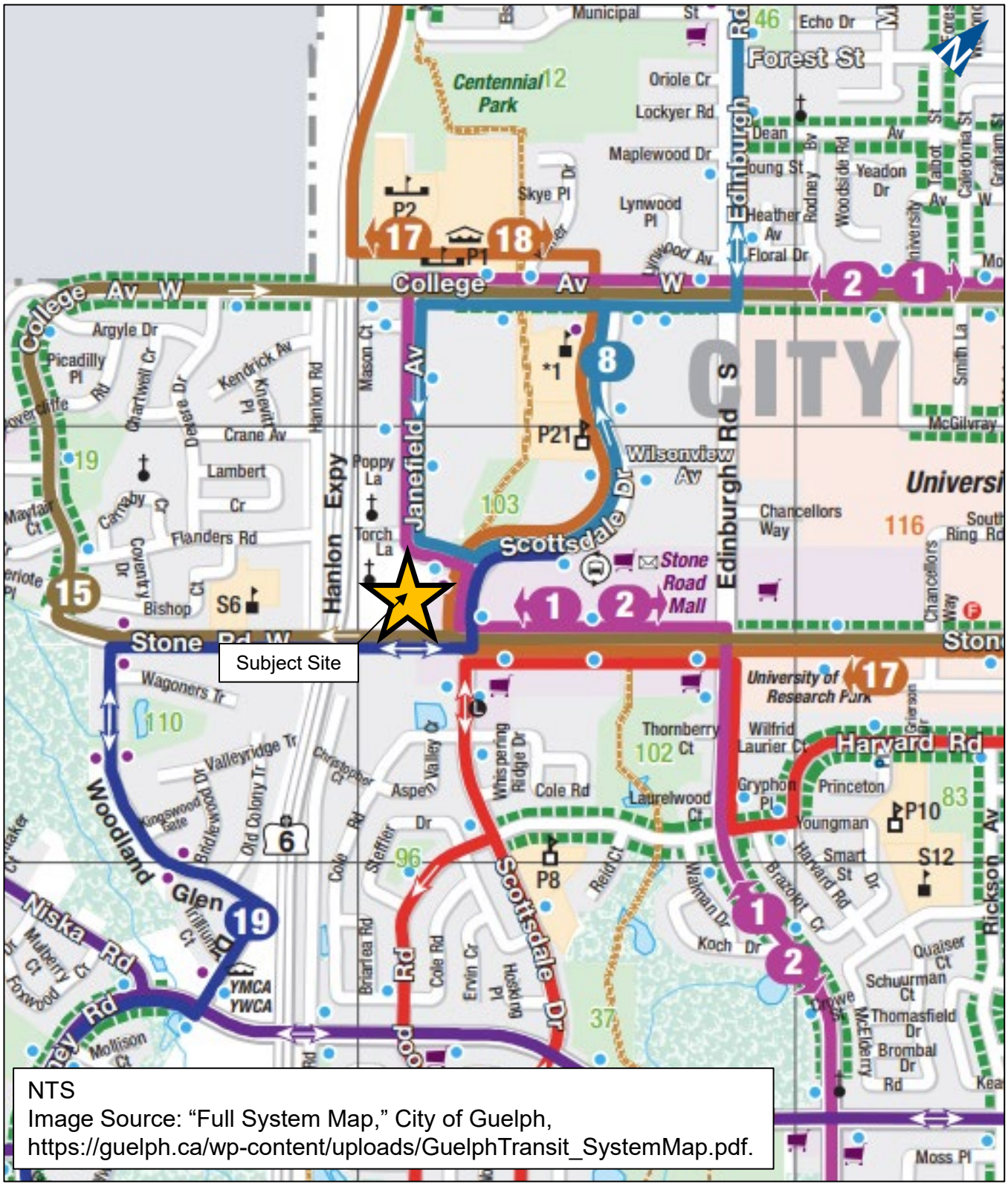
Regardless of whether the subject development proceeds, it is recommended to:

- Proceed with the planned conversion of the intersection of Highway 6 and Stone Road West to an interchange as identified in the Hanlon Expressway Environmental Assessment; and
- Extend the westbound and southbound left-turn lanes at the intersection of Stone Road West and Scottsdale Drive to meet the forecast queue lengths.

Yours very truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

Matt Brouwer
P.Eng.
Senior Project Manager



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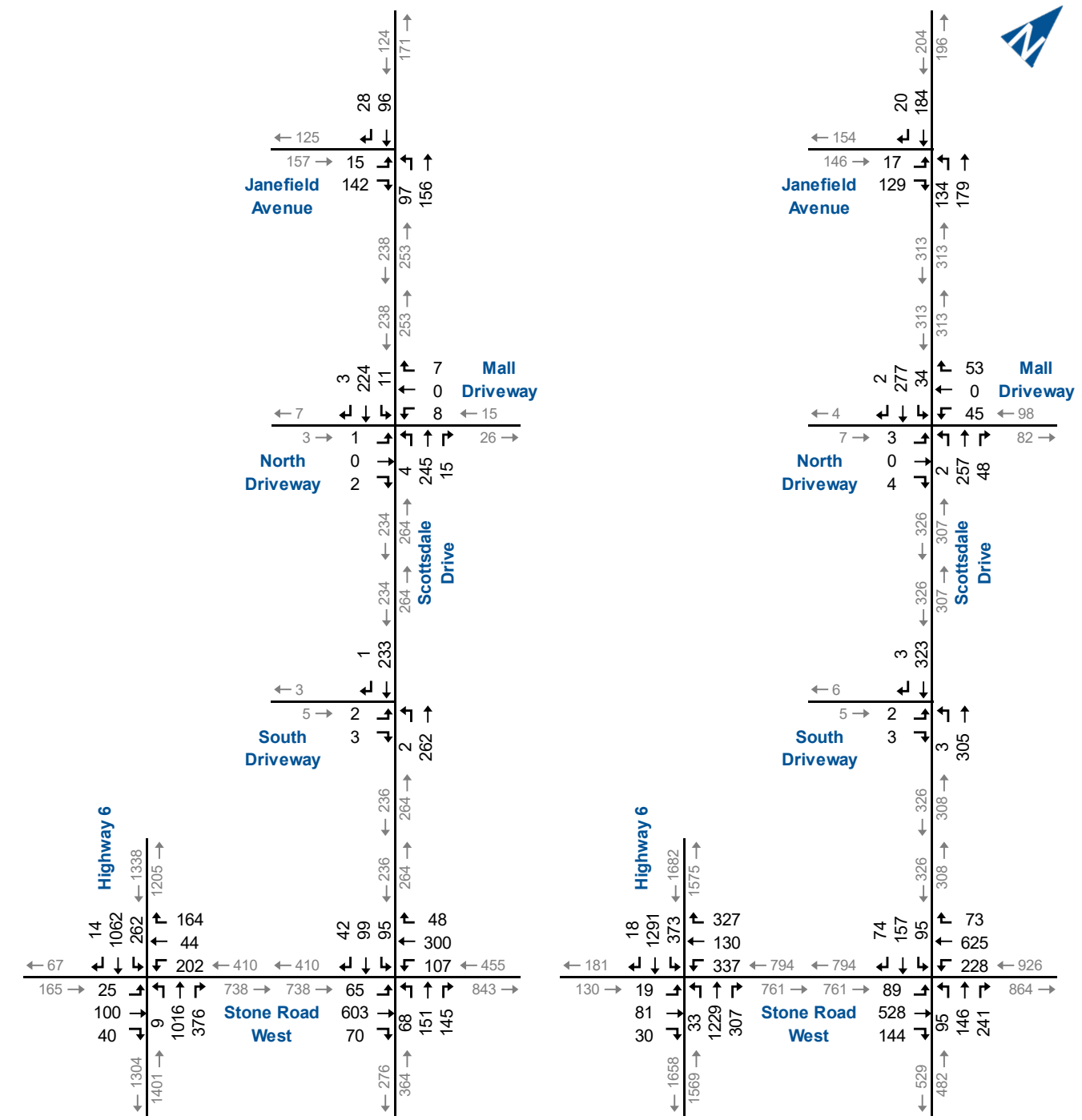
Existing Transit Network

601 Scottsdale Drive, Guelph TIS and PS
220563

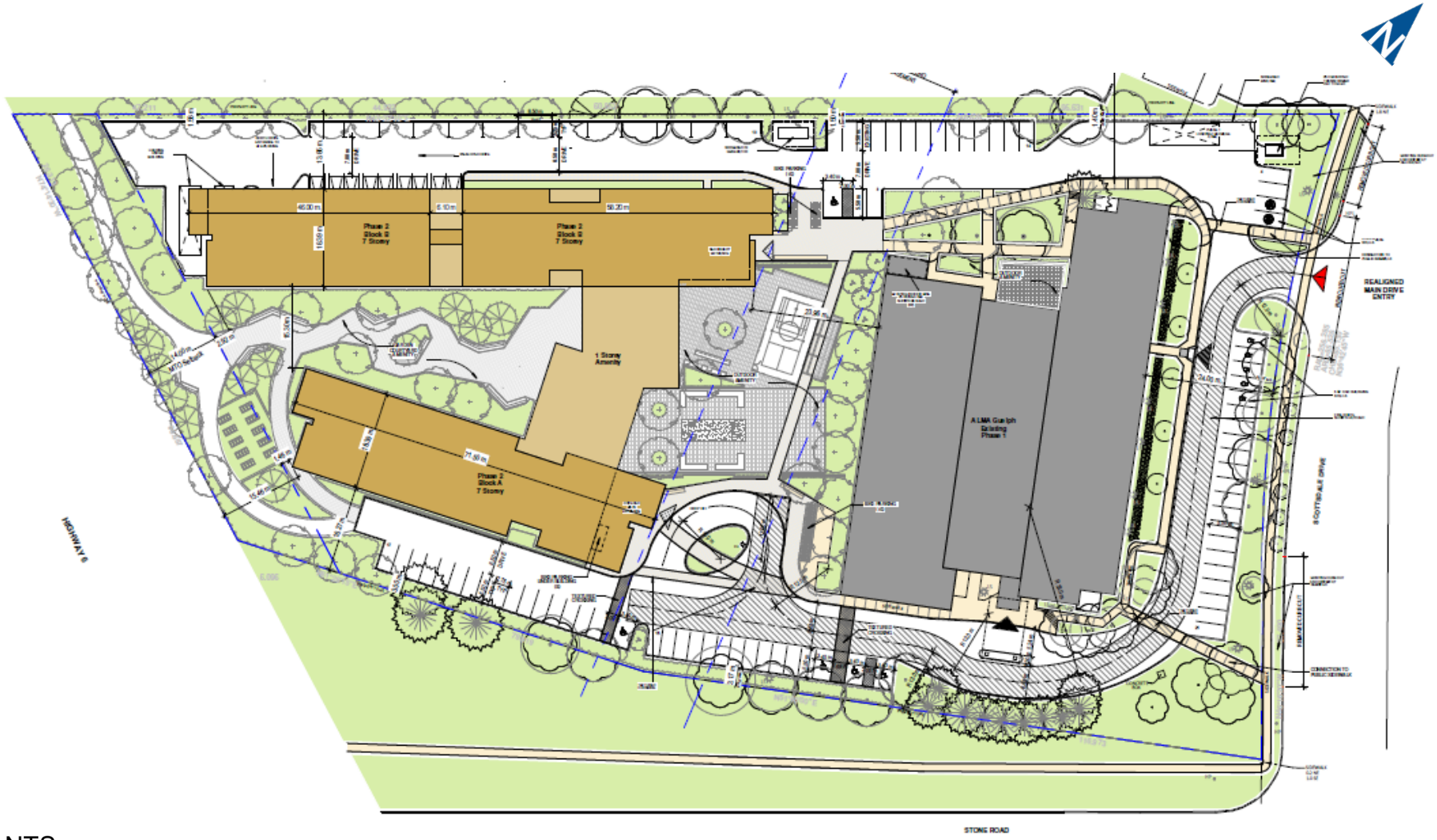
Figure 1



Existing Traffic Volumes

601 Scottsdale Drive, Guelph TIS and PS
220563

Figure 2



NTS

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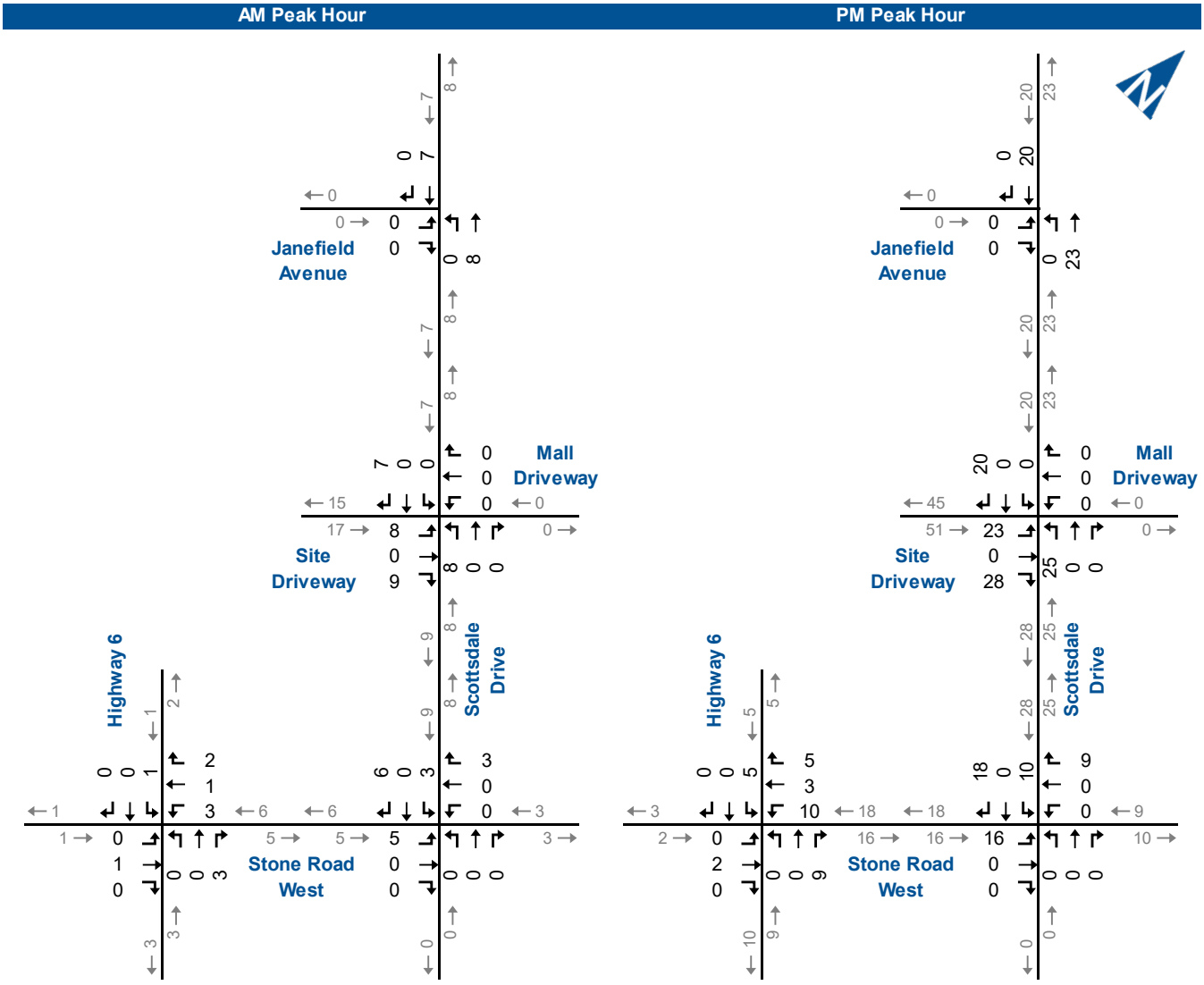
Site Plan

601 Scottsdale Drive, Guelph TIS and PS
220563

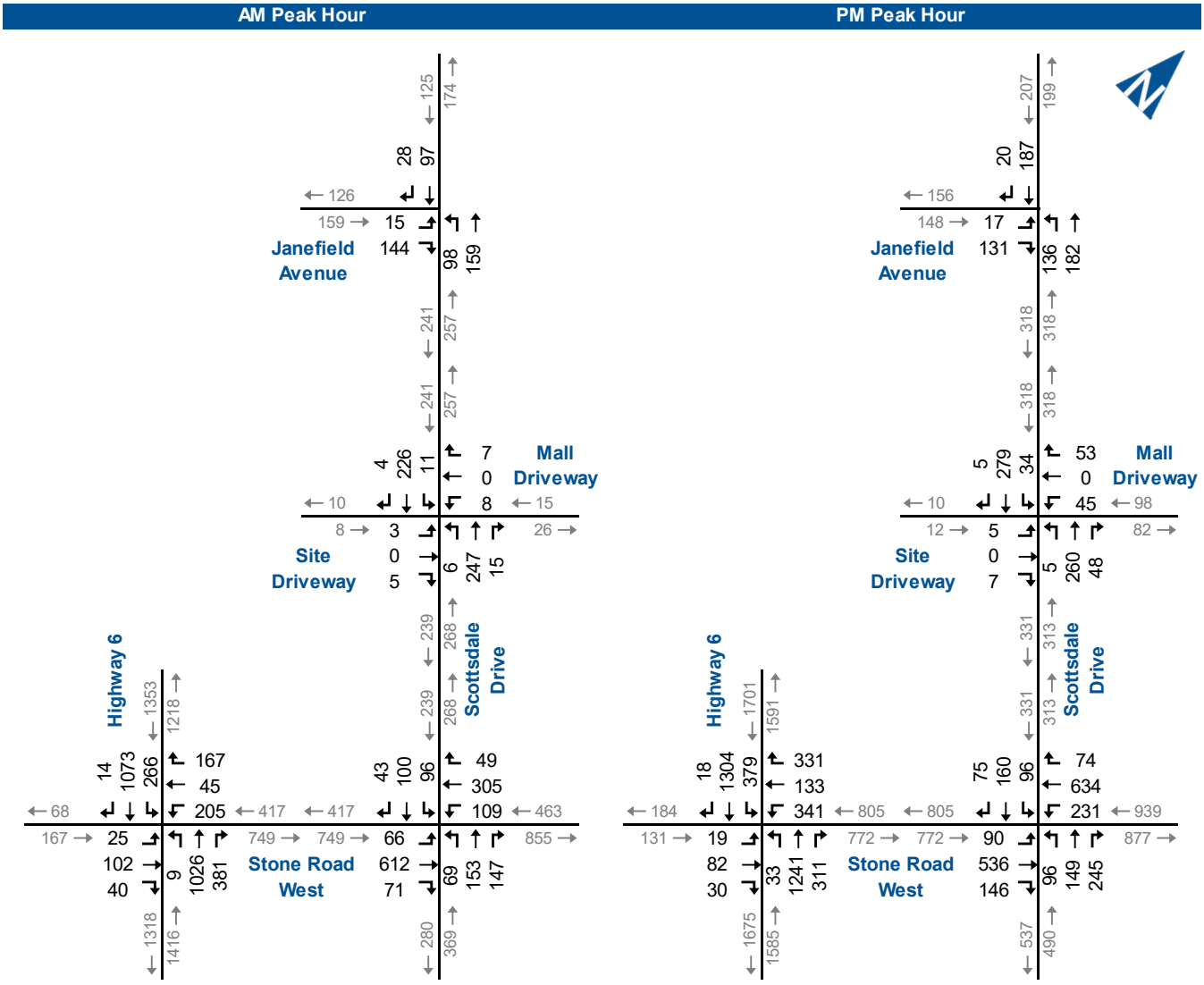
Figure 3



Site-Generated Traffic Volumes

601 Scottsdale Drive, Guelph TIS and PS
220563

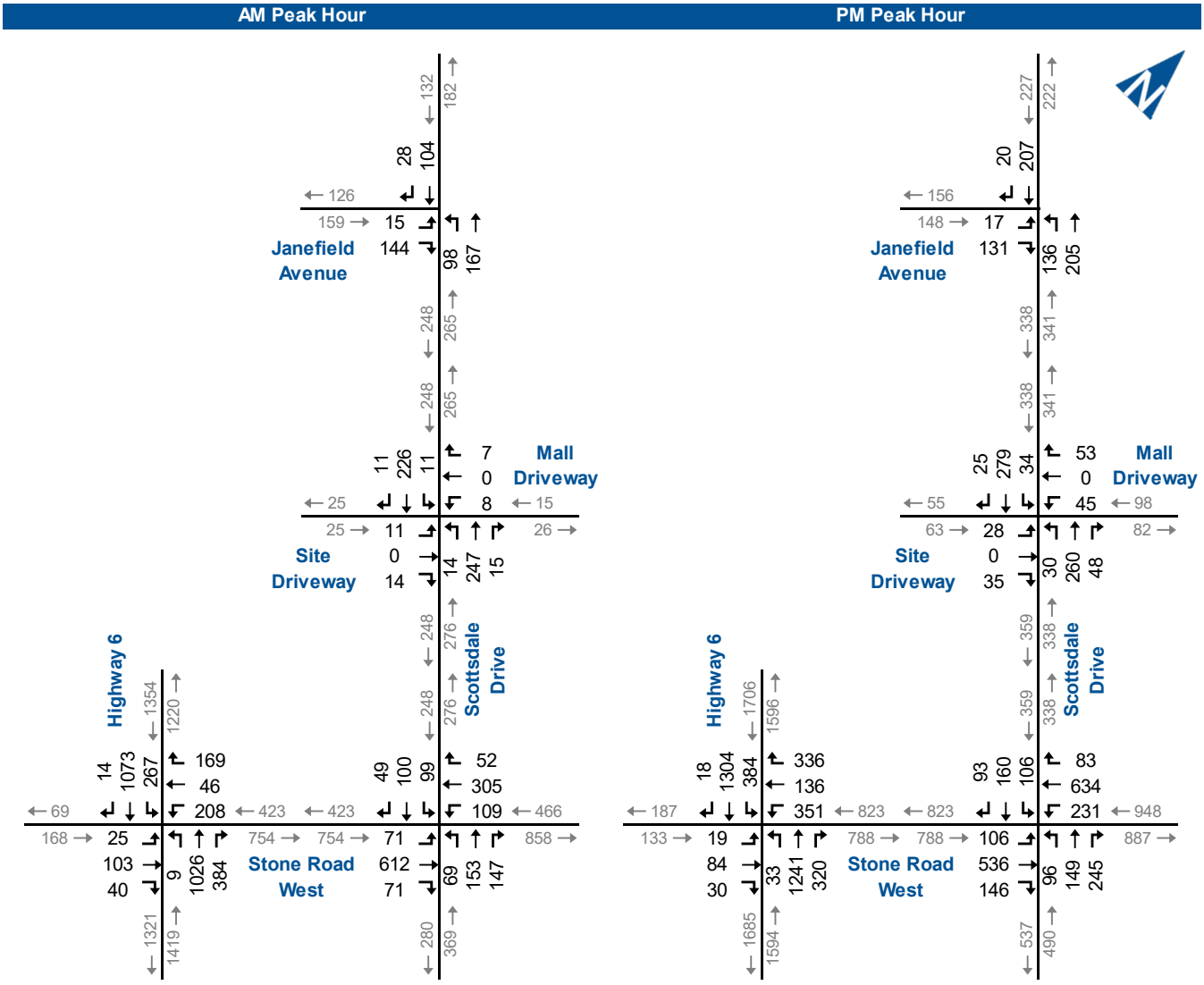
Figure 4



2025 Background Traffic Volumes

601 Scottsdale Drive, Guelph TIS and PS
220563

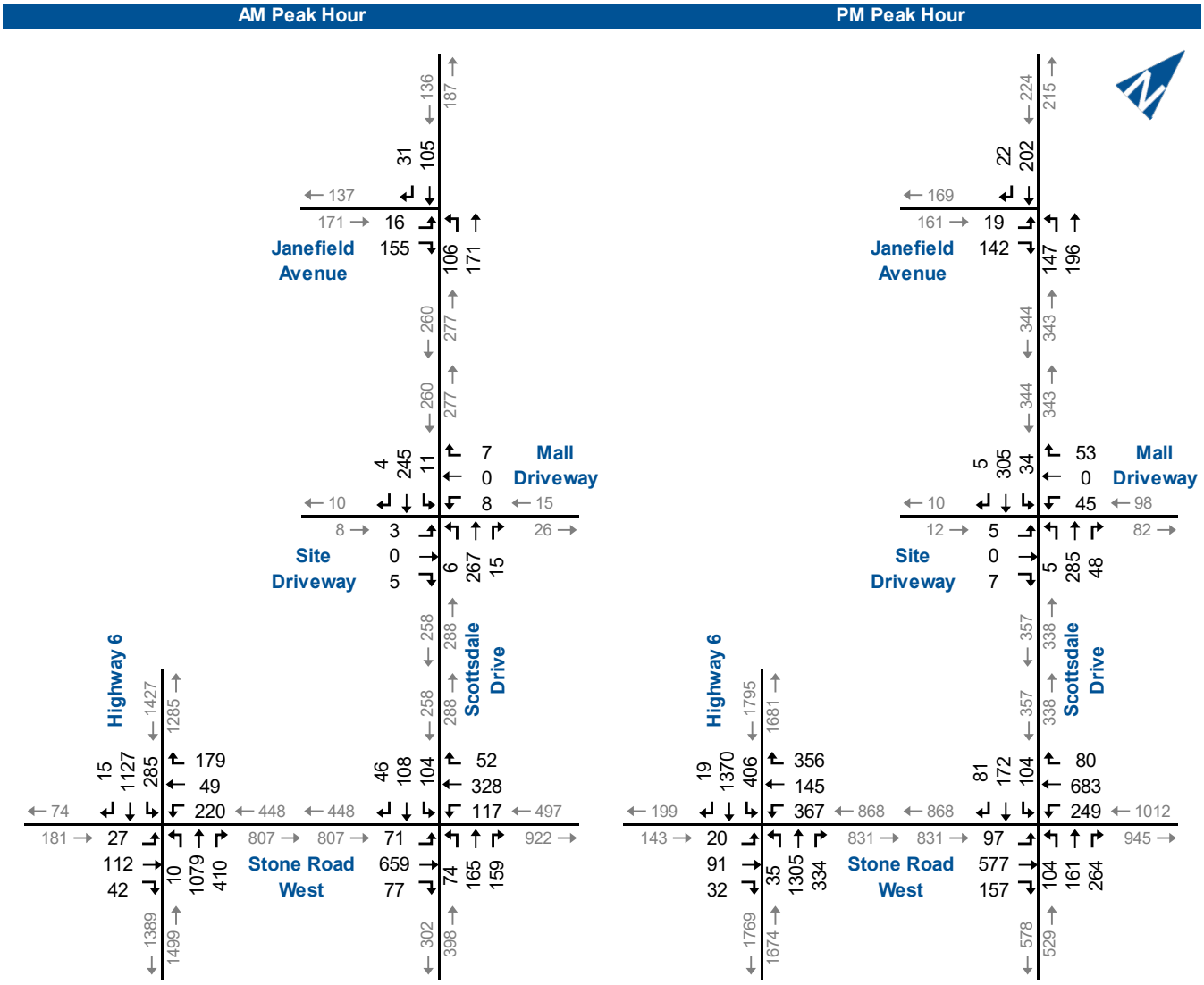
Figure 5



2025 Total Traffic Volumes

601 Scottsdale Drive, Guelph TIS and PS
220563

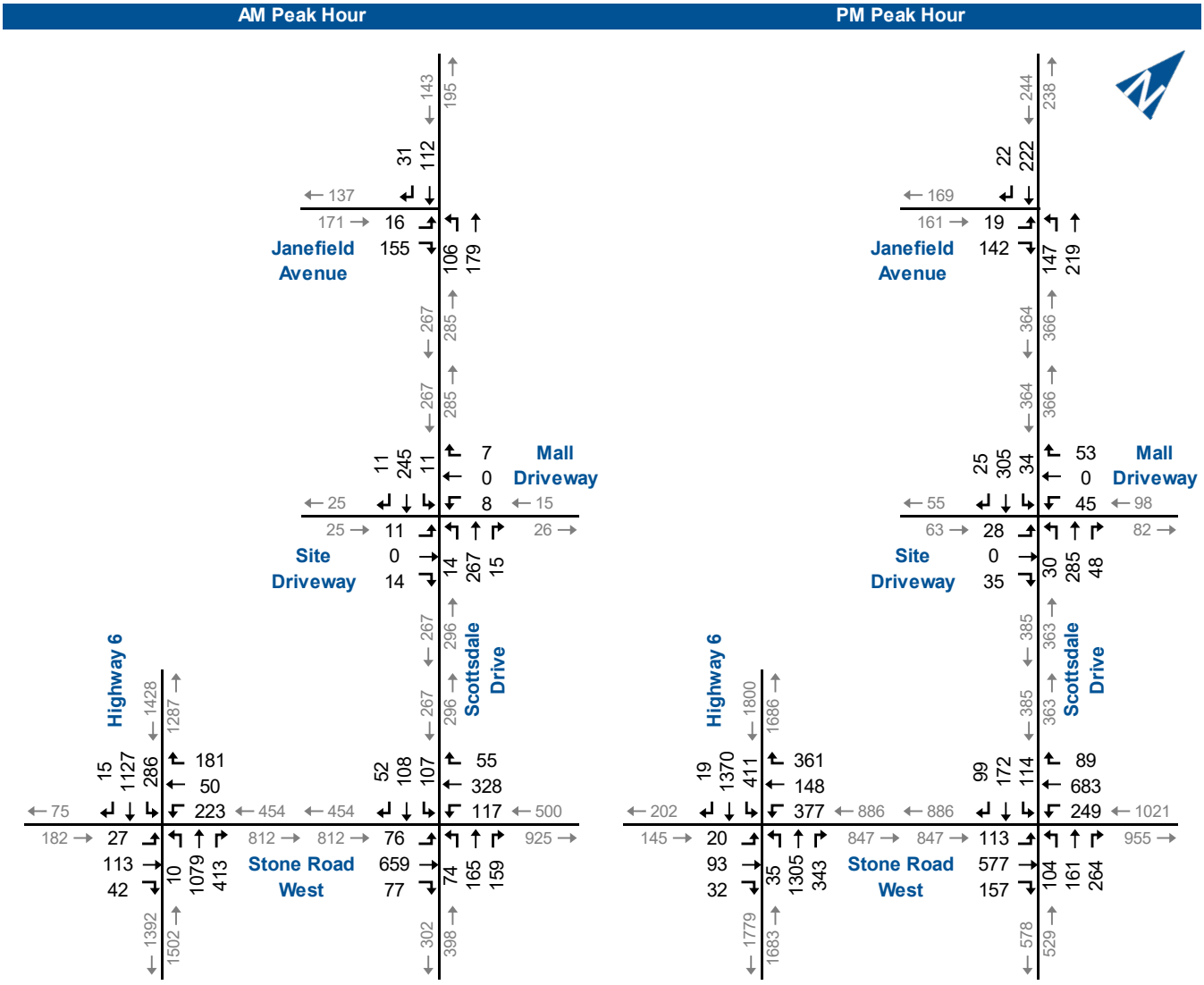
Figure 6



2030 Background Traffic Volumes

601 Scottsdale Drive, Guelph TIS and PS
220563

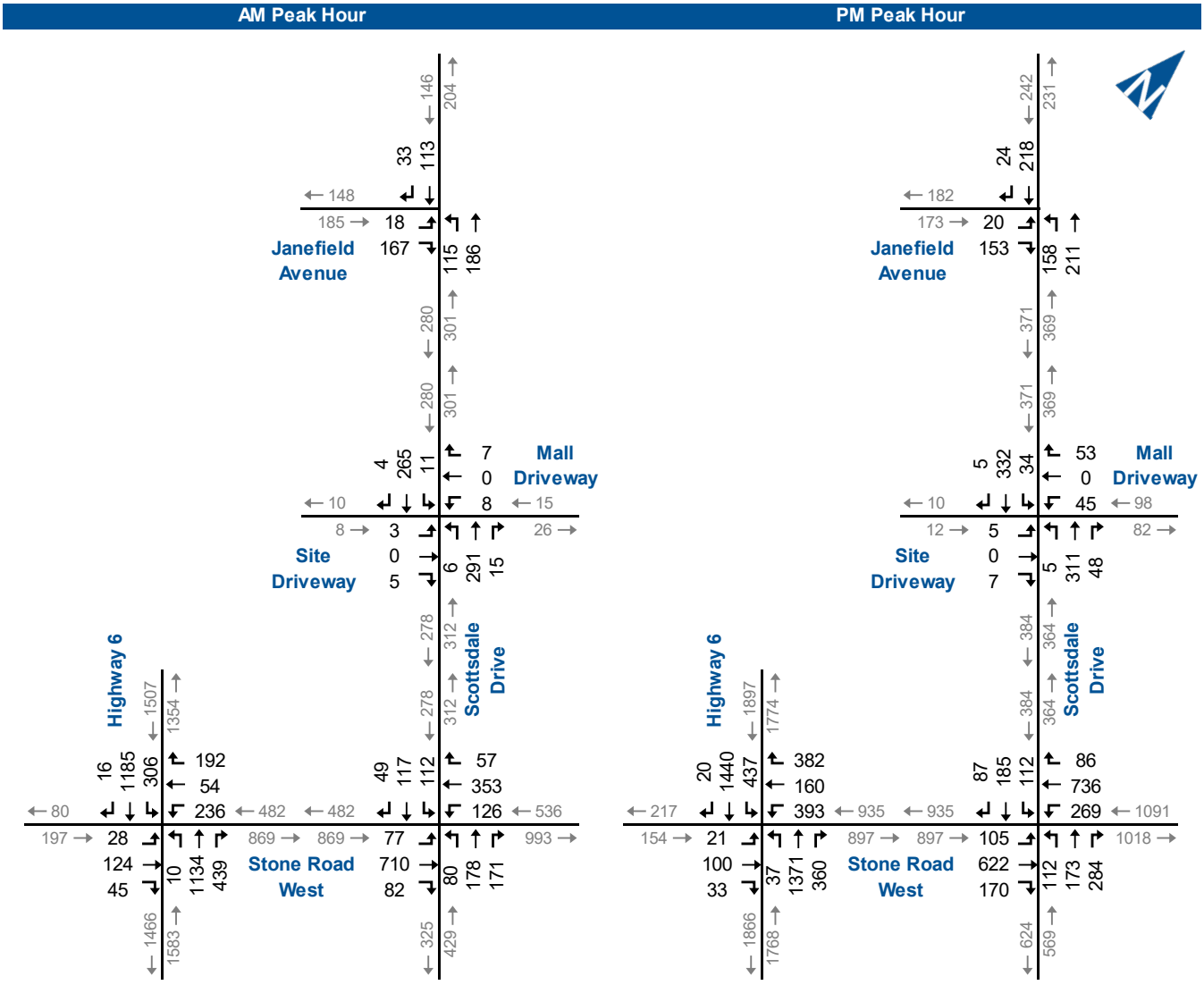
Figure 7



2030 Total Traffic Volumes

601 Scottsdale Drive, Guelph TIS and PS
220563

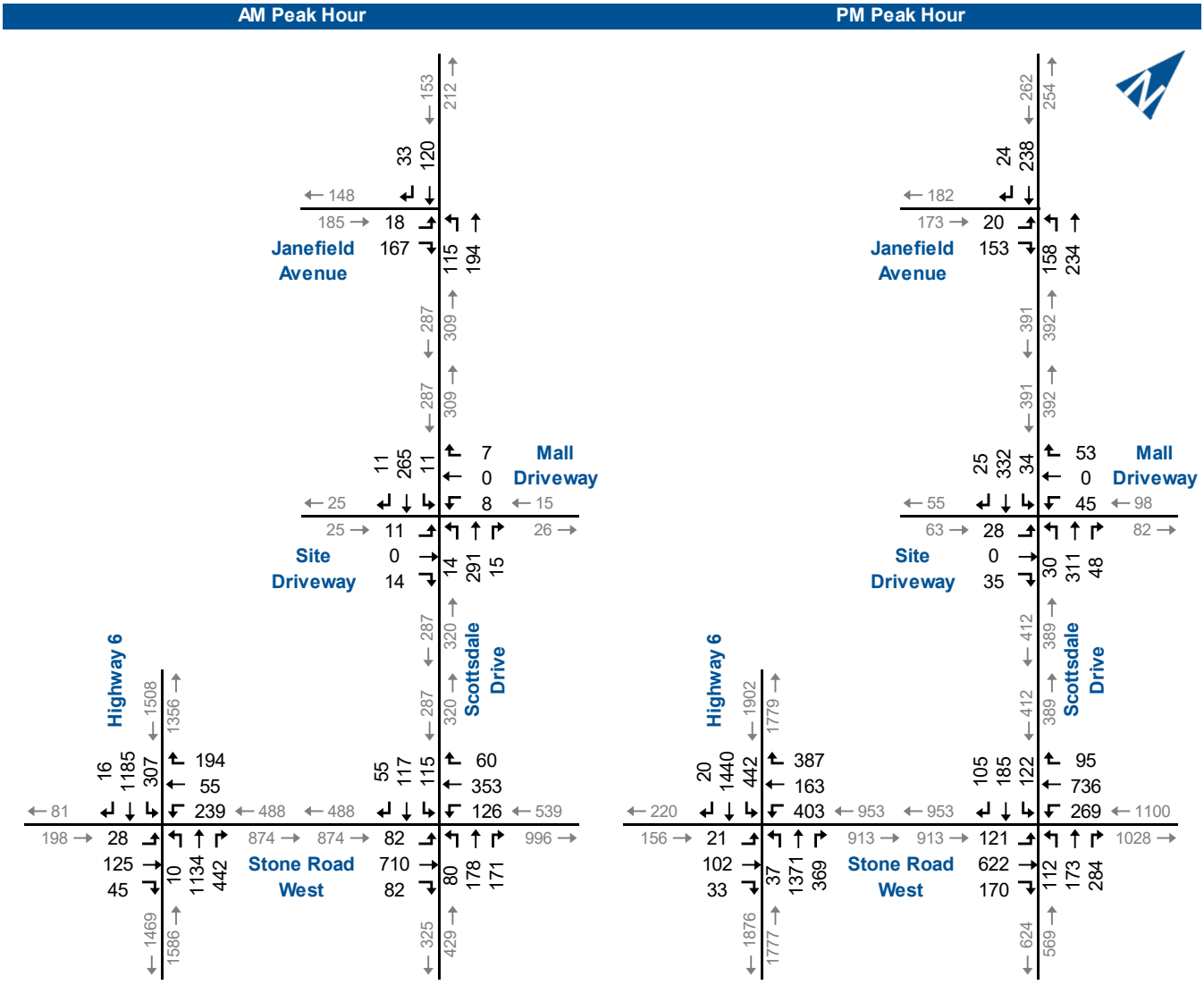
Figure 8



2035 Background Traffic Volumes

601 Scottsdale Drive, Guelph TIS and PS
220563

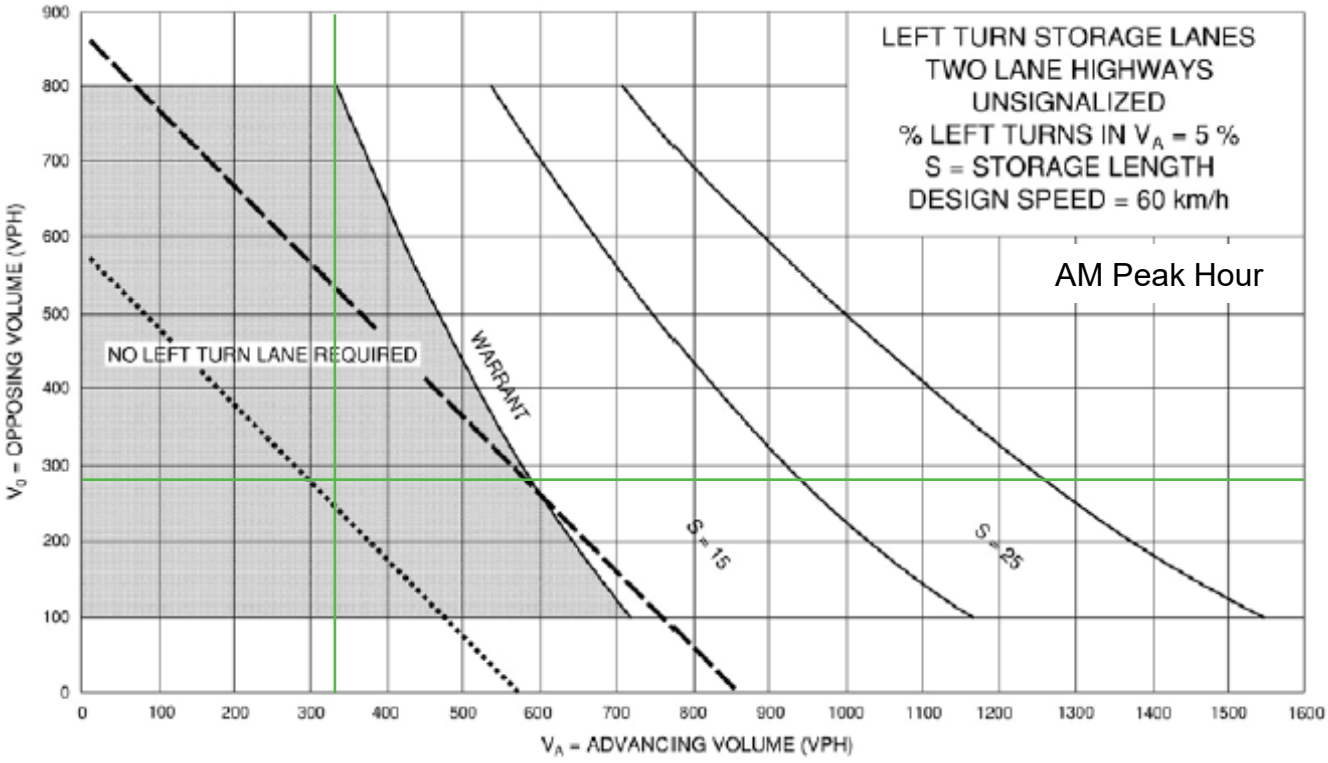
Figure 9

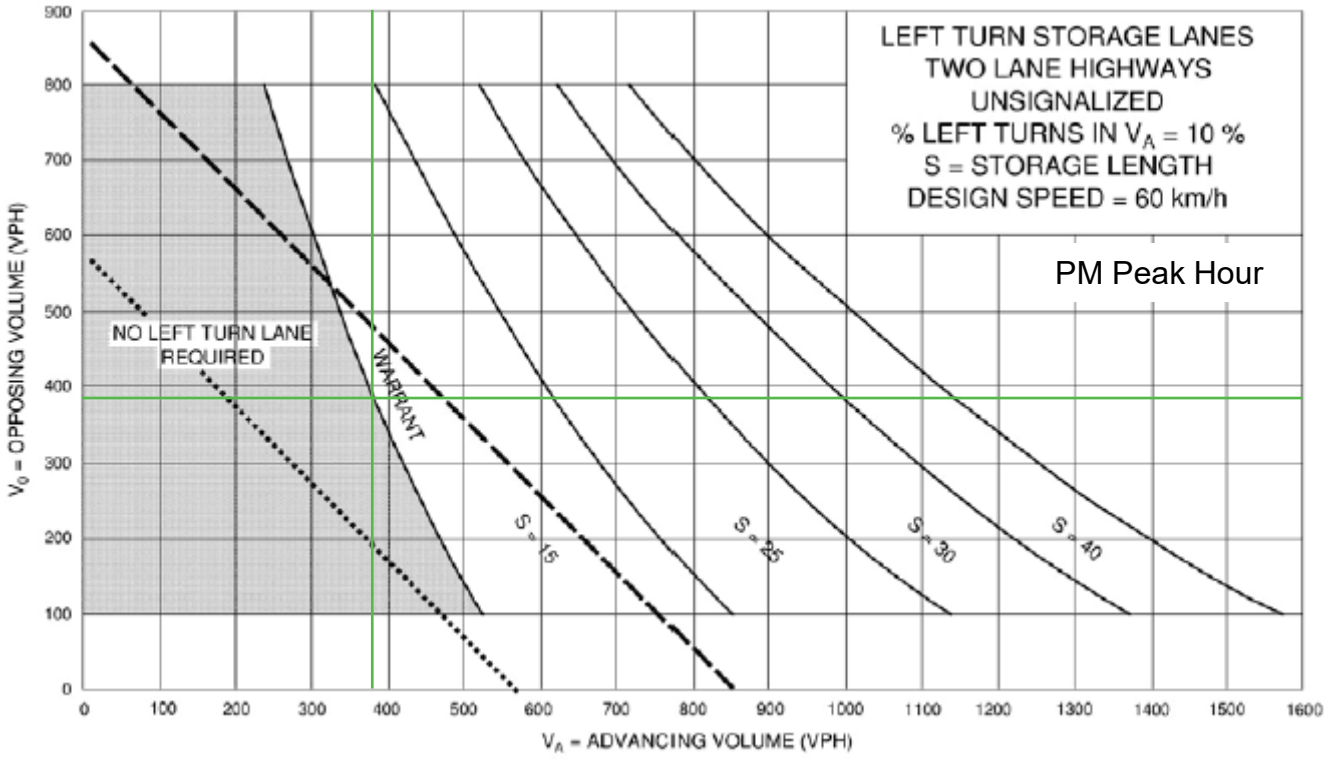


2035 Total Traffic Volumes

601 Scottsdale Drive, Guelph TIS and PS
220563

Figure 10





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Scottsdale Drive at Site Driveway
Left-Turn Lane Warrant (2035 Total)

601 Scottsdale Drive, Guelph TIS and PS
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Figure 11

Appendix A: Base Year Operations

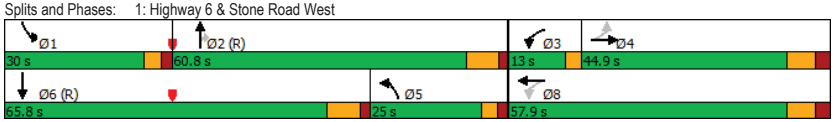
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	100	40	202	44	164	9	1016	376	262	1062	14
Future Volume (vph)	25	100	40	202	44	164	9	1016	376	262	1062	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	35.0		0.0	160.0		150.0	195.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor	1.00				0.99							
Frt		0.958			0.882				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1780	0	1719	3008	0	1626	3223	1568	3400	3276	0
Flt Permitted	0.611			0.423			0.950			0.950		
Satd. Flow (perm)	1114	1780	0	765	3008	0	1626	3223	1568	3400	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			178				409		1	
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		101.8			339.3			467.1			460.6	
Travel Time (s)		6.1			20.4			21.0			23.7	
Confl. Peds. (#/hr)	2					2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	0%	8%	5%	7%	4%	11%	12%	3%	3%	10%	7%
Adj. Flow (vph)	27	109	43	220	48	178	10	1104	409	285	1154	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	152	0	220	226	0	10	1104	409	285	1169	0
Turn Type	Perm	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	4	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	53.0	53.0	8.0	53.0	
Minimum Split (s)	44.9	44.9		10.0	44.9		13.0	60.8	60.8	13.0	60.8	
Total Split (s)	44.9	44.9		13.0	57.9		25.0	60.8	60.8	30.0	65.8	
Total Split (%)	30.2%	30.2%		8.7%	38.9%		16.8%	40.9%	40.9%	20.2%	44.3%	
Maximum Green (s)	37.0	37.0		10.0	50.0		20.0	53.0	53.0	25.0	58.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		3.0	5.9	5.9	3.0	5.9	
All-Red Time (s)	2.9	2.9		0.0	2.9		2.0	1.9	1.9	2.0	1.9	
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)	7.9	7.9		3.0	7.9		5.0	7.8	7.8	5.0	7.8	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	3.0	3.0	4.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)	21.0	21.0			21.0			41.0	41.0		41.0	
Flash Dont Walk (s)	16.0	16.0			16.0			12.0	12.0		12.0	
Pedestrian Calls (#/hr)	0	0			0			0	0		0	
Act Effct Green (s)	17.1	17.1		35.0	30.1		12.8	79.3	79.3	18.6	92.9	
Actuated g/C Ratio	0.11	0.11		0.24	0.20		0.09	0.53	0.53	0.13	0.62	
v/c Ratio	0.21	0.70		0.90	0.30		0.07	0.64	0.40	0.67	0.57	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	61.4	74.6		88.7	12.7		59.7	28.2	3.2	69.9	20.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	61.4	74.6		88.7	12.7		59.7	28.2	3.2	69.9	20.8	
LOS	E	E		F	B		E	C	A	E	C	
Approach Delay		72.6			50.2			21.7			30.4	
Approach LOS		E			D			C			C	
Queue Length 50th (m)	7.2	39.6		56.6	6.0		2.8	116.7	0.0	41.4	79.2	
Queue Length 95th (m)	16.3	60.7		#88.6	16.4		8.4	163.6	17.8	55.0	168.6	
Internal Link Dist (m)		77.8			315.3			443.1			436.6	
Turn Bay Length (m)	65.0			35.0			160.0		150.0	195.0		
Base Capacity (vph)	277	452		244	1129		218	1718	1027	571	2047	
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	0.10	0.34		0.90	0.20		0.05	0.64	0.40	0.50	0.57	

Intersection Summary

Area Type: Other
Cycle Length: 148.7
Actuated Cycle Length: 148.7
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 31.3 Intersection LOS: C
Intersection Capacity Utilization 93.6% ICU Level of Service F
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Highway 6 & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	100	40	202	44	164	9	1016	376	262	1062	14
Future Volume (veh/h)	25	100	40	202	44	164	9	1016	376	262	1062	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1900	1781	1826	1796	1841	1737	1722	1856	1856	1752	1796
Adj Flow Rate, veh/h	27	109	43	220	48	178	10	1104	409	285	1154	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	0	8	5	7	4	11	12	3	3	10	7
Cap, veh/h	156	147	58	204	343	305	417	1820	875	356	1310	17
Arrive On Green	0.11	0.11	0.11	0.07	0.20	0.20	0.25	0.56	0.56	0.10	0.39	0.39
Sat Flow, veh/h	1132	1294	511	1739	1706	1518	1654	3272	1572	3428	3364	44
Grp Volume(v), veh/h	27	0	152	220	48	178	10	1104	409	285	571	598
Grp Sat Flow(s),veh/h/ln	1132	0	1805	1739	1706	1518	1654	1636	1572	1714	1664	1744
Q Serve(g_s), s	3.3	0.0	12.1	10.0	3.4	15.8	0.7	33.7	23.2	12.1	47.5	47.5
Cycle Q Clear(g_c), s	6.1	0.0	12.1	10.0	3.4	15.8	0.7	33.7	23.2	12.1	47.5	47.5
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	156	0	205	204	343	305	417	1820	875	356	648	679
V/C Ratio(X)	0.17	0.00	0.74	1.08	0.14	0.58	0.02	0.61	0.47	0.80	0.88	0.88
Avail Cap(c_a), veh/h	308	0	448	204	573	509	417	1820	875	575	648	679
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.5	0.0	63.9	60.3	48.9	53.9	41.9	22.2	19.8	65.2	42.3	42.3
Incr Delay (d2), s/veh	0.5	0.0	5.2	85.6	0.2	1.8	0.0	1.5	1.8	5.8	15.9	15.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	0.0	9.4	12.2	2.5	9.8	0.5	17.0	12.4	9.0	27.8	28.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.0	0.0	69.1	146.0	49.1	55.6	42.0	23.7	21.6	71.1	58.2	57.6
LnGrp LOS	E	A	E	F	D	E	D	C	C	E	E	E
Approach Vol, veh/h		179			446			1523			1454	
Approach Delay, s/veh		68.1			99.5			23.2			60.5	
Approach LOS		E			F			C			E	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	20.5	90.7	13.0	24.9	45.3	65.8		37.9				
Change Period (Y+Rc), s	5.0	* 7.8	3.0	7.9	* 7.8	* 7.8		7.9				
Max Green Setting (Gmax), s	25.0	* 53	10.0	37.0	* 20	* 58		50.0				
Max Q Clear Time (g_c+I1), s	14.1	35.7	12.0	14.1	2.7	49.5		17.8				
Green Ext Time (p_c), s	1.4	10.3	0.0	1.0	0.0	5.2		1.7				

Intersection Summary	
HCM 6th Ctrl Delay	49.9
HCM 6th LOS	D

Notes

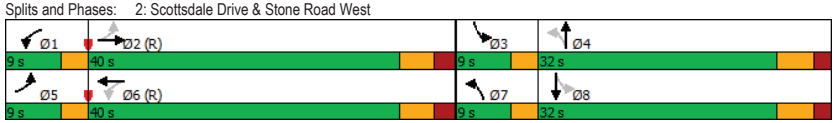
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	603	70	107	300	48	68	151	145	95	99	42
Future Volume (vph)	65	603	70	107	300	48	68	151	145	95	99	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	27.5		0.0	25.0		0.0	30.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			25.0			60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	1.00		1.00	1.00		0.97	0.99		0.99	0.98	
Frt		0.984			0.979			0.927			0.955	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	3363	0	1736	3203	0	1752	3194	0	1626	3174	0
Flt Permitted	0.512			0.291			0.648			0.406		
Satd. Flow (perm)	878	3363	0	529	3203	0	1157	3194	0	690	3174	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			23			171			49	
Link Speed (k/h)		60			60			41			41	
Link Distance (m)		339.3			210.0			117.2			40.4	
Travel Time (s)		20.4			12.6			10.3			3.5	
Confl. Peds. (#/hr)	11		14	14		11	37		12	12		37
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	10%	5%	8%	4%	9%	16%	3%	4%	3%	11%	4%	14%
Adj. Flow (vph)	76	709	82	126	353	56	80	178	171	112	116	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	791	0	126	409	0	80	349	0	112	165	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4			8		
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	9.0	27.1		9.0	27.1		9.0	31.0		9.0	31.0	
Total Split (s)	9.0	40.0		9.0	40.0		9.0	32.0		9.0	32.0	
Total Split (%)	10.0%	44.4%		10.0%	44.4%		10.0%	35.6%		10.0%	35.6%	
Maximum Green (s)	6.0	33.9		6.0	33.9		6.0	26.0		6.0	26.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.0		3.0	4.0	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.0		3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0			9.0			9.0	
Flash Dont Walk (s)		14.0			14.0			16.0			16.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	58.3	48.2		60.6	50.8		19.4	11.6		19.4	11.6	
Actuated g/C Ratio	0.65	0.54		0.67	0.56		0.22	0.13		0.22	0.13	
v/c Ratio	0.12	0.44		0.27	0.23		0.28	0.62		0.53	0.36	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	6.1	14.5		7.1	11.2		27.8	23.5		36.3	26.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	6.1	14.5		7.1	11.2		27.8	23.5		36.3	26.8	
LOS	A	B		A	B		C	C		D	C	
Approach Delay		13.8			10.2			24.3			30.6	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	3.8	40.3		6.4	17.1		10.7	15.1		15.4	9.6	
Queue Length 95th (m)	8.8	59.2		13.3	27.4		19.0	24.3		25.3	16.5	
Internal Link Dist (m)		315.3			186.0			93.2			16.4	
Turn Bay Length (m)	27.5			25.0			30.0			20.0		
Base Capacity (vph)	628	1807		461	1817		289	1044		211	951	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.12	0.44		0.27	0.23		0.28	0.33		0.53	0.17	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 17.2		Intersection LOS: B	
Intersection Capacity Utilization 63.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Scottsdale Drive & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	603	70	107	300	48	68	151	145	95	99	42
Future Volume (veh/h)	65	603	70	107	300	48	68	151	145	95	99	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.96		0.95	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1826	1781	1841	1767	1663	1856	1841	1856	1737	1841	1693
Adj Flow Rate, veh/h	76	709	82	126	353	56	80	178	171	112	116	49
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	10	5	8	4	9	16	3	4	3	11	4	14
Cap, veh/h	512	1380	159	379	1300	204	410	398	338	309	569	226
Arrive On Green	0.06	0.44	0.44	0.06	0.45	0.45	0.06	0.23	0.23	0.07	0.24	0.24
Sat Flow, veh/h	1668	3130	362	1753	2902	456	1767	1749	1484	1654	2408	954
Grp Volume(v), veh/h	76	393	398	126	203	206	80	178	171	112	82	83
Grp Sat Flow(s),veh/h/ln	1668	1735	1757	1753	1678	1679	1767	1749	1484	1654	1749	1614
Q Serve(g_s), s	2.2	14.7	14.8	3.5	6.8	7.0	3.1	7.9	9.1	4.6	3.4	3.7
Cycle Q Clear(g_c), s	2.2	14.7	14.8	3.5	6.8	7.0	3.1	7.9	9.1	4.6	3.4	3.7
Prop In Lane	1.00		0.21	1.00		0.27	1.00		1.00	1.00		0.59
Lane Grp Cap(c), veh/h	512	765	775	379	752	752	410	398	338	309	414	382
V/C Ratio(X)	0.15	0.51	0.51	0.33	0.27	0.27	0.20	0.45	0.51	0.36	0.20	0.22
Avail Cap(c_a), veh/h	529	765	775	384	752	752	426	505	429	309	505	466
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.1	18.2	18.2	13.4	15.6	15.6	24.1	29.9	30.4	24.6	27.5	27.7
Incr Delay (d2), s/veh	0.1	2.5	2.4	0.5	0.9	0.9	0.2	0.8	1.2	0.7	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	8.7	8.8	1.9	4.0	4.0	2.2	5.8	5.7	3.2	2.5	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.3	20.6	20.6	13.9	16.5	16.5	24.4	30.7	31.5	25.3	27.8	27.9
LnGrp LOS	B	C	C	B	B	B	C	C	C	C	C	C
Approach Vol, veh/h		867			535			429			277	
Approach Delay, s/veh		19.9			15.9			29.8			26.8	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	45.8	9.0	26.5	8.1	46.4	8.2	27.3
Change Period (Y+Rc), s	3.0	* 6.1	3.0	6.0	3.0	* 6.1	3.0	6.0
Max Green Setting (Gmax), s	6.0	* 34	6.0	26.0	6.0	* 34	6.0	26.0
Max Q Clear Time (g_c+I1), s	5.5	16.8	6.6	11.1	4.2	9.0	5.1	5.7
Green Ext Time (p_c), s	0.0	5.3	0.0	2.3	0.0	2.9	0.0	1.1

Intersection Summary		
HCM 6th Ctrl Delay		21.8
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	142	97	156	96	28
Future Volume (vph)	15	142	97	156	96	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.878				0.970	
Flt Protected	0.995			0.981		
Satd. Flow (prot)	1532	0	0	1748	1619	0
Flt Permitted	0.995			0.981		
Satd. Flow (perm)	1532	0	0	1748	1619	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	74.8			67.9	69.0	
Travel Time (s)	6.7			6.1	6.2	
Confl. Peds. (#/hr)	2	1	26			26
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	21%	7%	6%	7%	6%	41%
Adj. Flow (vph)	21	200	137	220	135	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	221	0	0	357	174	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	142	97	156	96	28
Future Vol, veh/h	15	142	97	156	96	28
Conflicting Peds, #/hr	2	1	26	0	0	26
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	21	7	6	7	6	41
Mvmt Flow	21	200	137	220	135	39

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	677	182	200	0	-	0
Stage 1	181	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Critical Hdwy	6.61	6.27	4.16	-	-	-
Critical Hdwy Stg 1	5.61	-	-	-	-	-
Critical Hdwy Stg 2	5.61	-	-	-	-	-
Follow-up Hdwy	3.689	3.363	2.254	-	-	-
Pot Cap-1 Maneuver	390	848	1349	-	-	-
Stage 1	806	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	329	829	1319	-	-	-
Mov Cap-2 Maneuver	329	-	-	-	-	-
Stage 1	696	-	-	-	-	-
Stage 2	562	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	3.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1319	-	724	-	-
HCM Lane V/C Ratio	0.104	-	0.305	-	-
HCM Control Delay (s)	8	0	12.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	1.3	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	3	2	262	233	1
Future Volume (vph)	2	3	2	262	233	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.919				0.999	
Flt Protected	0.980					
Satd. Flow (prot)	1678	0	0	3344	3340	0
Flt Permitted	0.980					
Satd. Flow (perm)	1678	0	0	3344	3340	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	48.6			40.4	70.2	
Travel Time (s)	4.4			3.6	6.3	
Confl. Peds. (#/hr)			37			37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	8%	8%	2%
Adj. Flow (vph)	2	3	2	285	253	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	0	0	287	254	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	3	2	262	233	1
Future Vol, veh/h	2	3	2	262	233	1
Conflicting Peds, #/hr	0	0	37	0	0	37
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	8	8	2
Mvmt Flow	2	3	2	285	253	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	438	164	291	0	-	0
Stage 1	291	-	-	-	-	-
Stage 2	147	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	547	852	1268	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	865	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	513	825	1228	-	-	-
Mov Cap-2 Maneuver	513	-	-	-	-	-
Stage 1	709	-	-	-	-	-
Stage 2	838	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1228	-	664	-	-
HCM Lane V/C Ratio	0.002	-	0.008	-	-
HCM Control Delay (s)	7.9	0	10.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	2	8	0	7	4	245	15	11	224	3
Future Volume (vph)	1	0	2	8	0	7	4	245	15	11	224	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.899			0.850				0.850		0.998	
Flt Protected		0.988		0.950				0.999			0.998	
Satd. Flow (prot)	0	1655	0	1203	1615	0	0	1772	1509	0	3355	0
Flt Permitted		0.988		0.950				0.999			0.998	
Satd. Flow (perm)	0	1655	0	1203	1615	0	0	1772	1509	0	3355	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		56.3			45.9			70.2			67.9	
Travel Time (s)		5.1			4.1			6.3			6.1	
Confl. Peds. (#/hr)			1	1			26		12	12		26
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	2%	2%	2%	50%	2%	0%	14%	7%	7%	9%	7%	14%
Adj. Flow (vph)	1	0	3	11	0	10	6	340	21	15	311	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	11	10	0	0	346	21	0	330	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	2	8	0	7	4	245	15	11	224	3
Future Vol, veh/h	1	0	2	8	0	7	4	245	15	11	224	3
Conflicting Peds, #/hr	0	0	1	1	0	0	26	0	12	12	0	26
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	50	2	0	14	7	7	9	7	14
Mvmt Flow	1	0	3	11	0	10	6	340	21	15	311	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	737	754	185	551	735	352	341	0	0	373	0	0
Stage 1	369	369	-	364	364	-	-	-	-	-	-	-
Stage 2	368	385	-	187	371	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	8.05	6.53	6.2	4.31	-	-	4.235	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.85	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	7.25	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.975	4.019	3.3	2.333	-	-	2.2855	-	-
Pot Cap-1 Maneuver	320	337	826	353	346	696	1143	-	-	1141	-	-
Stage 1	624	620	-	550	623	-	-	-	-	-	-	-
Stage 2	651	610	-	688	619	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	303	319	807	342	327	689	1118	-	-	1129	-	-
Mov Cap-2 Maneuver	303	319	-	342	327	-	-	-	-	-	-	-
Stage 1	606	596	-	541	612	-	-	-	-	-	-	-
Stage 2	637	600	-	674	595	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	13.3	0.1	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1118	-	-	519	342	689	1129	-	-
HCM Lane V/C Ratio	0.005	-	-	0.008	0.032	0.014	0.014	-	-
HCM Control Delay (s)	8.2	0	-	12	15.9	10.3	8.2	0.1	-
HCM Lane LOS	A	A	-	B	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	81	30	337	130	327	33	1229	307	373	1291	18
Future Volume (vph)	19	81	30	337	130	327	33	1229	307	373	1291	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	35.0		0.0	160.0		150.0	195.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor	0.99				0.98							
Frt		0.959			0.893				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1794	0	1787	3123	0	1805	3438	1583	3467	3466	0
Flt Permitted	0.470			0.497			0.950			0.950		
Satd. Flow (perm)	887	1794	0	935	3123	0	1805	3438	1583	3467	3466	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			355				334		1	
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		101.8			339.3			467.1			460.6	
Travel Time (s)		6.1			20.4			21.0			23.7	
Confl. Peds. (#/hr)	12					12						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	1%	2%	1%	0%	5%	2%	1%	4%	0%
Adj. Flow (vph)	21	88	33	366	141	355	36	1336	334	405	1403	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	121	0	366	496	0	36	1336	334	405	1423	0
Turn Type	Perm	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	4	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	53.0	53.0	8.0	53.0	
Minimum Split (s)	44.9	44.9		10.0	44.9		13.0	60.8	60.8	13.0	60.8	
Total Split (s)	44.9	44.9		13.0	57.9		25.0	60.8	60.8	30.0	65.8	
Total Split (%)	30.2%	30.2%		8.7%	38.9%		16.8%	40.9%	40.9%	20.2%	44.3%	
Maximum Green (s)	37.0	37.0		10.0	50.0		20.0	53.0	53.0	25.0	58.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		3.0	5.9	5.9	3.0	5.9	
All-Red Time (s)	2.9	2.9		0.0	2.9		2.0	1.9	1.9	2.0	1.9	
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)	7.9	7.9		3.0	7.9		5.0	7.8	7.8	5.0	7.8	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	3.0	3.0	4.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)	21.0	21.0			21.0			41.0	41.0		41.0	
Flash Dont Walk (s)	16.0	16.0			16.0			12.0	12.0		12.0	
Pedestrian Calls (#/hr)	0	0			0			0	0		0	
Act Effct Green (s)	14.7	14.7		32.6	27.7		17.6	76.9	76.9	23.3	85.3	
Actuated g/C Ratio	0.10	0.10		0.22	0.19		0.12	0.52	0.52	0.16	0.57	
v/c Ratio	0.24	0.64		1.40	0.57		0.17	0.75	0.34	0.74	0.72	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	66.7	73.0		241.2	17.2		59.1	33.0	3.2	68.4	27.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	66.7	73.0		241.2	17.2		59.1	33.0	3.2	68.4	27.8	
LOS	E	E		F	B		E	C	A	E	C	
Approach Delay		72.1			112.3			27.7			36.8	
Approach LOS		E			F			C			D	
Queue Length 50th (m)	5.8	31.1		~142.0	18.6		9.4	157.2	0.0	58.7	164.4	
Queue Length 95th (m)	14.1	50.3		#193.3	34.8		20.6	214.9	17.0	73.5	209.8	
Internal Link Dist (m)		77.8			315.3			443.1			436.6	
Turn Bay Length (m)	65.0			35.0			160.0		150.0	195.0		
Base Capacity (vph)	220	455		262	1285		242	1778	980	601	1988	
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	0.10	0.27		1.40	0.39		0.15	0.75	0.34	0.67	0.72	

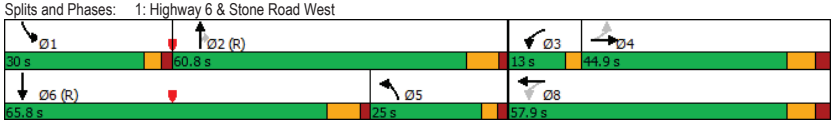
Intersection Summary

Area Type: Other
Cycle Length: 148.7
Actuated Cycle Length: 148.7
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.40
Intersection Signal Delay: 48.8 Intersection LOS: D
Intersection Capacity Utilization 99.2% ICU Level of Service F
Analysis Period (min) 15

~ 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.

Splits and Phases: 1: Highway 6 & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	81	30	337	130	327	33	1229	307	373	1291	18
Future Volume (veh/h)	19	81	30	337	130	327	33	1229	307	373	1291	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1885	1856	1885	1870	1885	1900	1826	1870	1885	1841	1900
Adj Flow Rate, veh/h	21	88	33	366	141	355	36	1336	334	405	1403	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	1	3	1	2	1	0	5	2	1	4	0
Cap, veh/h	115	255	96	344	504	444	306	1530	699	475	1374	20
Arrive On Green	0.20	0.20	0.20	0.07	0.28	0.28	0.17	0.44	0.44	0.14	0.39	0.39
Sat Flow, veh/h	910	1299	487	1795	1777	1565	1810	3469	1585	3483	3530	50
Grp Volume(v), veh/h	21	0	121	366	141	355	36	1336	334	405	695	728
Grp Sat Flow(s),veh/h/ln	910	0	1787	1795	1777	1565	1810	1735	1585	1742	1749	1832
Q Serve(g_s), s	3.3	0.0	8.7	10.0	9.2	31.3	2.5	52.2	22.2	16.9	58.0	58.0
Cycle Q Clear(g_c), s	21.6	0.0	8.7	10.0	9.2	31.3	2.5	52.2	22.2	16.9	58.0	58.0
Prop In Lane	1.00		0.27	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	115	0	351	344	504	444	306	1530	699	475	681	713
V/C Ratio(X)	0.18	0.00	0.34	1.07	0.28	0.80	0.12	0.87	0.48	0.85	1.02	1.02
Avail Cap(c_a), veh/h	162	0	444	344	596	525	306	1530	699	584	681	713
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.4	0.0	51.6	56.5	41.5	49.4	52.5	37.9	29.5	62.9	45.5	45.5
Incr Delay (d2), s/veh	0.7	0.0	0.6	66.8	0.3	7.3	0.2	7.2	2.3	10.8	39.8	39.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	0.0	6.7	20.5	6.9	17.9	2.0	28.8	12.8	12.3	39.6	41.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.2	0.0	52.2	123.4	41.8	56.8	52.7	45.1	31.8	73.7	85.3	84.8
LnGrp LOS	E	A	D	F	D	E	D	D	C	E	F	F
Approach Vol, veh/h		142			862			1706			1828	
Approach Delay, s/veh		54.2			82.6			42.7			82.5	
Approach LOS		D			F			D			F	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	25.3	73.5	13.0	37.2	33.0	65.8		50.2				
Change Period (Y+Rc), s	5.0	* 7.8	3.0	7.9	* 7.8	* 7.8		7.9				
Max Green Setting (Gmax), s	25.0	* 53	10.0	37.0	* 20	* 58		50.0				
Max Q Clear Time (g_c+I1), s	18.9	54.2	12.0	23.6	4.5	60.0		33.3				
Green Ext Time (p_c), s	1.4	0.0	0.0	0.6	0.1	0.0		3.3				

Intersection Summary	
HCM 6th Ctrl Delay	66.7
HCM 6th LOS	E

Notes

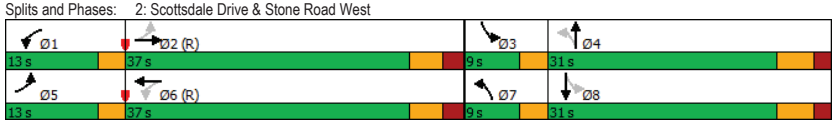
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	528	144	228	625	73	95	146	241	95	157	74
Future Volume (vph)	89	528	144	228	625	73	95	146	241	95	157	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	27.5		0.0	25.0		0.0	30.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			25.0			60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99				1.00		0.98	0.98		0.99	0.99	
Frt		0.968			0.984			0.907			0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3440	0	1787	3393	0	1805	3158	0	1687	3398	0
Flt Permitted	0.357			0.308			0.589			0.345		
Satd. Flow (perm)	673	3440	0	579	3393	0	1100	3158	0	607	3398	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			15			259			80	
Link Speed (k/h)		60			60			41			41	
Link Distance (m)		339.3			210.0			117.2			40.4	
Travel Time (s)		20.4			12.6			10.3			3.5	
Confl. Peds. (#/hr)	25					25	22		17	17		22
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	0%	1%	4%	6%	0%	3%	1%	7%	0%	0%
Adj. Flow (vph)	96	568	155	245	672	78	102	157	259	102	169	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	723	0	245	750	0	102	416	0	102	249	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4			8		
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	9.0	27.1		9.0	27.1		9.0	31.0		9.0	31.0	
Total Split (s)	13.0	37.0		13.0	37.0		9.0	31.0		9.0	31.0	
Total Split (%)	14.4%	41.1%		14.4%	41.1%		10.0%	34.4%		10.0%	34.4%	
Maximum Green (s)	10.0	30.9		10.0	30.9		6.0	25.0		6.0	25.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.0		3.0	4.0	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.0		3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0			9.0			9.0	
Flash Dont Walk (s)		14.0			14.0			16.0			16.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	56.3	45.9		62.1	50.7		19.4	11.6		19.4	11.6	
Actuated g/C Ratio	0.63	0.51		0.69	0.56		0.22	0.13		0.22	0.13	
v/c Ratio	0.19	0.41		0.46	0.39		0.36	0.66		0.50	0.49	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	6.7	15.0		8.6	13.1		29.7	19.1		35.3	27.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	6.7	15.0		8.6	13.1		29.7	19.1		35.3	27.6	
LOS	A	B		A	B		C	B		D	C	
Approach Delay		14.0			12.0			21.1			29.8	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	4.7	35.7		13.2	36.3		13.9	13.3		14.0	14.4	
Queue Length 95th (m)	11.3	60.5		26.3	58.7		24.5	26.0		24.7	24.1	
Internal Link Dist (m)		315.3			186.0			93.2			16.4	
Turn Bay Length (m)	27.5			25.0			30.0			20.0		
Base Capacity (vph)	566	1775		549	1917		283	1064		202	1001	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.17	0.41		0.45	0.39		0.36	0.39		0.50	0.25	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 35 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 70.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Scottsdale Drive & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	528	144	228	625	73	95	146	241	95	157	74
Future Volume (veh/h)	89	528	144	228	625	73	95	146	241	95	157	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	0.98		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1885	1841	1811	1900	1856	1885	1796	1900	1900
Adj Flow Rate, veh/h	96	568	155	245	672	78	102	157	259	102	169	80
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	2	0	1	4	6	0	3	1	7	0	0
Cap, veh/h	399	1111	302	439	1393	162	387	413	358	258	562	253
Arrive On Green	0.06	0.40	0.40	0.10	0.44	0.44	0.06	0.23	0.23	0.06	0.23	0.23
Sat Flow, veh/h	1810	2749	747	1795	3151	365	1810	1763	1528	1711	2397	1077
Grp Volume(v), veh/h	96	366	357	245	373	377	102	157	259	102	125	124
Grp Sat Flow(s),veh/h/ln	1810	1777	1719	1795	1749	1768	1810	1763	1528	1711	1805	1669
Q Serve(g_s), s	2.7	13.9	14.0	6.8	13.6	13.6	3.8	6.7	14.1	4.0	5.1	5.5
Cycle Q Clear(g_c), s	2.7	13.9	14.0	6.8	13.6	13.6	3.8	6.7	14.1	4.0	5.1	5.5
Prop In Lane	1.00		0.43	1.00		0.21	1.00		1.00	1.00		0.65
Lane Grp Cap(c), veh/h	399	718	695	439	773	782	387	413	358	258	424	392
V/C Ratio(X)	0.24	0.51	0.51	0.56	0.48	0.48	0.26	0.38	0.72	0.40	0.30	0.32
Avail Cap(c_a), veh/h	491	718	695	462	773	782	396	490	425	266	501	464
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.3	20.1	20.1	13.9	17.8	17.8	23.8	29.0	31.8	24.9	28.3	28.5
Incr Delay (d2), s/veh	0.3	2.6	2.7	1.4	2.1	2.1	0.4	0.6	4.9	1.0	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	8.8	8.6	3.8	8.2	8.3	2.8	5.0	9.2	2.9	3.9	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.6	22.7	22.8	15.2	19.9	19.9	24.2	29.5	36.7	25.9	28.7	28.9
LnGrp LOS	B	C	C	B	B	B	C	C	D	C	C	C
Approach Vol, veh/h		819			995			518			351	
Approach Delay, s/veh		21.8			18.8			32.0			28.0	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.9	42.5	8.5	27.1	8.5	45.9	8.5	27.1
Change Period (Y+Rc), s	3.0	* 6.1	3.0	6.0	3.0	* 6.1	3.0	6.0
Max Green Setting (Gmax), s	10.0	* 31	6.0	25.0	10.0	* 31	6.0	25.0
Max Q Clear Time (g_c+I1), s	8.8	16.0	6.0	16.1	4.7	15.6	5.8	7.5
Green Ext Time (p_c), s	0.1	4.5	0.0	2.1	0.1	4.7	0.0	1.6

Intersection Summary	
HCM 6th Ctrl Delay	23.5
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	17	129	134	179	184	20
Future Volume (vph)	17	129	134	179	184	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.880				0.987	
Flt Protected	0.994			0.979		
Satd. Flow (prot)	1599	0	0	1803	1790	0
Flt Permitted	0.994			0.979		
Satd. Flow (perm)	1599	0	0	1803	1790	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	74.8			67.9	69.0	
Travel Time (s)	6.7			6.1	6.2	
Confl. Peds. (#/hr)	3	9	11			11
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	19%	2%	2%	4%	3%	21%
Adj. Flow (vph)	19	147	152	203	209	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	166	0	0	355	232	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	129	134	179	184	20
Future Vol, veh/h	17	129	134	179	184	20
Conflicting Peds, #/hr	3	9	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	19	2	2	4	3	21
Mvmt Flow	19	147	152	203	209	23

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	742	241	243	0	-	0
Stage 1	232	-	-	-	-	-
Stage 2	510	-	-	-	-	-
Critical Hdwy	6.59	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.59	-	-	-	-	-
Critical Hdwy Stg 2	5.59	-	-	-	-	-
Follow-up Hdwy	3.671	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	359	798	1323	-	-	-
Stage 1	768	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	306	785	1311	-	-	-
Mov Cap-2 Maneuver	306	-	-	-	-	-
Stage 1	661	-	-	-	-	-
Stage 2	565	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	3.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1311	-	664	-	-
HCM Lane V/C Ratio	0.116	-	0.25	-	-
HCM Control Delay (s)	8.1	0	12.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	3	3	305	323	3
Future Volume (vph)	2	3	3	305	323	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.919				0.999	
Flt Protected	0.980					
Satd. Flow (prot)	1678	0	0	3505	3536	0
Flt Permitted	0.980					
Satd. Flow (perm)	1678	0	0	3505	3536	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	48.6			40.4	70.2	
Travel Time (s)	4.4			3.6	6.3	
Confl. Peds. (#/hr)			22			22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%
Adj. Flow (vph)	2	3	3	332	351	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	0	0	335	354	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	3	3	305	323	3
Future Vol, veh/h	2	3	3	305	323	3
Conflicting Peds, #/hr	0	0	22	0	0	22
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	3	2	2
Mvmt Flow	2	3	3	332	351	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	547	199	376	0	-	0
Stage 1	375	-	-	-	-	-
Stage 2	172	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	467	809	1179	-	-	-
Stage 1	665	-	-	-	-	-
Stage 2	841	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	448	794	1157	-	-	-
Mov Cap-2 Maneuver	448	-	-	-	-	-
Stage 1	650	-	-	-	-	-
Stage 2	825	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1157	-	607	-	-
HCM Lane V/C Ratio	0.003	-	0.009	-	-
HCM Control Delay (s)	8.1	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	4	45	0	53	2	257	48	34	277	2
Future Volume (vph)	3	0	4	45	0	53	2	257	48	34	277	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.923			0.850				0.850		0.999	
Flt Protected		0.979		0.950							0.995	
Satd. Flow (prot)	0	1331	0	1805	1583	0	0	1842	1615	0	3491	0
Flt Permitted		0.979		0.950							0.995	
Satd. Flow (perm)	0	1331	0	1805	1583	0	0	1842	1615	0	3491	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		56.3			45.9			70.2			67.9	
Travel Time (s)		5.1			4.1			6.3			6.1	
Confl. Peds. (#/hr)							11		12	12		11
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	29%	2%	29%	0%	2%	2%	25%	3%	0%	0%	3%	25%
Adj. Flow (vph)	3	0	4	51	0	60	2	289	54	38	311	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	7	0	51	60	0	0	291	54	0	351	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	4	45	0	53	2	257	48	34	277	2
Future Vol, veh/h	3	0	4	45	0	53	2	257	48	34	277	2
Conflicting Peds, #/hr	0	0	0	0	0	0	11	0	12	12	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	29	2	29	0	2	2	25	3	0	0	3	25
Mvmt Flow	3	0	4	51	0	60	2	289	54	38	311	2

Major/Minor	Minor2			Minor1				Major1			Major2	
Conflicting Flow All	749	758	168	537	705	301	324	0	0	355	0	0
Stage 1	399	399	-	305	305	-	-	-	-	-	-	-
Stage 2	350	359	-	232	400	-	-	-	-	-	-	-
Critical Hdwy	7.735	6.53	7.335	7.3	6.53	6.23	4.475	-	-	4.1	-	-
Critical Hdwy Stg 1	6.935	5.53	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.535	5.53	-	6.5	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.7755	4.019	3.5755	3.5	4.019	3.319	2.4375	-	-	2.2	-	-
Pot Cap-1 Maneuver	275	336	776	444	360	738	1100	-	-	1215	-	-
Stage 1	541	601	-	709	662	-	-	-	-	-	-	-
Stage 2	603	626	-	756	601	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	243	317	769	424	339	731	1090	-	-	1203	-	-
Mov Cap-2 Maneuver	243	317	-	424	339	-	-	-	-	-	-	-
Stage 1	535	573	-	700	654	-	-	-	-	-	-	-
Stage 2	553	618	-	723	573	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.2	12.3	0.1	1
HCM LOS	B	B		

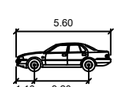
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1090	-	-	399	424	731	1203	-	-
HCM Lane V/C Ratio	0.002	-	-	0.02	0.119	0.081	0.032	-	-
HCM Control Delay (s)	8.3	0	-	14.2	14.6	10.4	8.1	0.1	-
HCM Lane LOS	A	A	-	B	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0.3	0.1	-	-

Appendix B: AutoTURN

THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
2	2024-03-28	SC	UPDATED SITE PLAN
1	2023-09-13	LC	UPDATED SITE PLAN

DESIGN VEHICLE:



P

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

AUTOTURN ASSESSMENT
601 SCOTTSDALE DRIVE
GUELPH, ON

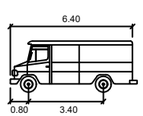
paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 220563	DATE: JULY 2023	SCALE: 1:750	DRAWING NO.:
DRAWN: LC	DESIGN: LC	CHECK: MB	01

THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
2	2024-03-28	SC	UPDATED SITE PLAN
1	2023-09-13	LC	UPDATED SITE PLAN

DESIGN VEHICLE:



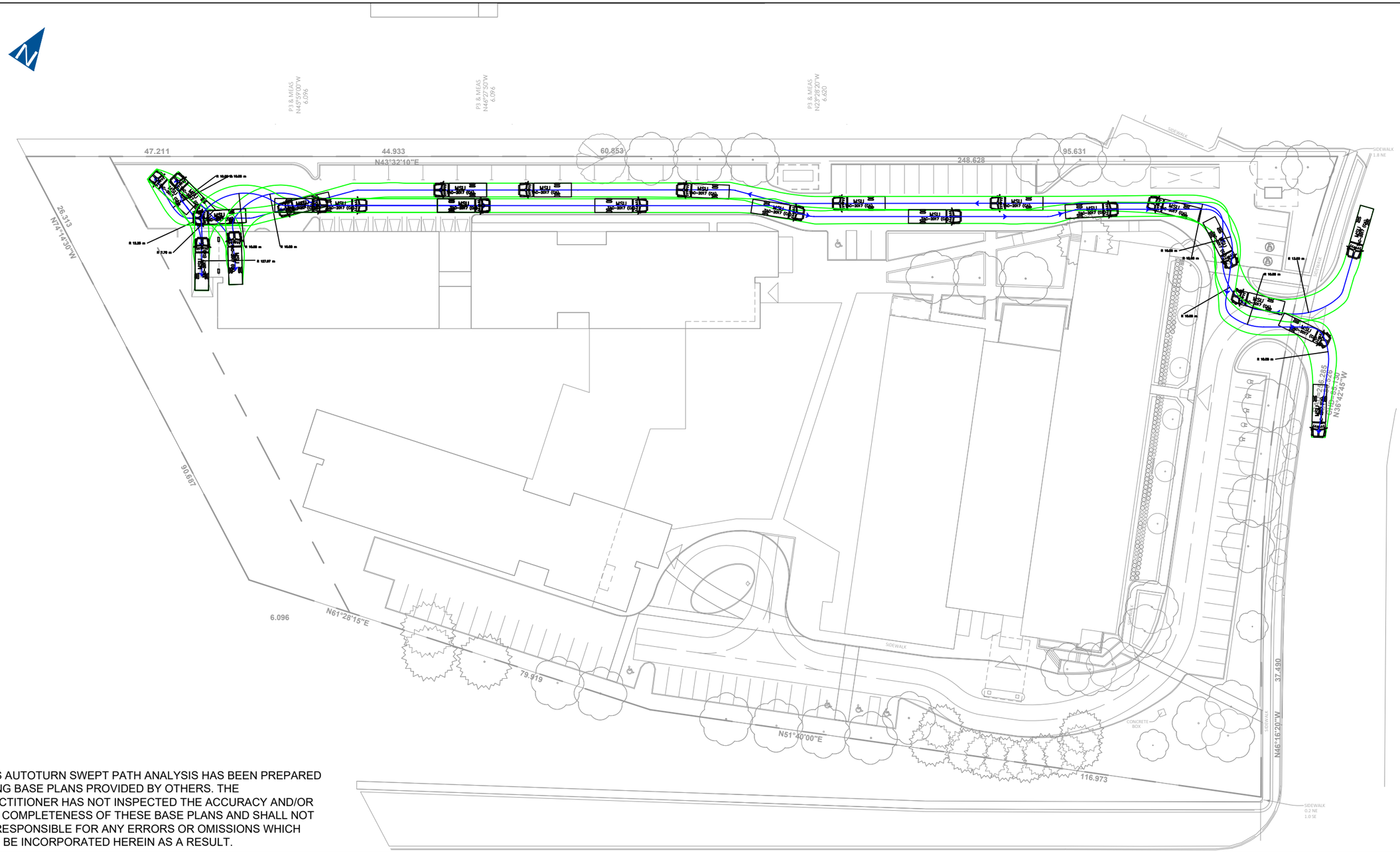
LSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.3

AUTOTURN ASSESSMENT
601 SCOTTSDALE DRIVE
GUELPH, ON

paradigm TRANSPORTATION SOLUTIONS LIMITED

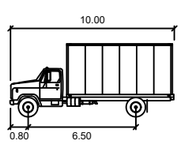
PROJECT NO.: 220563	DATE: JULY 2023	SCALE: 1:750	DRAWING NO.: 02
DRAWN: LC	DESIGN: LC	CHECK: MB	



THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
2	2024-03-28	SC	UPDATED SITE PLAN
1	2023-09-13	LC	UPDATED SITE PLAN

DESIGN VEHICLE:



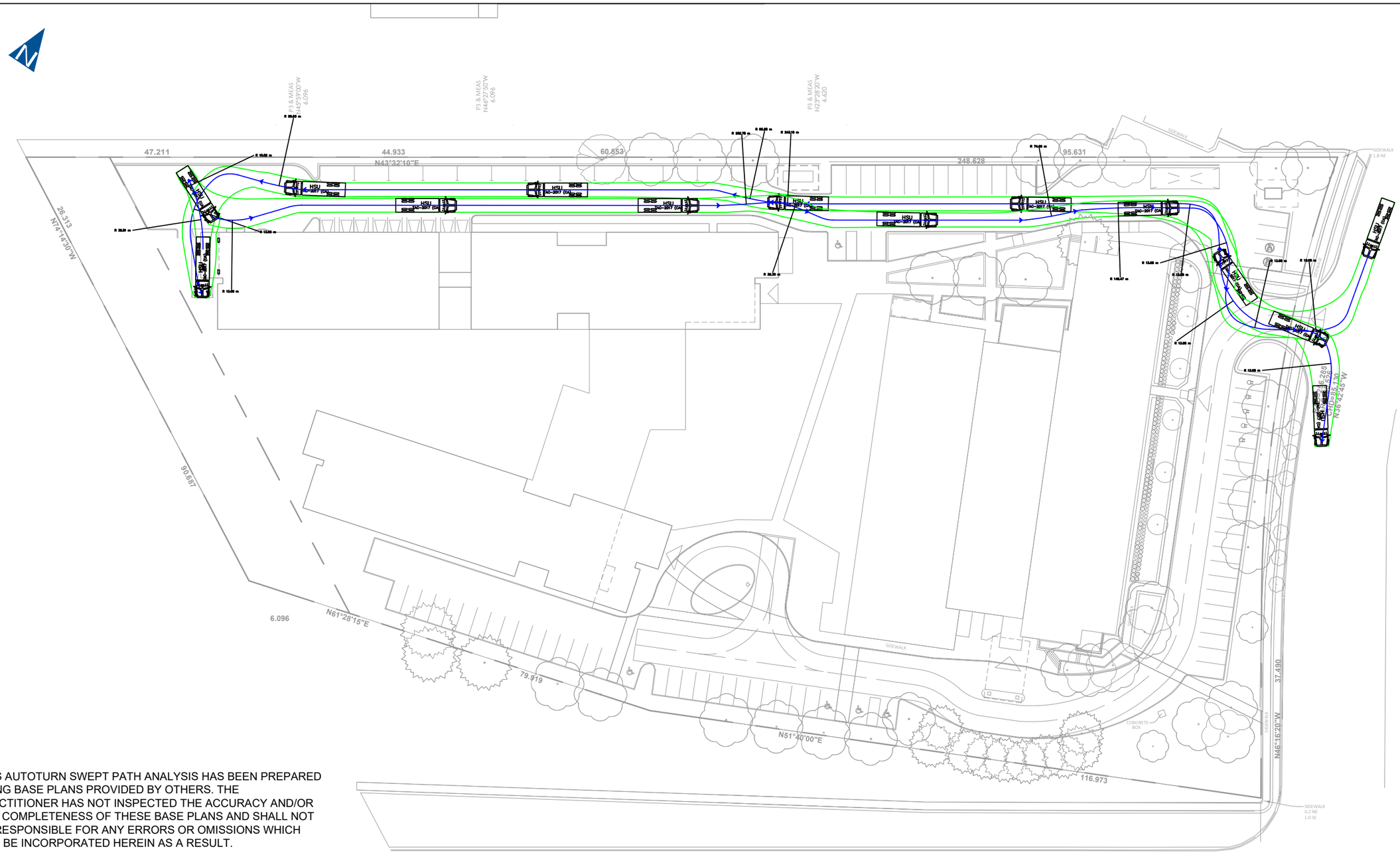
MSU

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

AUTOTURN ASSESSMENT
601 SCOTTSDALE DRIVE
GUELPH, ON

paradigm TRANSPORTATION SOLUTIONS LIMITED

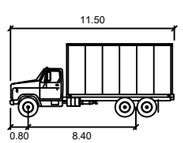
PROJECT NO.: 220563	DATE: JULY 2023	SCALE: 1:750	DRAWING NO.: 03
DRAWN: LC	DESIGN: LC	CHECK: MB	



THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
2	2024-03-28	SC	UPDATED SITE PLAN
1	2023-09-13	LC	UPDATED SITE PLAN

DESIGN VEHICLE:



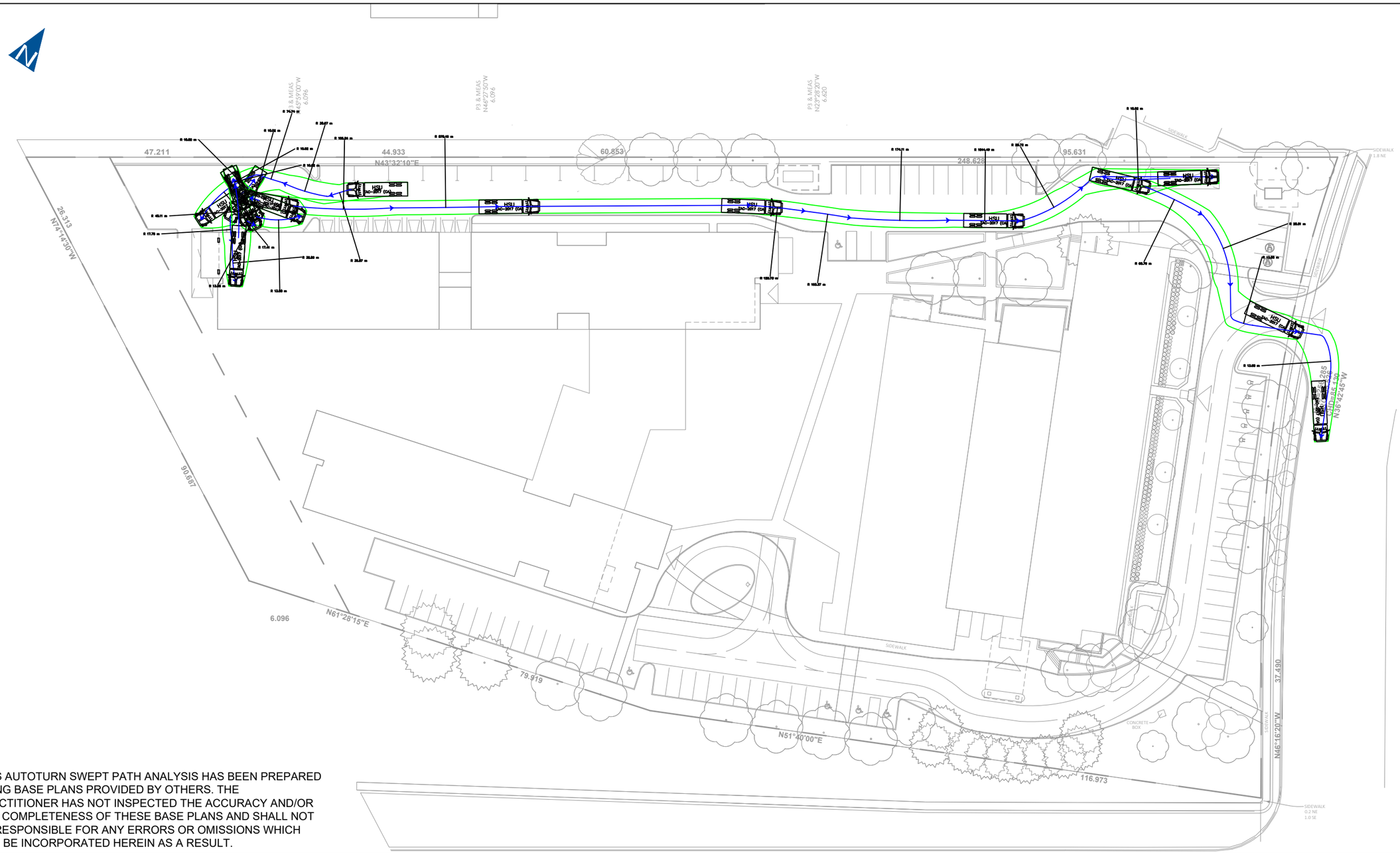
HSU

	meters
Width	2.60
Track	2.60
Lock to Lock Time	6.0
Steering Angle	40.0

AUTOTURN ASSESSMENT
601 SCOTTSDALE DRIVE
GUELPH, ON

paradigm TRANSPORTATION SOLUTIONS LIMITED

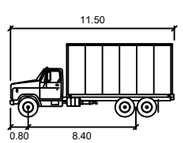
PROJECT NO.: 220563	DATE: JULY 2023	SCALE: 1:750	DRAWING NO.: 04
DRAWN: LC	DESIGN: LC	CHECK: MB	



THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
2	2024-03-28	SC	UPDATED SITE PLAN
1	2023-09-13	LC	UPDATED SITE PLAN

DESIGN VEHICLE:



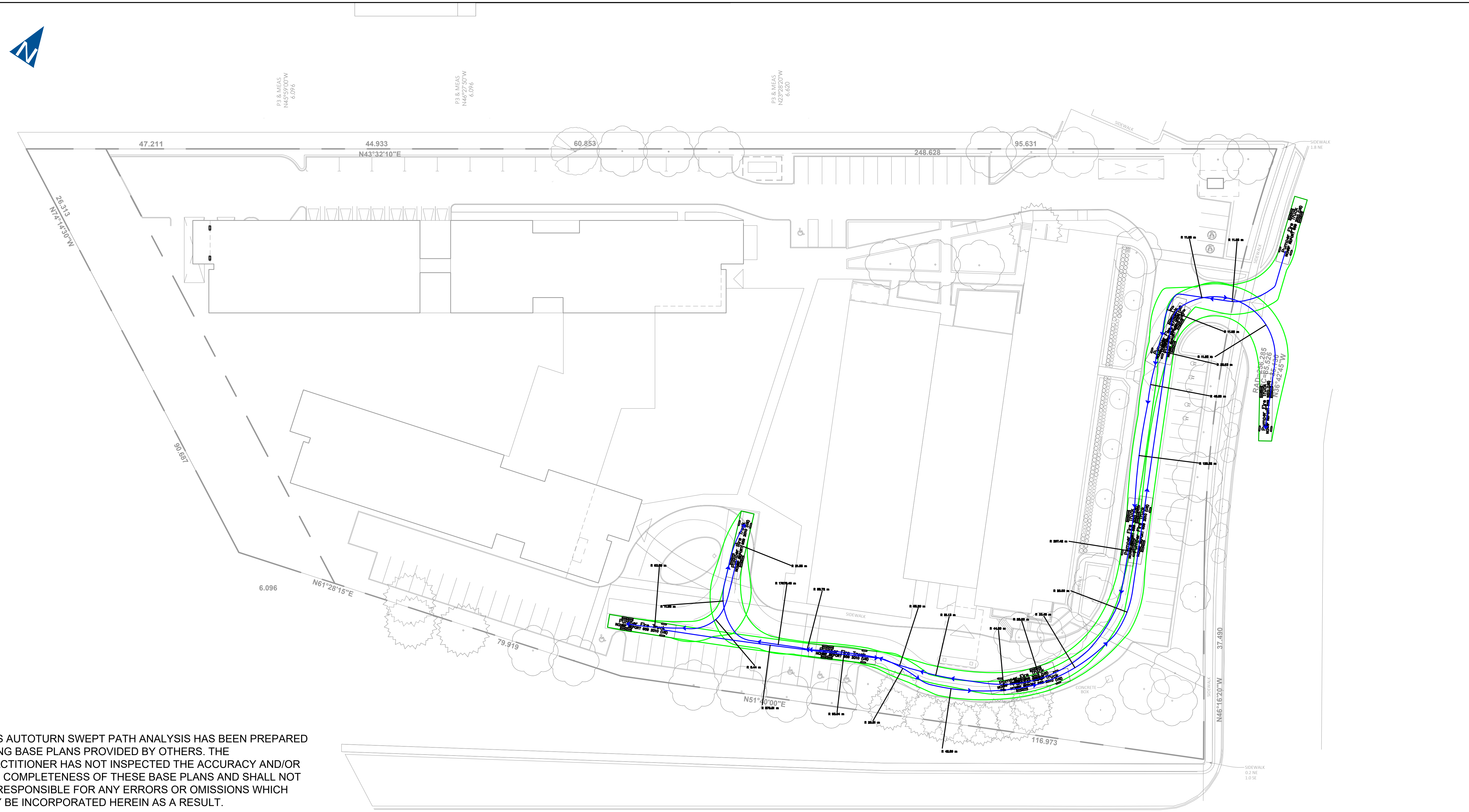
HSU

	meters
Width	2.60
Track	2.60
Lock to Lock Time	6.0
Steering Angle	40.0

AUTOTURN ASSESSMENT
601 SCOTTSDALE DRIVE
GUELPH, ON

paradigm TRANSPORTATION SOLUTIONS LIMITED

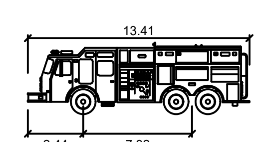
PROJECT NO.: 220563	DATE: JULY 2023	SCALE: 1:750	DRAWING NO.: 05
DRAWN: LC	DESIGN: LC	CHECK: MB	



THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
2	2024-03-28	SC	UPDATED SITE PLAN
1	2023-09-13	LC	UPDATED SITE PLAN

DESIGN VEHICLE:



Pumper Fire Truck

	meters
Width	: 2.59
Track	: 2.59
Lock to Lock Time	: 6.0
Steering Angle	: 37.8

AUTOTURN ASSESSMENT
601 SCOTTSDALE DRIVE
GUELPH, ON

PROJECT NO.: 220563	DATE: JULY 2023	SCALE: 1:750	DRAWING NO.:
DRAWN: LC	DESIGN: LC	CHECK: MB	06

Appendix C: 2025 Background Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	102	40	205	45	167	9	1026	381	266	1073	14
Future Volume (vph)	25	102	40	205	45	167	9	1026	381	266	1073	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	35.0		0.0	160.0		150.0	195.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor	1.00				0.99							
Frt		0.958			0.882				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1780	0	1719	3009	0	1626	3223	1568	3400	3276	0
Flt Permitted	0.608			0.419			0.950			0.950		
Satd. Flow (perm)	1109	1780	0	758	3009	0	1626	3223	1568	3400	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			182				414		1	
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		101.8			339.3			467.1			460.6	
Travel Time (s)		6.1			20.4			21.0			23.7	
Confl. Peds. (#/hr)	2					2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	0%	8%	5%	7%	4%	11%	12%	3%	3%	10%	7%
Adj. Flow (vph)	27	111	43	223	49	182	10	1115	414	289	1166	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	154	0	223	231	0	10	1115	414	289	1181	0
Turn Type	Perm	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	4	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	53.0	53.0	8.0	53.0	
Minimum Split (s)	44.9	44.9		10.0	44.9		13.0	60.8	60.8	13.0	60.8	
Total Split (s)	44.9	44.9		11.0	55.9		13.0	71.8	71.8	21.0	79.8	
Total Split (%)	30.2%	30.2%		7.4%	37.6%		8.7%	48.3%	48.3%	14.1%	53.7%	
Maximum Green (s)	37.0	37.0		8.0	48.0		8.0	64.0	64.0	16.0	72.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		3.0	5.9	5.9	3.0	5.9	
All-Red Time (s)	2.9	2.9		0.0	2.9		2.0	1.9	1.9	2.0	1.9	
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)	7.9	7.9		3.0	7.9		5.0	7.8	7.8	5.0	7.8	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	3.0	3.0	4.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)	21.0	21.0			21.0			41.0	41.0		41.0	
Flash Dont Walk (s)	16.0	16.0			16.0			12.0	12.0		12.0	
Pedestrian Calls (#/hr)	0	0			0			0	0		0	
Act Effct Green (s)	17.3	17.3		33.2	28.3		8.0	80.7	80.7	19.0	99.5	
Actuated g/C Ratio	0.12	0.12		0.22	0.19		0.05	0.54	0.54	0.13	0.67	
v/c Ratio	0.21	0.71		1.01	0.32		0.11	0.64	0.40	0.67	0.54	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	61.1	75.1		117.0	13.1		70.1	27.2	3.1	69.4	15.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	61.1	75.1		117.0	13.1		70.1	27.2	3.1	69.4	15.5	
LOS	E	E		F	B		E	C	A	E	B	
Approach Delay		73.0			64.2			21.0			26.1	
Approach LOS		E			E			C			C	
Queue Length 50th (m)	7.2	40.4		~59.2	6.2		2.8	116.1	0.0	41.9	76.7	
Queue Length 95th (m)	16.3	61.5		#101.0	16.9		9.2	162.5	17.4	55.5	138.3	
Internal Link Dist (m)		77.8			315.3			443.1			436.6	
Turn Bay Length (m)	65.0			35.0			160.0		150.0	195.0		
Base Capacity (vph)	275	451		220	1094		87	1749	1040	440	2192	
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	0.10	0.34		1.01	0.21		0.11	0.64	0.40	0.66	0.54	

Intersection Summary

Area Type: Other
Cycle Length: 148.7
Actuated Cycle Length: 148.7
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 31.0 Intersection LOS: C
Intersection Capacity Utilization 93.7% ICU Level of Service F
Analysis Period (min) 15

~ 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.

Splits and Phases: 1: Highway 6 & Stone Road West

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	102	40	205	45	167	9	1026	381	266	1073	14
Future Volume (veh/h)	25	102	40	205	45	167	9	1026	381	266	1073	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1900	1781	1826	1796	1841	1737	1722	1856	1856	1752	1796
Adj Flow Rate, veh/h	27	111	43	223	49	182	10	1115	414	289	1166	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	0	8	5	7	4	11	12	3	3	10	7
Cap, veh/h	136	149	58	180	322	286	282	1878	903	337	1626	21
Arrive On Green	0.11	0.11	0.11	0.05	0.19	0.19	0.17	0.57	0.57	0.10	0.48	0.48
Sat Flow, veh/h	1128	1302	504	1739	1706	1517	1654	3272	1572	3428	3365	43
Grp Volume(v), veh/h	27	0	154	223	49	182	10	1115	414	289	577	604
Grp Sat Flow(s),veh/h/ln	1128	0	1806	1739	1706	1517	1654	1636	1572	1714	1664	1744
Q Serve(g_s), s	3.4	0.0	12.3	8.0	3.6	16.5	0.8	32.8	22.7	12.4	40.8	40.8
Cycle Q Clear(g_c), s	8.8	0.0	12.3	8.0	3.6	16.5	0.8	32.8	22.7	12.4	40.8	40.8
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	136	0	207	180	322	286	282	1878	903	337	804	843
V/C Ratio(X)	0.20	0.00	0.74	1.24	0.15	0.64	0.04	0.59	0.46	0.86	0.72	0.72
Avail Cap(c_a), veh/h	287	0	448	180	550	489	282	1878	903	368	804	843
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.9	0.0	63.8	62.0	50.5	55.7	51.6	20.5	18.4	66.1	30.4	30.4
Incr Delay (d2), s/veh	0.7	0.0	5.2	144.5	0.2	2.3	0.1	1.4	1.7	17.6	5.4	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	0.0	9.5	16.1	2.6	10.1	0.5	16.4	12.0	9.9	22.1	22.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.6	0.0	69.0	206.5	50.7	58.1	51.7	21.9	20.0	83.7	35.9	35.7
LnGrp LOS	E	A	E	F	D	E	D	C	C	F	D	D
Approach Vol, veh/h		181			454			1539			1470	
Approach Delay, s/veh		68.5			130.2			21.6			45.2	
Approach LOS		E			F			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	8
Phs Duration (G+Y+Rc), s	19.7	93.3	11.0	25.0	33.2	79.8	36.0
Change Period (Y+Rc), s	5.0	* 7.8	3.0	7.9	* 7.8	* 7.8	7.9
Max Green Setting (Gmax), s	16.0	* 64	8.0	37.0	* 8	* 72	48.0
Max Q Clear Time (g_c+I1), s	14.4	34.8	10.0	14.3	2.8	42.8	18.5
Green Ext Time (p_c), s	0.3	14.2	0.0	1.1	0.0	11.1	1.7

Intersection Summary	
HCM 6th Ctrl Delay	47.0
HCM 6th LOS	D

Notes

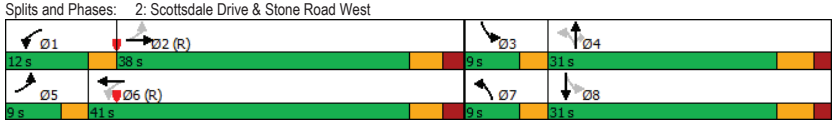
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	612	71	109	305	49	69	153	147	96	100	43
Future Volume (vph)	66	612	71	109	305	49	69	153	147	96	100	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	27.5		0.0	25.0		0.0	30.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			25.0			60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		0.97		0.98	0.99	0.98	
Frt		0.984			0.979				0.850		0.955	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	3363	0	1736	3194	0	1752	1827	1568	1626	1669	0
Flt Permitted	0.508			0.273			0.567			0.537		
Satd. Flow (perm)	866	3363	0	497	3194	0	1013	1827	1529	910	1669	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			24				173		24	
Link Speed (k/h)		60			60			41			41	
Link Distance (m)		339.3			210.0			117.2			40.4	
Travel Time (s)		20.4			12.6			10.3			3.5	
Confl. Peds. (#/hr)	11		14	14		11	37		12	12		37
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	10%	5%	8%	4%	9%	16%	3%	4%	3%	11%	4%	14%
Adj. Flow (vph)	78	720	84	128	359	58	81	180	173	113	118	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	804	0	128	417	0	81	180	173	113	169	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		
Detector Phase	5	2		1	6		7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	10.0	10.0	6.0	10.0	
Minimum Split (s)	9.0	27.1		9.0	27.1		9.0	31.0	31.0	9.0	31.0	
Total Split (s)	9.0	38.0		12.0	41.0		9.0	31.0	31.0	9.0	31.0	
Total Split (%)	10.0%	42.2%		13.3%	45.6%		10.0%	34.4%	34.4%	10.0%	34.4%	
Maximum Green (s)	6.0	31.9		9.0	34.9		6.0	25.0	25.0	6.0	25.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.0	2.0	0.0	2.0	
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)	3.0	6.1		3.0	6.1		3.0	6.0	6.0	3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	
Walk Time (s)		7.0			7.0			9.0	9.0		9.0	
Flash Dont Walk (s)		14.0			14.0			16.0	16.0		16.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effct Green (s)	55.5	45.1		57.9	47.8		22.2	14.4	14.4	22.2	14.4	
Actuated g/C Ratio	0.62	0.50		0.64	0.53		0.25	0.16	0.16	0.25	0.16	
v/c Ratio	0.13	0.48		0.30	0.24		0.27	0.62	0.44	0.42	0.59	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	7.7	17.2		8.8	13.2		24.9	44.1	9.0	28.7	38.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	7.7	17.2		8.8	13.2		24.9	44.1	9.0	28.7	38.0	
LOS	A	B		A	B		C	D	A	C	D	
Approach Delay		16.4			12.2			26.5			34.3	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	4.5	45.6		7.5	19.3		10.2	29.1	0.0	14.6	23.1	
Queue Length 95th (m)	10.4	67.3		15.6	31.2		17.9	43.0	13.0	23.6	36.9	
Internal Link Dist (m)		315.3			186.0			93.2			16.4	
Turn Bay Length (m)	27.5			25.0			30.0			20.0		
Base Capacity (vph)	596	1692		452	1708		298	507	549	272	480	
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	0.13	0.48		0.28	0.24		0.27	0.36	0.32	0.42	0.35	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 19.7		Intersection LOS: B	
Intersection Capacity Utilization 64.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Scottsdale Drive & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	612	71	109	305	49	69	153	147	96	100	43
Future Volume (veh/h)	66	612	71	109	305	49	69	153	147	96	100	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	0.97		0.95	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1826	1781	1841	1767	1663	1856	1841	1856	1737	1841	1693
Adj Flow Rate, veh/h	78	720	84	128	359	58	81	180	173	113	118	51
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	10	5	8	4	9	16	3	4	3	11	4	14
Cap, veh/h	511	1383	161	375	1300	208	358	415	337	322	281	122
Arrive On Green	0.06	0.44	0.44	0.06	0.45	0.45	0.06	0.23	0.23	0.07	0.23	0.23
Sat Flow, veh/h	1668	3124	364	1753	2893	463	1767	1841	1495	1654	1199	518
Grp Volume(v), veh/h	78	400	404	128	207	210	81	180	173	113	0	169
Grp Sat Flow(s),veh/h/ln	1668	1735	1753	1753	1678	1678	1767	1841	1495	1654	0	1717
Q Serve(g_s), s	2.2	15.0	15.0	3.5	7.0	7.1	3.1	7.6	9.1	4.7	0.0	7.5
Cycle Q Clear(g_c), s	2.2	15.0	15.0	3.5	7.0	7.1	3.1	7.6	9.1	4.7	0.0	7.5
Prop In Lane	1.00		0.21	1.00		0.28	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	511	768	776	375	754	754	358	415	337	322	0	403
V/C Ratio(X)	0.15	0.52	0.52	0.34	0.27	0.28	0.23	0.43	0.51	0.35	0.00	0.42
Avail Cap(c_a), veh/h	526	768	776	439	754	754	374	511	415	322	0	477
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.1	18.2	18.2	13.4	15.6	15.6	24.5	29.9	30.5	24.5	0.0	29.2
Incr Delay (d2), s/veh	0.1	2.5	2.5	0.5	0.9	0.9	0.3	0.7	1.2	0.6	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	8.9	8.9	1.9	4.0	4.1	2.3	5.9	5.8	3.2	0.0	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	20.7	20.7	13.9	16.5	16.5	24.8	30.6	31.7	25.2	0.0	29.9
LnGrp LOS	B	C	C	B	B	B	C	C	C	C	A	C
Approach Vol, veh/h		882			545			434			282	
Approach Delay, s/veh		19.9			15.9			30.0			28.0	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	45.9	9.0	26.3	8.1	46.5	8.2	27.1
Change Period (Y+Rc), s	3.0	* 6.1	3.0	6.0	3.0	* 6.1	3.0	6.0
Max Green Setting (Gmax), s	9.0	* 32	6.0	25.0	6.0	* 35	6.0	25.0
Max Q Clear Time (g_c+I1), s	5.5	17.0	6.7	11.1	4.2	9.1	5.1	9.5
Green Ext Time (p_c), s	0.1	5.1	0.0	1.8	0.0	3.0	0.0	1.0

Intersection Summary		
HCM 6th Ctrl Delay	22.0	
HCM 6th LOS	C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	144	98	159	97	28
Future Volume (vph)	15	144	98	159	97	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.878				0.970	
Flt Protected	0.995		0.950			
Satd. Flow (prot)	1532	0	1703	1776	1620	0
Flt Permitted	0.995		0.950			
Satd. Flow (perm)	1532	0	1703	1776	1620	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	74.8			68.1	69.0	
Travel Time (s)	6.7			6.1	6.2	
Confl. Peds. (#/hr)	2	1	26			26
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	21%	7%	6%	7%	6%	41%
Adj. Flow (vph)	21	203	138	224	137	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	224	0	138	224	176	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	144	98	159	97	28
Future Vol, veh/h	15	144	98	159	97	28
Conflicting Peds, #/hr	2	1	26	0	0	26
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	20	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	21	7	6	7	6	41
Mvmt Flow	21	203	138	224	137	39

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	685	184	202	0	-	0
Stage 1	183	-	-	-	-	-
Stage 2	502	-	-	-	-	-
Critical Hdwy	6.61	6.27	4.16	-	-	-
Critical Hdwy Stg 1	5.61	-	-	-	-	-
Critical Hdwy Stg 2	5.61	-	-	-	-	-
Follow-up Hdwy	3.689	3.363	2.254	-	-	-
Pot Cap-1 Maneuver	386	846	1346	-	-	-
Stage 1	805	-	-	-	-	-
Stage 2	571	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	330	827	1316	-	-	-
Mov Cap-2 Maneuver	330	-	-	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	558	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	3.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1316	-	724	-	-
HCM Lane V/C Ratio	0.105	-	0.309	-	-
HCM Control Delay (s)	8.1	-	12.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.3	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	5	8	0	7	6	247	15	11	226	4
Future Volume (vph)	3	0	5	8	0	7	6	247	15	11	226	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.914				0.850		0.992			0.997	
Flt Protected		0.982			0.950			0.999		0.950		
Satd. Flow (prot)	0	1672	0	0	1203	1615	0	1757	0	1656	1768	0
Flt Permitted		0.982			0.950			0.999		0.950		
Satd. Flow (perm)	0	1672	0	0	1203	1615	0	1757	0	1656	1768	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		32.3			45.9			70.2			68.1	
Travel Time (s)		2.9			4.1			6.3			6.1	
Confl. Peds. (#/hr)			1	1			26		12	12		26
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	2%	2%	2%	50%	2%	0%	14%	7%	7%	9%	7%	14%
Adj. Flow (vph)	4	0	7	11	0	10	8	343	21	15	314	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	11	10	0	372	0	15	320	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	5	8	0	7	6	247	15	11	226	4
Future Vol, veh/h	3	0	5	8	0	7	6	247	15	11	226	4
Conflicting Peds, #/hr	0	0	1	1	0	0	26	0	12	12	0	26
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	20	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	50	2	0	14	7	7	9	7	14
Mvmt Flow	4	0	7	11	0	10	8	343	21	15	314	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	748	765	344	734	758	366	346	0	0	376	0	0
Stage 1	373	373	-	382	382	-	-	-	-	-	-	-
Stage 2	375	392	-	352	376	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.6	6.52	6.2	4.24	-	-	4.19	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.6	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.6	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.95	4.018	3.3	2.326	-	-	2.281	-	-
Pot Cap-1 Maneuver	329	333	699	282	336	684	1149	-	-	1145	-	-
Stage 1	648	618	-	554	613	-	-	-	-	-	-	-
Stage 2	646	606	-	576	616	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	312	315	683	271	318	677	1124	-	-	1133	-	-
Mov Cap-2 Maneuver	312	315	-	271	318	-	-	-	-	-	-	-
Stage 1	628	596	-	543	601	-	-	-	-	-	-	-
Stage 2	631	594	-	562	594	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.8	14.9	0.2	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1124	-	-	472	271	677	1133	-	-
HCM Lane V/C Ratio	0.007	-	-	0.024	0.041	0.014	0.013	-	-
HCM Control Delay (s)	8.2	0	-	12.8	18.9	10.4	8.2	-	-
HCM Lane LOS	A	A	-	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	0	-	-

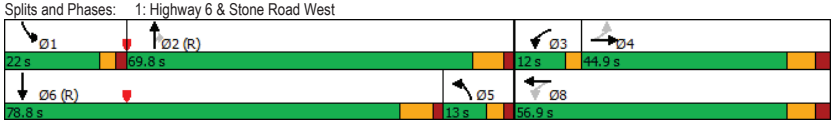
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	82	30	341	133	331	33	1241	311	379	1304	18
Future Volume (vph)	19	82	30	341	133	331	33	1241	311	379	1304	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	35.0		0.0	160.0		150.0	195.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor	0.99				0.98							
Frt		0.959			0.893				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1794	0	1787	3123	0	1805	3438	1583	3467	3466	0
Flt Permitted	0.428			0.494			0.950			0.950		
Satd. Flow (perm)	807	1794	0	929	3123	0	1805	3438	1583	3467	3466	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			270				338		1	
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		101.8			339.3			467.1			460.6	
Travel Time (s)		6.1			20.4			21.0			23.7	
Confl. Peds. (#/hr)	12					12						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	1%	2%	1%	0%	5%	2%	1%	4%	0%
Adj. Flow (vph)	21	89	33	371	145	360	36	1349	338	412	1417	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	122	0	371	505	0	36	1349	338	412	1437	0
Turn Type	Perm	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	4	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	53.0	53.0	8.0	53.0	
Minimum Split (s)	44.9	44.9		10.0	44.9		13.0	60.8	60.8	13.0	60.8	
Total Split (s)	44.9	44.9		12.0	56.9		13.0	69.8	69.8	22.0	78.8	
Total Split (%)	30.2%	30.2%		8.1%	38.3%		8.7%	46.9%	46.9%	14.8%	53.0%	
Maximum Green (s)	37.0	37.0		9.0	49.0		8.0	62.0	62.0	17.0	71.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		3.0	5.9	5.9	3.0	5.9	
All-Red Time (s)	2.9	2.9		0.0	2.9		2.0	1.9	1.9	2.0	1.9	
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)	7.9	7.9		3.0	7.9		5.0	7.8	7.8	5.0	7.8	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	3.0	3.0	4.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)	21.0	21.0			21.0			41.0	41.0		41.0	
Flash Dont Walk (s)	16.0	16.0			16.0			12.0	12.0		12.0	
Pedestrian Calls (#/hr)	0	0			0			0	0		0	
Act Effct Green (s)	14.8	14.8		31.7	26.8		8.0	74.2	74.2	27.0	95.8	
Actuated g/C Ratio	0.10	0.10		0.21	0.18		0.05	0.50	0.50	0.18	0.64	
v/c Ratio	0.26	0.65		1.49	0.64		0.37	0.79	0.35	0.66	0.64	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	68.3	73.1		278.1	29.2		79.2	35.6	3.3	62.0	18.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	68.3	73.1		278.1	29.2		79.2	35.6	3.3	62.0	18.9	
LOS	E	E		F	C		E	D	A	E	B	
Approach Delay		72.4			134.6			30.2			28.5	
Approach LOS		E			F			C			C	
Queue Length 50th (m)	5.8	31.4		~148.9	33.6		10.3	164.8	0.0	58.3	132.3	
Queue Length 95th (m)	14.2	50.6		#200.0	50.2		22.6	216.0	16.9	74.6	173.3	
Internal Link Dist (m)		77.8			315.3			443.1			436.6	
Turn Bay Length (m)	65.0			35.0			160.0		150.0	195.0		
Base Capacity (vph)	200	455		249	1210		97	1716	959	628	2233	
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	0.10	0.27		1.49	0.42		0.37	0.79	0.35	0.66	0.64	

Intersection Summary		
Area Type:	Other	
Cycle Length: 148.7		
Actuated Cycle Length: 148.7		
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.49		
Intersection Signal Delay: 50.8	Intersection LOS: D	
Intersection Capacity Utilization 99.5%	ICU Level of Service F	
Analysis Period (min) 15		

~ 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.

Splits and Phases: 1: Highway 6 & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	82	30	341	133	331	33	1241	311	379	1304	18
Future Volume (veh/h)	19	82	30	341	133	331	33	1241	311	379	1304	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1885	1856	1885	1870	1885	1900	1826	1870	1885	1841	1900
Adj Flow Rate, veh/h	21	89	33	371	145	360	36	1349	338	412	1417	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	1	3	1	2	1	0	5	2	1	4	0
Cap, veh/h	111	265	98	340	504	444	149	1608	735	397	1682	24
Arrive On Green	0.20	0.20	0.20	0.06	0.28	0.28	0.08	0.46	0.46	0.11	0.48	0.48
Sat Flow, veh/h	903	1304	484	1795	1777	1565	1810	3469	1585	3483	3531	50
Grp Volume(v), veh/h	21	0	122	371	145	360	36	1349	338	412	701	736
Grp Sat Flow(s),veh/h/ln	903	0	1788	1795	1777	1565	1810	1735	1585	1742	1749	1832
Q Serve(g_s), s	3.3	0.0	8.7	9.0	9.5	31.9	2.8	50.9	21.7	17.0	52.2	52.3
Cycle Q Clear(g_c), s	23.2	0.0	8.7	9.0	9.5	31.9	2.8	50.9	21.7	17.0	52.2	52.3
Prop In Lane	1.00		0.27	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	111	0	363	340	504	444	149	1608	735	397	833	873
V/C Ratio(X)	0.19	0.00	0.34	1.09	0.29	0.81	0.24	0.84	0.46	1.04	0.84	0.84
Avail Cap(c_a), veh/h	152	0	444	340	584	515	149	1608	735	397	833	873
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.1	0.0	50.8	57.0	41.6	49.7	64.0	35.1	27.3	66.0	34.1	34.1
Incr Delay (d2), s/veh	0.8	0.0	0.5	76.0	0.3	8.4	1.2	5.4	2.1	55.0	10.1	9.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	0.0	6.7	22.1	7.1	18.3	2.3	27.5	12.4	15.6	29.4	30.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.9	0.0	51.3	132.9	42.0	58.1	65.2	40.5	29.3	121.0	44.2	43.8
LnGrp LOS	E	A	D	F	D	E	E	D	C	F	D	D
Approach Vol, veh/h		143			876			1723			1849	
Approach Delay, s/veh		53.6			87.1			38.8			61.1	
Approach LOS		D			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	22.0	76.9	12.0	38.1	20.1	78.8		50.1				
Change Period (Y+Rc), s	5.0	* 7.8	3.0	7.9	* 7.8	* 7.8		7.9				
Max Green Setting (Gmax), s	17.0	* 62	9.0	37.0	* 8	* 71		49.0				
Max Q Clear Time (g_c+I1), s	19.0	52.9	11.0	25.2	4.8	54.3		33.9				
Green Ext Time (p_c), s	0.0	7.0	0.0	0.6	0.0	10.2		3.3				

Intersection Summary	
HCM 6th Ctrl Delay	57.5
HCM 6th LOS	E

Notes

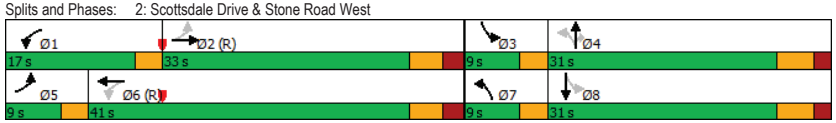
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	536	146	231	634	74	96	149	245	96	160	75
Future Volume (vph)	90	536	146	231	634	74	96	149	245	96	160	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	27.5		0.0	25.0		0.0	30.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			25.0			60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98				0.99		0.98		0.97	0.99	0.99	
Frt		0.968			0.984				0.850		0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3440	0	1787	3383	0	1805	1845	1599	1687	1788	0
Flt Permitted	0.346			0.278			0.388			0.611		
Satd. Flow (perm)	646	3440	0	523	3383	0	726	1845	1551	1069	1788	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			16				263		26	
Link Speed (k/h)		60			60			41			41	
Link Distance (m)		339.3			210.0			117.2			40.4	
Travel Time (s)		20.4			12.6			10.3			3.5	
Confl. Peds. (#/hr)	25					25	22		17	17		22
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	0%	1%	4%	6%	0%	3%	1%	7%	0%	0%
Adj. Flow (vph)	97	576	157	248	682	80	103	160	263	103	172	81
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	733	0	248	762	0	103	160	263	103	253	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		
Detector Phase	5	2		1	6		7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	10.0	10.0	6.0	10.0	
Minimum Split (s)	9.0	27.1		9.0	27.1		9.0	31.0	31.0	9.0	31.0	
Total Split (s)	9.0	33.0		17.0	41.0		9.0	31.0	31.0	9.0	31.0	
Total Split (%)	10.0%	36.7%		18.9%	45.6%		10.0%	34.4%	34.4%	10.0%	34.4%	
Maximum Green (s)	6.0	26.9		14.0	34.9		6.0	25.0	25.0	6.0	25.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.0	2.0	0.0	2.0	
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)	3.0	6.1		3.0	6.1		3.0	6.0	6.0	3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	
Walk Time (s)		7.0			7.0			9.0	9.0		9.0	
Flash Dont Walk (s)		14.0			14.0			16.0	16.0		16.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effct Green (s)	50.0	39.7		56.9	45.4		24.6	16.8	16.8	24.6	16.8	
Actuated g/C Ratio	0.56	0.44		0.63	0.50		0.27	0.19	0.19	0.27	0.19	
v/c Ratio	0.21	0.48		0.51	0.44		0.38	0.47	0.52	0.31	0.71	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	10.0	20.5		12.4	17.4		25.2	35.9	7.8	23.7	41.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	10.0	20.5		12.4	17.4		25.2	35.9	7.8	23.7	41.5	
LOS	A	C		B	B		C	D	A	C	D	
Approach Delay		19.3			16.2			19.7			36.3	
Approach LOS		B			B			B			D	
Queue Length 50th (m)	6.2	44.2		17.4	44.6		12.5	24.5	0.0	12.6	36.6	
Queue Length 95th (m)	14.6	74.3		34.3	69.1		21.4	38.9	17.4	21.5	55.7	
Internal Link Dist (m)		315.3			186.0			93.2			16.4	
Turn Bay Length (m)	27.5			25.0			30.0			20.0		
Base Capacity (vph)	452	1537		532	1715		270	512	620	333	515	
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	0.21	0.48		0.47	0.44		0.38	0.31	0.42	0.31	0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 35 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Scottsdale Drive & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	536	146	231	634	74	96	149	245	96	160	75
Future Volume (veh/h)	90	536	146	231	634	74	96	149	245	96	160	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1885	1841	1811	1900	1856	1885	1796	1900	1900
Adj Flow Rate, veh/h	97	576	157	248	682	80	103	160	263	103	172	81
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	2	0	1	4	6	0	3	1	7	0	0
Cap, veh/h	396	1101	299	441	1397	164	310	431	360	332	281	132
Arrive On Green	0.06	0.40	0.40	0.10	0.44	0.44	0.06	0.23	0.23	0.06	0.23	0.23
Sat Flow, veh/h	1810	2741	744	1795	3147	369	1810	1856	1552	1711	1209	569
Grp Volume(v), veh/h	97	373	360	248	379	383	103	160	263	103	0	253
Grp Sat Flow(s),veh/h/ln	1810	1777	1708	1795	1749	1767	1810	1856	1552	1711	0	1778
Q Serve(g_s), s	2.7	14.3	14.4	6.8	13.8	13.9	3.8	6.5	14.1	4.1	0.0	11.5
Cycle Q Clear(g_c), s	2.7	14.3	14.4	6.8	13.8	13.9	3.8	6.5	14.1	4.1	0.0	11.5
Prop In Lane	1.00		0.44	1.00		0.21	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	396	714	686	441	776	784	310	431	360	332	0	414
V/C Ratio(X)	0.24	0.52	0.52	0.56	0.49	0.49	0.33	0.37	0.73	0.31	0.00	0.61
Avail Cap(c_a), veh/h	407	714	686	535	776	784	320	515	431	340	0	494
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.4	20.4	20.4	14.0	17.8	17.8	24.6	29.0	32.0	24.1	0.0	30.9
Incr Delay (d2), s/veh	0.3	2.7	2.9	1.1	2.2	2.2	0.6	0.5	5.0	0.5	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	9.0	8.8	3.7	8.3	8.4	2.9	5.1	9.4	2.9	0.0	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.7	23.1	23.3	15.1	20.0	20.0	25.2	29.6	37.0	24.6	0.0	32.5
LnGrp LOS	B	C	C	B	B	B	C	C	D	C	A	C
Approach Vol, veh/h		830			1010			526			356	
Approach Delay, s/veh		22.2			18.8			32.4			30.2	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.2	42.3	8.6	26.9	8.5	46.0	8.5	26.9
Change Period (Y+Rc), s	3.0	* 6.1	3.0	6.0	3.0	* 6.1	3.0	6.0
Max Green Setting (Gmax), s	14.0	* 27	6.0	25.0	6.0	* 35	6.0	25.0
Max Q Clear Time (g_c+I1), s	8.8	16.4	6.1	16.1	4.7	15.9	5.8	13.5
Green Ext Time (p_c), s	0.4	3.8	0.0	1.7	0.0	5.3	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	23.9
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	17	131	136	182	187	20
Future Volume (vph)	17	131	136	182	187	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.880				0.987	
Flt Protected	0.994		0.950			
Satd. Flow (prot)	1599	0	1770	1827	1790	0
Flt Permitted	0.994		0.950			
Satd. Flow (perm)	1599	0	1770	1827	1790	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	74.8			68.1	69.0	
Travel Time (s)	6.7			6.1	6.2	
Confl. Peds. (#/hr)	3	9	11			11
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	19%	2%	2%	4%	3%	21%
Adj. Flow (vph)	19	149	155	207	213	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	168	0	155	207	236	0
Sign Control	Stop			Free	Free	

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

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	131	136	182	187	20
Future Vol, veh/h	17	131	136	182	187	20
Conflicting Peds, #/hr	3	9	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	20	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	19	2	2	4	3	21
Mvmt Flow	19	149	155	207	213	23

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	756	245	247	0	-	0
Stage 1	236	-	-	-	-	-
Stage 2	520	-	-	-	-	-
Critical Hdwy	6.59	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.59	-	-	-	-	-
Critical Hdwy Stg 2	5.59	-	-	-	-	-
Follow-up Hdwy	3.671	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	353	794	1319	-	-	-
Stage 1	765	-	-	-	-	-
Stage 2	564	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	305	781	1307	-	-	-
Mov Cap-2 Maneuver	305	-	-	-	-	-
Stage 1	668	-	-	-	-	-
Stage 2	559	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	3.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1307	-	662	-	-
HCM Lane V/C Ratio	0.118	-	0.254	-	-
HCM Control Delay (s)	8.1	-	12.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	7	45	0	53	5	260	48	34	279	5
Future Volume (vph)	5	0	7	45	0	53	5	260	48	34	279	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.923				0.850		0.979			0.997	
Flt Protected		0.979			0.950			0.999		0.950		
Satd. Flow (prot)	0	1331	0	0	1805	1583	0	1806	0	1805	1832	0
Flt Permitted		0.979			0.950			0.999		0.950		
Satd. Flow (perm)	0	1331	0	0	1805	1583	0	1806	0	1805	1832	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		32.3			45.9			70.2			68.1	
Travel Time (s)		2.9			4.1			6.3			6.1	
Confl. Peds. (#/hr)							11		12	12		11
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	29%	2%	29%	0%	2%	2%	25%	3%	0%	0%	3%	25%
Adj. Flow (vph)	6	0	8	51	0	60	6	292	54	38	313	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	0	51	60	0	352	0	38	319	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	34.7%	ICU Level of Service A	
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	7	45	0	53	5	260	48	34	279	5
Future Vol, veh/h	5	0	7	45	0	53	5	260	48	34	279	5
Conflicting Peds, #/hr	0	0	0	0	0	0	11	0	12	12	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	20	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	29	2	29	0	2	2	25	3	0	0	3	25
Mvmt Flow	6	0	8	51	0	60	6	292	54	38	313	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	764	773	327	739	749	331	330	0	0	358	0	0
Stage 1	403	403	-	343	343	-	-	-	-	-	-	-
Stage 2	361	370	-	396	406	-	-	-	-	-	-	-
Critical Hdwy	7.39	6.52	6.49	7.1	6.52	6.22	4.35	-	-	4.1	-	-
Critical Hdwy Stg 1	6.39	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.39	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.761	4.018	3.561	3.5	4.018	3.318	2.425	-	-	2.2	-	-
Pot Cap-1 Maneuver	290	330	656	336	341	711	1111	-	-	1212	-	-
Stage 1	574	600	-	676	637	-	-	-	-	-	-	-
Stage 2	605	620	-	633	598	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	255	311	650	319	322	704	1101	-	-	1200	-	-
Mov Cap-2 Maneuver	255	311	-	319	322	-	-	-	-	-	-	-
Stage 1	565	575	-	665	626	-	-	-	-	-	-	-
Stage 2	550	609	-	606	573	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.4	14.2	0.1	0.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1101	-	-	395	319	704	1200	-	-
HCM Lane V/C Ratio	0.005	-	-	0.034	0.159	0.085	0.032	-	-
HCM Control Delay (s)	8.3	0	-	14.4	18.4	10.6	8.1	-	-
HCM Lane LOS	A	A	-	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.6	0.3	0.1	-	-

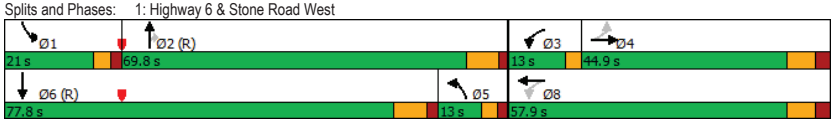
Appendix D: 2025 Total Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	103	40	208	46	169	9	1026	384	267	1073	14
Future Volume (vph)	25	103	40	208	46	169	9	1026	384	267	1073	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	35.0		0.0	160.0		150.0	195.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor	1.00				0.99							
Frt		0.958			0.882				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1781	0	1719	3008	0	1626	3223	1568	3400	3276	0
Flt Permitted	0.606			0.417			0.950			0.950		
Satd. Flow (perm)	1105	1781	0	755	3008	0	1626	3223	1568	3400	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			184				417		1	
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		101.8			339.3			467.1			460.6	
Travel Time (s)		6.1			20.4			21.0			23.7	
Confl. Peds. (#/hr)	2					2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	0%	8%	5%	7%	4%	11%	12%	3%	3%	10%	7%
Adj. Flow (vph)	27	112	43	226	50	184	10	1115	417	290	1166	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	155	0	226	234	0	10	1115	417	290	1181	0
Turn Type	Perm	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	4	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	53.0	53.0	8.0	53.0	
Minimum Split (s)	44.9	44.9		10.0	44.9		13.0	60.8	60.8	13.0	60.8	
Total Split (s)	44.9	44.9		13.0	57.9		13.0	69.8	69.8	21.0	77.8	
Total Split (%)	30.2%	30.2%		8.7%	38.9%		8.7%	46.9%	46.9%	14.1%	52.3%	
Maximum Green (s)	37.0	37.0		10.0	50.0		8.0	62.0	62.0	16.0	70.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		3.0	5.9	5.9	3.0	5.9	
All-Red Time (s)	2.9	2.9		0.0	2.9		2.0	1.9	1.9	2.0	1.9	
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)	7.9	7.9		3.0	7.9		5.0	7.8	7.8	5.0	7.8	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	3.0	3.0	4.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)	21.0	21.0			21.0			41.0	41.0		41.0	
Flash Dont Walk (s)	16.0	16.0			16.0			12.0	12.0		12.0	
Pedestrian Calls (#/hr)	0	0			0			0	0		0	
Act Effct Green (s)	17.4	17.4		35.3	30.4		8.0	78.6	78.6	19.0	97.4	
Actuated g/C Ratio	0.12	0.12		0.24	0.20		0.05	0.53	0.53	0.13	0.66	
v/c Ratio	0.21	0.71		0.93	0.31		0.11	0.66	0.41	0.67	0.55	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	61.0	75.1		93.3	12.6		70.1	29.0	3.2	69.3	16.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	61.0	75.1		93.3	12.6		70.1	29.0	3.2	69.3	16.7	
LOS	E	E		F	B		E	C	A	E	B	
Approach Delay		73.0			52.3			22.3			27.1	
Approach LOS		E			D			C			C	
Queue Length 50th (m)	7.2	40.7		58.2	6.2		2.8	120.0	0.0	42.1	81.1	
Queue Length 95th (m)	16.2	61.7		#93.1	16.7		9.2	167.1	17.9	55.7	143.4	
Internal Link Dist (m)		77.8			315.3			443.1			436.6	
Turn Bay Length (m)	65.0			35.0			160.0		150.0	195.0		
Base Capacity (vph)	274	452		244	1133		87	1702	1025	441	2146	
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	0.10	0.34		0.93	0.21		0.11	0.66	0.41	0.66	0.55	

Intersection Summary		
Area Type:	Other	
Cycle Length: 148.7		
Actuated Cycle Length: 148.7		
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.93		
Intersection Signal Delay: 30.5	Intersection LOS: C	
Intersection Capacity Utilization 93.7%	ICU Level of Service F	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 1: Highway 6 & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	103	40	208	46	169	9	1026	384	267	1073	14
Future Volume (veh/h)	25	103	40	208	46	169	9	1026	384	267	1073	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1900	1781	1826	1796	1841	1737	1722	1856	1856	1752	1796
Adj Flow Rate, veh/h	27	112	43	226	50	184	10	1115	417	290	1166	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	0	8	5	7	4	11	12	3	3	10	7
Cap, veh/h	152	151	58	204	346	307	281	1832	880	338	1581	20
Arrive On Green	0.12	0.12	0.12	0.07	0.20	0.20	0.17	0.56	0.56	0.10	0.47	0.47
Sat Flow, veh/h	1124	1305	501	1739	1706	1518	1654	3272	1572	3428	3365	43
Grp Volume(v), veh/h	27	0	155	226	50	184	10	1115	417	290	577	604
Grp Sat Flow(s),veh/h/ln	1124	0	1807	1739	1706	1518	1654	1636	1572	1714	1664	1744
Q Serve(g_s), s	3.3	0.0	12.4	10.0	3.6	16.4	0.8	33.9	23.7	12.4	41.9	41.9
Cycle Q Clear(g_c), s	6.7	0.0	12.4	10.0	3.6	16.4	0.8	33.9	23.7	12.4	41.9	41.9
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	152	0	208	204	346	307	281	1832	880	338	782	819
V/C Ratio(X)	0.18	0.00	0.74	1.11	0.14	0.60	0.04	0.61	0.47	0.86	0.74	0.74
Avail Cap(c_a), veh/h	302	0	449	204	573	509	281	1832	880	368	782	819
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.9	0.0	63.8	60.2	48.8	53.9	51.6	21.9	19.6	66.1	32.0	32.0
Incr Delay (d2), s/veh	0.5	0.0	5.2	95.3	0.2	1.9	0.1	1.5	1.8	17.7	6.1	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	0.0	9.6	13.0	2.6	10.0	0.5	17.1	12.5	9.9	22.8	23.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.4	0.0	69.0	155.5	49.0	55.8	51.7	23.4	21.5	83.8	38.2	37.9
LnGrp LOS	E	A	E	F	D	E	D	C	C	F	D	D
Approach Vol, veh/h		182			460			1542			1471	
Approach Delay, s/veh		68.1			104.1			23.1			47.1	
Approach LOS		E			F			C			D	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	19.7	91.2	13.0	25.1	33.1	77.8		38.1				
Change Period (Y+Rc), s	5.0	* 7.8	3.0	7.9	* 7.8	* 7.8		7.9				
Max Green Setting (Gmax), s	16.0	* 62	10.0	37.0	* 8	* 70		50.0				
Max Q Clear Time (g_c+I1), s	14.4	35.9	12.0	14.4	2.8	43.9		18.4				
Green Ext Time (p_c), s	0.3	13.4	0.0	1.1	0.0	10.6		1.8				

Intersection Summary	
HCM 6th Ctrl Delay	45.2
HCM 6th LOS	D

Notes

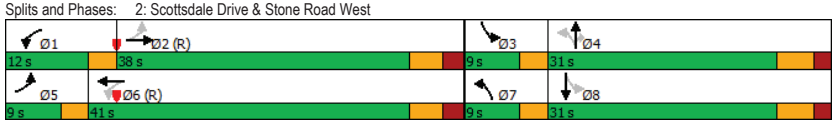
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	612	71	109	305	52	69	153	147	99	100	49
Future Volume (vph)	71	612	71	109	305	52	69	153	147	99	100	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	27.5		0.0	25.0		0.0	30.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			25.0			60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		0.97		0.98	0.99	0.98	
Frt		0.984			0.978				0.850		0.951	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	3363	0	1736	3189	0	1752	1827	1568	1626	1656	0
Flt Permitted	0.506			0.274			0.548			0.537		
Satd. Flow (perm)	863	3363	0	499	3189	0	980	1827	1529	910	1656	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			25				173		27	
Link Speed (k/h)		60			60			41			41	
Link Distance (m)		339.3			210.0			117.2			40.4	
Travel Time (s)		20.4			12.6			10.3			3.5	
Confl. Peds. (#/hr)	11		14	14		11	37		12	12		37
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	10%	5%	8%	4%	9%	16%	3%	4%	3%	11%	4%	14%
Adj. Flow (vph)	84	720	84	128	359	61	81	180	173	116	118	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	804	0	128	420	0	81	180	173	116	176	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		
Detector Phase	5	2		1	6		7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	10.0	10.0	6.0	10.0	
Minimum Split (s)	9.0	27.1		9.0	27.1		9.0	31.0	31.0	9.0	31.0	
Total Split (s)	9.0	38.0		12.0	41.0		9.0	31.0	31.0	9.0	31.0	
Total Split (%)	10.0%	42.2%		13.3%	45.6%		10.0%	34.4%	34.4%	10.0%	34.4%	
Maximum Green (s)	6.0	31.9		9.0	34.9		6.0	25.0	25.0	6.0	25.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.0	2.0	0.0	2.0	
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)	3.0	6.1		3.0	6.1		3.0	6.0	6.0	3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	
Walk Time (s)		7.0			7.0			9.0	9.0		9.0	
Flash Dont Walk (s)		14.0			14.0			16.0	16.0		16.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effct Green (s)	55.6	45.1		57.8	47.7		22.2	14.4	14.4	22.2	14.4	
Actuated g/C Ratio	0.62	0.50		0.64	0.53		0.25	0.16	0.16	0.25	0.16	
v/c Ratio	0.14	0.48		0.30	0.25		0.28	0.62	0.44	0.43	0.61	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	7.7	17.2		8.8	13.3		25.0	44.1	9.0	29.1	38.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	7.7	17.2		8.8	13.3		25.0	44.1	9.0	29.1	38.5	
LOS	A	B		A	B		C	D	A	C	D	
Approach Delay		16.3			12.2			26.5			34.7	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	4.8	45.6		7.5	19.5		10.2	29.1	0.0	15.1	23.9	
Queue Length 95th (m)	11.0	67.3		15.6	31.5		17.9	43.0	13.0	24.2	38.1	
Internal Link Dist (m)		315.3			186.0			93.2			16.4	
Turn Bay Length (m)	27.5			25.0			30.0			20.0		
Base Capacity (vph)	597	1692		453	1702		293	507	549	272	479	
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	0.14	0.48		0.28	0.25		0.28	0.36	0.32	0.43	0.37	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 19.8		Intersection LOS: B	
Intersection Capacity Utilization 64.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Scottsdale Drive & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	612	71	109	305	52	69	153	147	99	100	49
Future Volume (veh/h)	71	612	71	109	305	52	69	153	147	99	100	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	0.97		0.95	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1826	1781	1841	1767	1663	1856	1841	1856	1737	1841	1693
Adj Flow Rate, veh/h	84	720	84	128	359	61	81	180	173	116	118	58
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	10	5	8	4	9	16	3	4	3	11	4	14
Cap, veh/h	510	1383	161	375	1286	216	352	415	337	322	268	132
Arrive On Green	0.06	0.44	0.44	0.06	0.45	0.45	0.06	0.23	0.23	0.07	0.23	0.23
Sat Flow, veh/h	1668	3124	364	1753	2870	483	1767	1841	1495	1654	1144	562
Grp Volume(v), veh/h	84	400	404	128	208	212	81	180	173	116	0	176
Grp Sat Flow(s),veh/h/ln	1668	1735	1753	1753	1678	1674	1767	1841	1495	1654	0	1707
Q Serve(g_s), s	2.4	15.0	15.0	3.5	7.0	7.2	3.1	7.6	9.1	4.8	0.0	7.9
Cycle Q Clear(g_c), s	2.4	15.0	15.0	3.5	7.0	7.2	3.1	7.6	9.1	4.8	0.0	7.9
Prop In Lane	1.00		0.21	1.00		0.29	1.00		1.00	1.00		0.33
Lane Grp Cap(c), veh/h	510	768	776	375	752	750	352	415	337	322	0	400
V/C Ratio(X)	0.16	0.52	0.52	0.34	0.28	0.28	0.23	0.43	0.51	0.36	0.00	0.44
Avail Cap(c_a), veh/h	523	768	776	439	752	750	368	511	415	322	0	474
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.1	18.2	18.2	13.4	15.7	15.7	24.5	29.9	30.5	24.6	0.0	29.4
Incr Delay (d2), s/veh	0.2	2.5	2.5	0.5	0.9	0.9	0.3	0.7	1.2	0.7	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	8.9	8.9	1.9	4.1	4.2	2.3	5.9	5.8	3.3	0.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	20.7	20.7	13.9	16.6	16.6	24.8	30.6	31.7	25.3	0.0	30.2
LnGrp LOS	B	C	C	B	B	B	C	C	C	C	A	C
Approach Vol, veh/h		888			548			434			292	
Approach Delay, s/veh		19.9			16.0			30.0			28.2	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	45.9	9.0	26.3	8.3	46.4	8.2	27.1
Change Period (Y+Rc), s	3.0	* 6.1	3.0	6.0	3.0	* 6.1	3.0	6.0
Max Green Setting (Gmax), s	9.0	* 32	6.0	25.0	6.0	* 35	6.0	25.0
Max Q Clear Time (g_c+I1), s	5.5	17.0	6.8	11.1	4.4	9.2	5.1	9.9
Green Ext Time (p_c), s	0.1	5.1	0.0	1.8	0.0	3.0	0.0	1.0

Intersection Summary		
HCM 6th Ctrl Delay		22.0
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	144	98	167	104	28
Future Volume (vph)	15	144	98	167	104	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.878				0.972	
Flt Protected	0.995		0.950			
Satd. Flow (prot)	1532	0	1703	1776	1629	0
Flt Permitted	0.995		0.950			
Satd. Flow (perm)	1532	0	1703	1776	1629	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	74.8			68.1	69.0	
Travel Time (s)	6.7			6.1	6.2	
Confl. Peds. (#/hr)	2	1	26			26
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	21%	7%	6%	7%	6%	41%
Adj. Flow (vph)	21	203	138	235	146	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	224	0	138	235	185	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	144	98	167	104	28
Future Vol, veh/h	15	144	98	167	104	28
Conflicting Peds, #/hr	2	1	26	0	0	26
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	20	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	21	7	6	7	6	41
Mvmt Flow	21	203	138	235	146	39

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	705	193	211	0	-	0
Stage 1	192	-	-	-	-	-
Stage 2	513	-	-	-	-	-
Critical Hdwy	6.61	6.27	4.16	-	-	-
Critical Hdwy Stg 1	5.61	-	-	-	-	-
Critical Hdwy Stg 2	5.61	-	-	-	-	-
Follow-up Hdwy	3.689	3.363	2.254	-	-	-
Pot Cap-1 Maneuver	376	836	1336	-	-	-
Stage 1	797	-	-	-	-	-
Stage 2	564	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	321	817	1307	-	-	-
Mov Cap-2 Maneuver	321	-	-	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	552	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1307	-	713	-	-
HCM Lane V/C Ratio	0.106	-	0.314	-	-
HCM Control Delay (s)	8.1	-	12.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.3	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	14	8	0	7	14	247	15	11	226	11
Future Volume (vph)	11	0	14	8	0	7	14	247	15	11	226	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.925				0.850		0.993			0.993	
Flt Protected		0.978			0.950			0.998		0.950		
Satd. Flow (prot)	0	1685	0	0	1203	1615	0	1754	0	1656	1758	0
Flt Permitted		0.978			0.950			0.998		0.950		
Satd. Flow (perm)	0	1685	0	0	1203	1615	0	1754	0	1656	1758	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		32.3			45.9			70.2			68.1	
Travel Time (s)		2.9			4.1			6.3			6.1	
Confl. Peds. (#/hr)			1	1			26		12	12		26
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	2%	2%	2%	50%	2%	0%	14%	7%	7%	9%	7%	14%
Adj. Flow (vph)	15	0	19	11	0	10	19	343	21	15	314	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	11	10	0	383	0	15	329	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	0	14	8	0	7	14	247	15	11	226	11
Future Vol, veh/h	11	0	14	8	0	7	14	247	15	11	226	11
Conflicting Peds, #/hr	0	0	1	1	0	0	26	0	12	12	0	26
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	20	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	50	2	0	14	7	7	9	7	14
Mvmt Flow	15	0	19	11	0	10	19	343	21	15	314	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	775	792	349	766	789	366	355	0	0	376	0	0
Stage 1	378	378	-	404	404	-	-	-	-	-	-	-
Stage 2	397	414	-	362	385	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.6	6.52	6.2	4.24	-	-	4.19	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.6	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.6	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.95	4.018	3.3	2.326	-	-	2.281	-	-
Pot Cap-1 Maneuver	315	322	694	267	323	684	1140	-	-	1145	-	-
Stage 1	644	615	-	538	599	-	-	-	-	-	-	-
Stage 2	629	593	-	569	611	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	296	301	678	250	302	677	1115	-	-	1133	-	-
Mov Cap-2 Maneuver	296	301	-	250	302	-	-	-	-	-	-	-
Stage 1	616	593	-	521	580	-	-	-	-	-	-	-
Stage 2	607	575	-	545	590	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.1	15.6	0.4	0.4
HCM LOS	B	C		

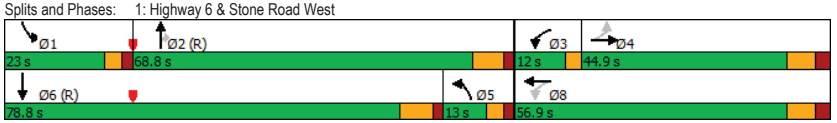
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1115	-	-	432	250	677	1133	-	-
HCM Lane V/C Ratio	0.017	-	-	0.08	0.044	0.014	0.013	-	-
HCM Control Delay (s)	8.3	0	-	14.1	20.1	10.4	8.2	-	-
HCM Lane LOS	A	A	-	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.1	0	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	84	30	351	136	336	33	1241	320	384	1304	18
Future Volume (vph)	19	84	30	351	136	336	33	1241	320	384	1304	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	35.0		0.0	160.0		150.0	195.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor	0.99				0.98							
Frt		0.960			0.893				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1796	0	1787	3123	0	1805	3438	1583	3467	3466	0
Flt Permitted	0.413			0.488			0.950			0.950		
Satd. Flow (perm)	779	1796	0	918	3123	0	1805	3438	1583	3467	3466	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			285				348		1	
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		101.8			339.3			467.1			460.6	
Travel Time (s)		6.1			20.4			21.0			23.7	
Confl. Peds. (#/hr)	12					12						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	1%	2%	1%	0%	5%	2%	1%	4%	0%
Adj. Flow (vph)	21	91	33	382	148	365	36	1349	348	417	1417	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	124	0	382	513	0	36	1349	348	417	1437	0
Turn Type	Perm	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	4	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	53.0	53.0	8.0	53.0	
Minimum Split (s)	44.9	44.9		10.0	44.9		13.0	60.8	60.8	13.0	60.8	
Total Split (s)	44.9	44.9		12.0	56.9		13.0	68.8	68.8	23.0	78.8	
Total Split (%)	30.2%	30.2%		8.1%	38.3%		8.7%	46.3%	46.3%	15.5%	53.0%	
Maximum Green (s)	37.0	37.0		9.0	49.0		8.0	61.0	61.0	18.0	71.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		3.0	5.9	5.9	3.0	5.9	
All-Red Time (s)	2.9	2.9		0.0	2.9		2.0	1.9	1.9	2.0	1.9	
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)	7.9	7.9		3.0	7.9		5.0	7.8	7.8	5.0	7.8	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	3.0	3.0	4.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)	21.0	21.0			21.0			41.0	41.0		41.0	
Flash Dont Walk (s)	16.0	16.0			16.0			12.0	12.0		12.0	
Pedestrian Calls (#/hr)	0	0			0			0	0		0	
Act Effct Green (s)	14.9	14.9		31.8	26.9		8.0	74.8	74.8	26.2	95.7	
Actuated g/C Ratio	0.10	0.10		0.21	0.18		0.05	0.50	0.50	0.18	0.64	
v/c Ratio	0.27	0.65		1.54	0.64		0.37	0.78	0.36	0.68	0.64	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	68.8	73.3		298.5	27.8		79.2	35.1	3.3	63.4	19.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	68.8	73.3		298.5	27.8		79.2	35.1	3.3	63.4	19.0	
LOS	E	E		F	C		E	D	A	E	B	
Approach Delay		72.7			143.3			29.7			29.0	
Approach LOS		E			F			C			C	
Queue Length 50th (m)	5.8	31.9		~155.7	32.4		10.3	164.6	0.0	59.3	133.0	
Queue Length 95th (m)	14.2	51.5		#207.6	49.1		22.6	217.2	17.1	75.4	173.7	
Internal Link Dist (m)		77.8			315.3			443.1			436.6	
Turn Bay Length (m)	65.0			35.0			160.0		150.0	195.0		
Base Capacity (vph)	193	455		248	1220		97	1730	969	611	2230	
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	0.11	0.27		1.54	0.42		0.37	0.78	0.36	0.68	0.64	

Intersection Summary		
Area Type:	Other	
Cycle Length: 148.7		
Actuated Cycle Length: 148.7		
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.54		
Intersection Signal Delay: 52.7	Intersection LOS: D	
Intersection Capacity Utilization 100.0%	ICU Level of Service G	
Analysis Period (min) 15		
~ 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.		

Splits and Phases: 1: Highway 6 & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	84	30	351	136	336	33	1241	320	384	1304	18
Future Volume (veh/h)	19	84	30	351	136	336	33	1241	320	384	1304	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1885	1856	1885	1870	1885	1900	1826	1870	1885	1841	1900
Adj Flow Rate, veh/h	21	91	33	382	148	365	36	1349	348	417	1417	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	1	3	1	2	1	0	5	2	1	4	0
Cap, veh/h	109	269	98	341	507	447	145	1578	721	421	1682	24
Arrive On Green	0.20	0.20	0.20	0.06	0.29	0.29	0.08	0.45	0.45	0.12	0.48	0.48
Sat Flow, veh/h	896	1313	476	1795	1777	1565	1810	3469	1585	3483	3531	50
Grp Volume(v), veh/h	21	0	124	382	148	365	36	1349	348	417	701	736
Grp Sat Flow(s),veh/h/ln	896	0	1789	1795	1777	1565	1810	1735	1585	1742	1749	1832
Q Serve(g_s), s	3.3	0.0	8.8	9.0	9.7	32.4	2.8	51.7	22.9	17.8	52.2	52.3
Cycle Q Clear(g_c), s	23.7	0.0	8.8	9.0	9.7	32.4	2.8	51.7	22.9	17.8	52.2	52.3
Prop In Lane	1.00		0.27	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	109	0	367	341	507	447	145	1578	721	421	833	873
V/C Ratio(X)	0.19	0.00	0.34	1.12	0.29	0.82	0.25	0.86	0.48	0.99	0.84	0.84
Avail Cap(c_a), veh/h	148	0	444	341	584	515	145	1578	721	421	833	873
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.2	0.0	50.6	56.8	41.5	49.6	64.3	36.2	28.4	65.4	34.1	34.1
Incr Delay (d2), s/veh	0.8	0.0	0.5	85.5	0.3	8.8	1.3	6.2	2.3	41.4	10.1	9.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	0.0	6.8	23.5	7.2	18.6	2.3	28.1	13.0	15.0	29.4	30.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.1	0.0	51.1	142.4	41.8	58.4	65.6	42.4	30.7	106.9	44.2	43.8
LnGrp LOS	E	A	D	F	D	E	E	D	C	F	D	D
Approach Vol, veh/h		145			895			1733			1854	
Approach Delay, s/veh		53.4			91.5			40.5			58.1	
Approach LOS		D			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	23.0	75.6	12.0	38.4	19.8	78.8		50.4				
Change Period (Y+Rc), s	5.0	* 7.8	3.0	7.9	* 7.8	* 7.8		7.9				
Max Green Setting (Gmax), s	18.0	* 61	9.0	37.0	* 8	* 71		49.0				
Max Q Clear Time (g_c+I1), s	19.8	53.7	11.0	25.7	4.8	54.3		34.4				
Green Ext Time (p_c), s	0.0	5.8	0.0	0.6	0.0	10.2		3.3				

Intersection Summary	
HCM 6th Ctrl Delay	57.8
HCM 6th LOS	E

Notes

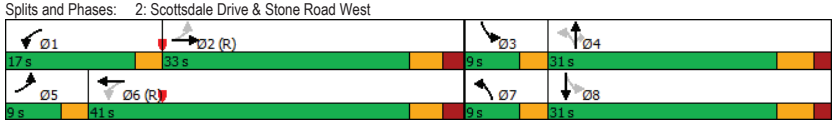
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	536	146	231	634	83	96	149	245	106	160	93
Future Volume (vph)	106	536	146	231	634	83	96	149	245	106	160	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	27.5		0.0	25.0		0.0	30.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			25.0			60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98				0.99		0.99		0.97	0.99	0.99	
Frt		0.968			0.983				0.850		0.945	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3440	0	1787	3376	0	1805	1845	1599	1687	1772	0
Flt Permitted	0.336			0.274			0.360			0.616		
Satd. Flow (perm)	627	3440	0	515	3376	0	674	1845	1551	1078	1772	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			18				263		32	
Link Speed (k/h)		60			60			41			41	
Link Distance (m)		339.3			210.0			117.2			40.4	
Travel Time (s)		20.4			12.6			10.3			3.5	
Confl. Peds. (#/hr)	25					25	22		17	17		22
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	0%	1%	4%	6%	0%	3%	1%	7%	0%	0%
Adj. Flow (vph)	114	576	157	248	682	89	103	160	263	114	172	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	733	0	248	771	0	103	160	263	114	272	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		
Detector Phase	5	2		1	6		7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	10.0	10.0	6.0	10.0	
Minimum Split (s)	9.0	27.1		9.0	27.1		9.0	31.0	31.0	9.0	31.0	
Total Split (s)	9.0	33.0		17.0	41.0		9.0	31.0	31.0	9.0	31.0	
Total Split (%)	10.0%	36.7%		18.9%	45.6%		10.0%	34.4%	34.4%	10.0%	34.4%	
Maximum Green (s)	6.0	26.9		14.0	34.9		6.0	25.0	25.0	6.0	25.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.0	2.0	0.0	2.0	
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)	3.0	6.1		3.0	6.1		3.0	6.0	6.0	3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	
Walk Time (s)		7.0			7.0			9.0	9.0		9.0	
Flash Dont Walk (s)		14.0			14.0			16.0	16.0		16.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effct Green (s)	49.4	39.0		56.1	44.6		25.4	17.6	17.6	25.4	17.6	
Actuated g/C Ratio	0.55	0.43		0.62	0.50		0.28	0.20	0.20	0.28	0.20	
v/c Ratio	0.26	0.48		0.52	0.46		0.39	0.44	0.51	0.33	0.73	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	10.7	21.0		13.1	18.0		24.8	34.7	7.4	23.6	41.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	10.7	21.0		13.1	18.0		24.8	34.7	7.4	23.6	41.2	
LOS	B	C		B	B		C	C	A	C	D	
Approach Delay		19.6			16.8			19.1			36.0	
Approach LOS		B			B			B			D	
Queue Length 50th (m)	7.5	45.0		17.8	46.5		12.4	24.2	0.0	13.9	38.7	
Queue Length 95th (m)	17.3	74.3		35.3	70.1		20.9	38.2	17.1	23.0	58.7	
Internal Link Dist (m)		315.3			186.0			93.2			16.4	
Turn Bay Length (m)	27.5			25.0			30.0			20.0		
Base Capacity (vph)	440	1513		522	1682		265	512	620	344	515	
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	0.26	0.48		0.48	0.46		0.39	0.31	0.42	0.33	0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 35 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 20.8		Intersection LOS: C	
Intersection Capacity Utilization 72.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Scottsdale Drive & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	536	146	231	634	83	96	149	245	106	160	93
Future Volume (veh/h)	106	536	146	231	634	83	96	149	245	106	160	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1885	1841	1811	1900	1856	1885	1796	1900	1900
Adj Flow Rate, veh/h	114	576	157	248	682	89	103	160	263	114	172	100
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	2	0	1	4	6	0	3	1	7	0	0
Cap, veh/h	391	1087	295	437	1358	177	300	431	360	340	264	154
Arrive On Green	0.06	0.40	0.40	0.10	0.44	0.44	0.06	0.23	0.23	0.07	0.24	0.24
Sat Flow, veh/h	1810	2740	744	1795	3104	405	1810	1856	1552	1711	1114	648
Grp Volume(v), veh/h	114	373	360	248	384	387	103	160	263	114	0	272
Grp Sat Flow(s),veh/h/ln	1810	1777	1708	1795	1749	1760	1810	1856	1552	1711	0	1762
Q Serve(g_s), s	3.3	14.4	14.5	6.9	14.2	14.3	3.8	6.5	14.1	4.5	0.0	12.5
Cycle Q Clear(g_c), s	3.3	14.4	14.5	6.9	14.2	14.3	3.8	6.5	14.1	4.5	0.0	12.5
Prop In Lane	1.00		0.44	1.00		0.23	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	391	705	678	437	765	770	300	431	360	340	0	418
V/C Ratio(X)	0.29	0.53	0.53	0.57	0.50	0.50	0.34	0.37	0.73	0.34	0.00	0.65
Avail Cap(c_a), veh/h	398	705	678	531	765	770	309	515	431	340	0	489
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.8	20.7	20.8	14.2	18.3	18.3	24.7	29.0	32.0	24.0	0.0	31.0
Incr Delay (d2), s/veh	0.4	2.8	3.0	1.2	2.3	2.3	0.7	0.5	5.0	0.6	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.9	9.0	8.8	3.8	8.6	8.6	2.9	5.1	9.4	3.2	0.0	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.2	23.5	23.7	15.4	20.6	20.6	25.4	29.6	37.0	24.6	0.0	33.4
LnGrp LOS	B	C	C	B	C	C	C	C	D	C	A	C
Approach Vol, veh/h		847			1019			526			386	
Approach Delay, s/veh		22.5			19.3			32.5			30.8	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.3	41.8	9.0	26.9	8.7	45.5	8.5	27.3
Change Period (Y+Rc), s	3.0	* 6.1	3.0	6.0	3.0	* 6.1	3.0	6.0
Max Green Setting (Gmax), s	14.0	* 27	6.0	25.0	6.0	* 35	6.0	25.0
Max Q Clear Time (g_c+I1), s	8.9	16.5	6.5	16.1	5.3	16.3	5.8	14.5
Green Ext Time (p_c), s	0.4	3.7	0.0	1.7	0.0	5.4	0.0	1.4

Intersection Summary		
HCM 6th Ctrl Delay	24.4	
HCM 6th LOS	C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	17	131	136	205	207	20
Future Volume (vph)	17	131	136	205	207	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.880				0.988	
Flt Protected	0.994		0.950			
Satd. Flow (prot)	1599	0	1770	1827	1795	0
Flt Permitted	0.994		0.950			
Satd. Flow (perm)	1599	0	1770	1827	1795	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	74.8			68.1	69.0	
Travel Time (s)	6.7			6.1	6.2	
Confl. Peds. (#/hr)	3	9	11			11
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	19%	2%	2%	4%	3%	21%
Adj. Flow (vph)	19	149	155	233	235	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	168	0	155	233	258	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	131	136	205	207	20
Future Vol, veh/h	17	131	136	205	207	20
Conflicting Peds, #/hr	3	9	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	20	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	19	2	2	4	3	21
Mvmt Flow	19	149	155	233	235	23

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	804	267	269	0	-	0
Stage 1	258	-	-	-	-	-
Stage 2	546	-	-	-	-	-
Critical Hdwy	6.59	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.59	-	-	-	-	-
Critical Hdwy Stg 2	5.59	-	-	-	-	-
Follow-up Hdwy	3.671	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	330	772	1295	-	-	-
Stage 1	747	-	-	-	-	-
Stage 2	548	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	285	759	1283	-	-	-
Mov Cap-2 Maneuver	285	-	-	-	-	-
Stage 1	651	-	-	-	-	-
Stage 2	543	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	3.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1283	-	637	-	-
HCM Lane V/C Ratio	0.12	-	0.264	-	-
HCM Control Delay (s)	8.2	-	12.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	0	35	45	0	53	30	260	48	34	279	25
Future Volume (vph)	28	0	35	45	0	53	30	260	48	34	279	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.925				0.850		0.981			0.988	
Flt Protected		0.978			0.950			0.996		0.950		
Satd. Flow (prot)	0	1332	0	0	1805	1583	0	1776	0	1805	1791	0
Flt Permitted		0.978			0.950			0.996		0.950		
Satd. Flow (perm)	0	1332	0	0	1805	1583	0	1776	0	1805	1791	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		32.3			45.9			70.2			68.1	
Travel Time (s)		2.9			4.1			6.3			6.1	
Confl. Peds. (#/hr)							11		12	12		11
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	29%	2%	29%	0%	2%	2%	25%	3%	0%	0%	3%	25%
Adj. Flow (vph)	31	0	39	51	0	60	34	292	54	38	313	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	70	0	0	51	60	0	380	0	38	341	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	55.1%	ICU Level of Service B	
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	0	35	45	0	53	30	260	48	34	279	25
Future Vol, veh/h	28	0	35	45	0	53	30	260	48	34	279	25
Conflicting Peds, #/hr	0	0	0	0	0	0	11	0	12	12	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	20	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	29	2	29	0	2	2	25	3	0	0	3	25
Mvmt Flow	31	0	39	51	0	60	34	292	54	38	313	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	831	840	338	822	827	331	352	0	0	358	0	0
Stage 1	414	414	-	399	399	-	-	-	-	-	-	-
Stage 2	417	426	-	423	428	-	-	-	-	-	-	-
Critical Hdwy	7.39	6.52	6.49	7.1	6.52	6.22	4.35	-	-	4.1	-	-
Critical Hdwy Stg 1	6.39	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.39	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.761	4.018	3.561	3.5	4.018	3.318	2.425	-	-	2.2	-	-
Pot Cap-1 Maneuver	260	302	647	295	307	711	1090	-	-	1212	-	-
Stage 1	565	593	-	631	602	-	-	-	-	-	-	-
Stage 2	563	586	-	613	585	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	223	276	641	260	280	704	1080	-	-	1200	-	-
Mov Cap-2 Maneuver	223	276	-	260	280	-	-	-	-	-	-	-
Stage 1	538	569	-	600	573	-	-	-	-	-	-	-
Stage 2	495	557	-	557	561	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.9	15.9	0.7	0.8
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1080	-	-	350	260	704	1200	-	-
HCM Lane V/C Ratio	0.031	-	-	0.202	0.194	0.085	0.032	-	-
HCM Control Delay (s)	8.4	0	-	17.9	22.2	10.6	8.1	-	-
HCM Lane LOS	A	A	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.7	0.3	0.1	-	-

Appendix E: 2030 Background Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	112	42	220	49	179	10	1079	410	285	1127	15
Future Volume (vph)	27	112	42	220	49	179	10	1079	410	285	1127	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	35.0		0.0	160.0		150.0	195.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor	1.00				0.99							
Frt		0.959			0.882				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1783	0	1719	3008	0	1626	3223	1568	3400	3276	0
Flt Permitted	0.598			0.393			0.950			0.950		
Satd. Flow (perm)	1091	1783	0	711	3008	0	1626	3223	1568	3400	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			195				446		1	
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		101.8			339.3			467.1			460.6	
Travel Time (s)		6.1			20.4			21.0			23.7	
Confl. Peds. (#/hr)	2					2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	0%	8%	5%	7%	4%	11%	12%	3%	3%	10%	7%
Adj. Flow (vph)	29	122	46	239	53	195	11	1173	446	310	1225	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	168	0	239	248	0	11	1173	446	310	1241	0
Turn Type	Perm	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	4	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	53.0	53.0	8.0	53.0	
Minimum Split (s)	44.9	44.9		10.0	44.9		13.0	60.8	60.8	13.0	60.8	
Total Split (s)	44.9	44.9		11.0	55.9		13.0	72.8	72.8	20.0	79.8	
Total Split (%)	30.2%	30.2%		7.4%	37.6%		8.7%	49.0%	49.0%	13.4%	53.7%	
Maximum Green (s)	37.0	37.0		8.0	48.0		8.0	65.0	65.0	15.0	72.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		3.0	5.9	5.9	3.0	5.9	
All-Red Time (s)	2.9	2.9		0.0	2.9		2.0	1.9	1.9	2.0	1.9	
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)	7.9	7.9		3.0	7.9		5.0	7.8	7.8	5.0	7.8	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	3.0	3.0	4.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)	21.0	21.0			21.0			41.0	41.0		41.0	
Flash Dont Walk (s)	16.0	16.0			16.0			12.0	12.0		12.0	
Pedestrian Calls (#/hr)	0	0			0			0	0		0	
Act Effct Green (s)	18.5	18.5		34.4	29.5		8.0	78.0	78.0	20.5	98.3	
Actuated g/C Ratio	0.12	0.12		0.23	0.20		0.05	0.52	0.52	0.14	0.66	
v/c Ratio	0.21	0.73		1.10	0.33		0.13	0.69	0.43	0.66	0.57	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	60.1	75.3		138.1	12.8		70.5	30.6	3.3	67.6	16.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	60.1	75.3		138.1	12.8		70.5	30.6	3.3	67.6	16.8	
LOS	E	E		F	B		E	C	A	E	B	
Approach Delay		73.0			74.3			23.4			26.9	
Approach LOS		E			E			C			C	
Queue Length 50th (m)	7.7	44.4		~69.5	6.6		3.1	131.6	0.0	44.6	85.8	
Queue Length 95th (m)	17.2	66.2		#113.4	17.5		9.8	180.9	18.4	59.0	152.7	
Internal Link Dist (m)		77.8			315.3			443.1			436.6	
Turn Bay Length (m)	65.0			35.0			160.0		150.0	195.0		
Base Capacity (vph)	271	452		218	1103		87	1690	1034	469	2166	
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	0.11	0.37		1.10	0.22		0.13	0.69	0.43	0.66	0.57	

Intersection Summary		
Area Type:	Other	
Cycle Length: 148.7		
Actuated Cycle Length: 148.7		
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.10		
Intersection Signal Delay: 33.7	Intersection LOS: C	
Intersection Capacity Utilization 94.2%	ICU Level of Service F	
Analysis Period (min) 15		
~ 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.		

Splits and Phases: 1: Highway 6 & Stone Road West

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	112	42	220	49	179	10	1079	410	285	1127	15
Future Volume (veh/h)	27	112	42	220	49	179	10	1079	410	285	1127	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1900	1781	1826	1796	1841	1737	1722	1856	1856	1752	1796
Adj Flow Rate, veh/h	29	122	46	239	53	195	11	1173	446	310	1225	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	0	8	5	7	4	11	12	3	3	10	7
Cap, veh/h	134	160	60	180	334	297	270	1847	887	345	1626	21
Arrive On Green	0.12	0.12	0.12	0.05	0.20	0.20	0.16	0.56	0.56	0.10	0.48	0.48
Sat Flow, veh/h	1111	1313	495	1739	1706	1518	1654	3272	1572	3428	3364	44
Grp Volume(v), veh/h	29	0	168	239	53	195	11	1173	446	310	606	635
Grp Sat Flow(s),veh/h/ln	1111	0	1808	1739	1706	1518	1654	1636	1572	1714	1664	1744
Q Serve(g_s), s	3.7	0.0	13.4	8.0	3.8	17.7	0.8	36.3	25.7	13.3	44.1	44.1
Cycle Q Clear(g_c), s	10.3	0.0	13.4	8.0	3.8	17.7	0.8	36.3	25.7	13.3	44.1	44.1
Prop In Lane	1.00		0.27	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	134	0	221	180	334	297	270	1847	887	345	804	843
V/C Ratio(X)	0.22	0.00	0.76	1.33	0.16	0.66	0.04	0.64	0.50	0.90	0.75	0.75
Avail Cap(c_a), veh/h	274	0	449	180	550	489	270	1847	887	345	804	843
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.1	0.0	63.3	61.4	49.7	55.3	52.5	22.0	19.7	66.2	31.3	31.3
Incr Delay (d2), s/veh	0.8	0.0	5.3	180.7	0.2	2.4	0.1	1.7	2.0	25.4	6.5	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.8	0.0	10.2	18.8	2.8	10.7	0.6	18.1	13.4	10.9	23.8	24.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.9	0.0	68.6	242.1	49.9	57.7	52.6	23.7	21.8	91.7	37.7	37.5
LnGrp LOS	E	A	E	F	D	E	D	C	C	F	D	D
Approach Vol, veh/h		197			487			1630			1551	
Approach Delay, s/veh		68.2			147.4			23.4			48.4	
Approach LOS		E			F			C			D	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	20.0	91.9	11.0	26.1	32.1	79.8		37.1				
Change Period (Y+Rc), s	5.0	* 7.8	3.0	7.9	* 7.8	* 7.8		7.9				
Max Green Setting (Gmax), s	15.0	* 65	8.0	37.0	* 8	* 72		48.0				
Max Q Clear Time (g_c+I1), s	15.3	38.3	10.0	15.4	2.8	46.1		19.7				
Green Ext Time (p_c), s	0.0	14.5	0.0	1.2	0.0	11.3		1.8				

Intersection Summary	
HCM 6th Ctrl Delay	51.3
HCM 6th LOS	D

Notes

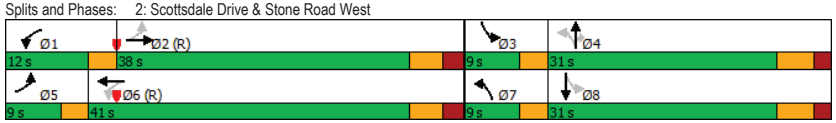
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	659	77	117	328	52	74	165	159	104	108	46
Future Volume (vph)	71	659	77	117	328	52	74	165	159	104	108	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	27.5		0.0	25.0		0.0	30.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			25.0			60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		0.97		0.98	0.99	0.98	
Frt		0.984			0.980				0.850		0.955	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	3362	0	1736	3199	0	1752	1827	1568	1626	1670	0
Flt Permitted	0.493			0.235			0.603			0.477		
Satd. Flow (perm)	841	3362	0	428	3199	0	1079	1827	1529	809	1670	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			23				187		24	
Link Speed (k/h)		60			60			41			41	
Link Distance (m)		339.3			210.0			117.2			40.4	
Travel Time (s)		20.4			12.6			10.3			3.5	
Confl. Peds. (#/hr)	11		14	14		11	37		12	12		37
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	10%	5%	8%	4%	9%	16%	3%	4%	3%	11%	4%	14%
Adj. Flow (vph)	84	775	91	138	386	61	87	194	187	122	127	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	866	0	138	447	0	87	194	187	122	181	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		
Detector Phase	5	2		1	6		7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	10.0	10.0	6.0	10.0	
Minimum Split (s)	9.0	27.1		9.0	27.1		9.0	31.0	31.0	9.0	31.0	
Total Split (s)	9.0	38.0		12.0	41.0		9.0	31.0	31.0	9.0	31.0	
Total Split (%)	10.0%	42.2%		13.3%	45.6%		10.0%	34.4%	34.4%	10.0%	34.4%	
Maximum Green (s)	6.0	31.9		9.0	34.9		6.0	25.0	25.0	6.0	25.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.0	2.0	0.0	2.0	
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)	3.0	6.1		3.0	6.1		3.0	6.0	6.0	3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	
Walk Time (s)		7.0			7.0			9.0	9.0		9.0	
Flash Dont Walk (s)		14.0			14.0			16.0	16.0		16.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effct Green (s)	53.0	42.4		55.7	45.3		24.0	15.0	15.0	24.6	16.8	
Actuated g/C Ratio	0.59	0.47		0.62	0.50		0.27	0.17	0.17	0.27	0.19	
v/c Ratio	0.15	0.54		0.36	0.28		0.26	0.64	0.46	0.44	0.55	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	8.1	19.4		10.1	14.3		24.1	44.2	8.6	28.7	35.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	8.1	19.4		10.1	14.3		24.1	44.2	8.6	28.7	35.4	
LOS	A	B		B	B		C	D	A	C	D	
Approach Delay		18.4			13.3			26.3			32.7	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	5.0	51.6		8.4	21.5		10.9	31.3	0.0	15.7	25.1	
Queue Length 95th (m)	11.3	76.0		17.0	34.5		18.4	45.4	13.1	24.7	39.1	
Internal Link Dist (m)		315.3			186.0			93.2			16.4	
Turn Bay Length (m)	27.5			25.0			30.0			20.0		
Base Capacity (vph)	561	1592		405	1620		332	507	559	275	481	
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	0.15	0.54		0.34	0.28		0.26	0.38	0.33	0.44	0.38	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 20.6		Intersection LOS: C	
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Scottsdale Drive & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	659	77	117	328	52	74	165	159	104	108	46
Future Volume (veh/h)	71	659	77	117	328	52	74	165	159	104	108	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	0.97		0.95	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1826	1781	1841	1767	1663	1856	1841	1856	1737	1841	1693
Adj Flow Rate, veh/h	84	775	91	138	386	61	87	194	187	122	127	54
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	10	5	8	4	9	16	3	4	3	11	4	14
Cap, veh/h	493	1367	161	352	1289	202	355	423	344	317	286	122
Arrive On Green	0.06	0.44	0.44	0.06	0.44	0.44	0.06	0.23	0.23	0.07	0.24	0.24
Sat Flow, veh/h	1668	3121	366	1753	2903	455	1767	1841	1496	1654	1206	513
Grp Volume(v), veh/h	84	431	435	138	222	225	87	194	187	122	0	181
Grp Sat Flow(s),veh/h/ln	1668	1735	1753	1753	1678	1680	1767	1841	1496	1654	0	1719
Q Serve(g_s), s	2.4	16.7	16.7	3.8	7.6	7.7	3.3	8.2	9.9	5.0	0.0	8.1
Cycle Q Clear(g_c), s	2.4	16.7	16.7	3.8	7.6	7.7	3.3	8.2	9.9	5.0	0.0	8.1
Prop In Lane	1.00		0.21	1.00		0.27	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	493	760	768	352	745	746	355	423	344	317	0	408
V/C Ratio(X)	0.17	0.57	0.57	0.39	0.30	0.30	0.25	0.46	0.54	0.39	0.00	0.44
Avail Cap(c_a), veh/h	506	760	768	414	745	746	368	511	416	317	0	477
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.3	18.9	18.9	14.1	16.0	16.1	24.3	29.9	30.5	24.5	0.0	29.3
Incr Delay (d2), s/veh	0.2	3.0	3.0	0.7	1.0	1.0	0.4	0.8	1.3	0.8	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	9.7	9.8	2.1	4.4	4.5	2.4	6.4	6.3	3.5	0.0	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.5	21.9	21.9	14.8	17.0	17.1	24.6	30.6	31.9	25.3	0.0	30.0
LnGrp LOS	B	C	C	B	B	B	C	C	C	C	A	C
Approach Vol, veh/h		950			585			468			303	
Approach Delay, s/veh		21.1			16.5			30.0			28.1	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	45.5	9.0	26.7	8.3	46.1	8.3	27.3
Change Period (Y+Rc), s	3.0	* 6.1	3.0	6.0	3.0	* 6.1	3.0	6.0
Max Green Setting (Gmax), s	9.0	* 32	6.0	25.0	6.0	* 35	6.0	25.0
Max Q Clear Time (g_c+I1), s	5.8	18.7	7.0	11.9	4.4	9.7	5.3	10.1
Green Ext Time (p_c), s	0.1	5.1	0.0	2.0	0.0	3.2	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	22.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	155	106	171	105	31
Future Volume (vph)	16	155	106	171	105	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.878				0.969	
Flt Protected	0.995		0.950			
Satd. Flow (prot)	1532	0	1703	1776	1615	0
Flt Permitted	0.995		0.950			
Satd. Flow (perm)	1532	0	1703	1776	1615	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	74.8			68.1	69.0	
Travel Time (s)	6.7			6.1	6.2	
Confl. Peds. (#/hr)	2	1	26			26
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	21%	7%	6%	7%	6%	41%
Adj. Flow (vph)	23	218	149	241	148	44
Shared Lane Traffic (%)						
Lane Group Flow (vph)	241	0	149	241	192	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	155	106	171	105	31
Future Vol, veh/h	16	155	106	171	105	31
Conflicting Peds, #/hr	2	1	26	0	0	26
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	20	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	21	7	6	7	6	41
Mvmt Flow	23	218	149	241	148	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	737	197	218	0	-	0
Stage 1	196	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Critical Hdwy	6.61	6.27	4.16	-	-	-
Critical Hdwy Stg 1	5.61	-	-	-	-	-
Critical Hdwy Stg 2	5.61	-	-	-	-	-
Follow-up Hdwy	3.689	3.363	2.254	-	-	-
Pot Cap-1 Maneuver	359	832	1328	-	-	-
Stage 1	794	-	-	-	-	-
Stage 2	547	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	304	813	1299	-	-	-
Mov Cap-2 Maneuver	304	-	-	-	-	-
Stage 1	688	-	-	-	-	-
Stage 2	535	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	3.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1299	-	703	-	-
HCM Lane V/C Ratio	0.115	-	0.343	-	-
HCM Control Delay (s)	8.1	-	12.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.5	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	5	8	0	7	6	267	15	11	245	4
Future Volume (vph)	3	0	5	8	0	7	6	267	15	11	245	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.914				0.850		0.993			0.997	
Flt Protected		0.982			0.950			0.999		0.950		
Satd. Flow (prot)	0	1672	0	0	1203	1615	0	1759	0	1656	1768	0
Flt Permitted		0.982			0.950			0.999		0.950		
Satd. Flow (perm)	0	1672	0	0	1203	1615	0	1759	0	1656	1768	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		32.3			45.9			70.2			68.1	
Travel Time (s)		2.9			4.1			6.3			6.1	
Confl. Peds. (#/hr)			1	1			26		12	12		26
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	2%	2%	2%	50%	2%	0%	14%	7%	7%	9%	7%	14%
Adj. Flow (vph)	4	0	7	11	0	10	8	371	21	15	340	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	11	10	0	400	0	15	346	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	32.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	5	8	0	7	6	267	15	11	245	4
Future Vol, veh/h	3	0	5	8	0	7	6	267	15	11	245	4
Conflicting Peds, #/hr	0	0	1	1	0	0	26	0	12	12	0	26
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	20	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	50	2	0	14	7	7	9	7	14
Mvmt Flow	4	0	7	11	0	10	8	371	21	15	340	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	802	819	370	788	812	394	372	0	0	404	0	0
Stage 1	399	399	-	410	410	-	-	-	-	-	-	-
Stage 2	403	420	-	378	402	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.6	6.52	6.2	4.24	-	-	4.19	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.6	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.6	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.95	4.018	3.3	2.326	-	-	2.281	-	-
Pot Cap-1 Maneuver	302	310	676	258	313	659	1123	-	-	1118	-	-
Stage 1	627	602	-	534	595	-	-	-	-	-	-	-
Stage 2	624	589	-	557	600	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	286	293	661	248	296	652	1098	-	-	1107	-	-
Mov Cap-2 Maneuver	286	293	-	248	296	-	-	-	-	-	-	-
Stage 1	608	580	-	524	584	-	-	-	-	-	-	-
Stage 2	609	578	-	543	578	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.3	15.7	0.2	0.4
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1098	-	-	443	248	652	1107	-	-
HCM Lane V/C Ratio	0.008	-	-	0.025	0.045	0.015	0.014	-	-
HCM Control Delay (s)	8.3	0	-	13.3	20.2	10.6	8.3	-	-
HCM Lane LOS	A	A	-	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	91	32	367	145	356	35	1305	334	406	1370	19
Future Volume (vph)	20	91	32	367	145	356	35	1305	334	406	1370	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	35.0		0.0	160.0		150.0	195.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor	0.99				0.98							
Frt		0.961			0.893				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1799	0	1787	3124	0	1805	3438	1583	3467	3466	0
Flt Permitted	0.328			0.463			0.950			0.950		
Satd. Flow (perm)	619	1799	0	871	3124	0	1805	3438	1583	3467	3466	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			280				363		1	
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		101.8			339.3			467.1			460.6	
Travel Time (s)		6.1			20.4			21.0			23.7	
Confl. Peds. (#/hr)	12					12						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	1%	2%	1%	0%	5%	2%	1%	4%	0%
Adj. Flow (vph)	22	99	35	399	158	387	38	1418	363	441	1489	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	134	0	399	545	0	38	1418	363	441	1510	0
Turn Type	Perm	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	4	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	53.0	53.0	8.0	53.0	
Minimum Split (s)	44.9	44.9		10.0	44.9		13.0	60.8	60.8	13.0	60.8	
Total Split (s)	44.9	44.9		11.0	55.9		13.0	69.8	69.8	23.0	79.8	
Total Split (%)	30.2%	30.2%		7.4%	37.6%		8.7%	46.9%	46.9%	15.5%	53.7%	
Maximum Green (s)	37.0	37.0		8.0	48.0		8.0	62.0	62.0	18.0	72.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		3.0	5.9	5.9	3.0	5.9	
All-Red Time (s)	2.9	2.9		0.0	2.9		2.0	1.9	1.9	2.0	1.9	
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)	7.9	7.9		3.0	7.9		5.0	7.8	7.8	5.0	7.8	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	3.0	3.0	4.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)	21.0	21.0			21.0			41.0	41.0		41.0	
Flash Dont Walk (s)	16.0	16.0			16.0			12.0	12.0		12.0	
Pedestrian Calls (#/hr)	0	0			0			0	0		0	
Act Effct Green (s)	15.7	15.7		31.6	26.7		8.0	72.7	72.7	28.6	95.9	
Actuated g/C Ratio	0.11	0.11		0.21	0.18		0.05	0.49	0.49	0.19	0.64	
v/c Ratio	0.34	0.67		1.71	0.69		0.39	0.84	0.38	0.66	0.68	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	74.0	74.6		369.3	31.4		80.2	39.4	3.4	61.0	19.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	74.0	74.6		369.3	31.4		80.2	39.4	3.4	61.0	19.9	
LOS	E	E		F	C		F	D	A	E	B	
Approach Delay		74.5			174.2			33.1			29.2	
Approach LOS		E			F			C			C	
Queue Length 50th (m)	6.1	35.0		~170.2	38.6		10.9	183.1	0.0	62.3	144.5	
Queue Length 95th (m)	14.9	55.0		#223.3	55.9		23.2	#252.3	17.6	79.1	189.7	
Internal Link Dist (m)		77.8			315.3			443.1			436.6	
Turn Bay Length (m)	65.0			35.0			160.0		150.0	195.0		
Base Capacity (vph)	154	455		234	1198		97	1681	959	666	2235	
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	0.14	0.29		1.71	0.45		0.39	0.84	0.38	0.66	0.68	

Intersection Summary		
Area Type:	Other	
Cycle Length: 148.7		
Actuated Cycle Length: 148.7		
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.71		
Intersection Signal Delay: 60.2	Intersection LOS: E	
Intersection Capacity Utilization 109.1%	ICU Level of Service H	
Analysis Period (min) 15		
~ 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.		

Splits and Phases: 1: Highway 6 & Stone Road West

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	91	32	367	145	356	35	1305	334	406	1370	19
Future Volume (veh/h)	20	91	32	367	145	356	35	1305	334	406	1370	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1885	1856	1885	1870	1885	1900	1826	1870	1885	1841	1900
Adj Flow Rate, veh/h	22	99	35	399	158	387	38	1418	363	441	1489	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	1	3	1	2	1	0	5	2	1	4	0
Cap, veh/h	101	290	102	340	520	458	120	1553	709	421	1706	24
Arrive On Green	0.22	0.22	0.22	0.05	0.29	0.29	0.07	0.45	0.45	0.12	0.48	0.48
Sat Flow, veh/h	871	1324	468	1795	1777	1566	1810	3469	1585	3483	3531	50
Grp Volume(v), veh/h	22	0	134	399	158	387	38	1418	363	441	737	773
Grp Sat Flow(s),veh/h/ln	871	0	1792	1795	1777	1566	1810	1735	1585	1742	1749	1832
Q Serve(g_s), s	3.6	0.0	9.4	8.0	10.3	34.6	3.0	56.9	24.5	18.0	56.1	56.2
Cycle Q Clear(g_c), s	27.2	0.0	9.4	8.0	10.3	34.6	3.0	56.9	24.5	18.0	56.1	56.2
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	101	0	392	340	520	458	120	1553	709	421	845	885
V/C Ratio(X)	0.22	0.00	0.34	1.17	0.30	0.84	0.32	0.91	0.51	1.05	0.87	0.87
Avail Cap(c_a), veh/h	127	0	445	340	572	504	120	1553	709	421	845	885
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.5	0.0	49.1	56.9	40.9	49.5	66.3	38.5	29.5	65.5	34.4	34.4
Incr Delay (d2), s/veh	1.1	0.0	0.5	105.2	0.3	11.6	2.1	9.8	2.6	57.0	12.0	11.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	0.0	7.2	26.7	7.6	20.0	2.5	31.4	13.8	16.6	31.6	32.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.5	0.0	49.6	162.1	41.2	61.1	68.5	48.2	32.1	122.5	46.4	46.1
LnGrp LOS	E	A	D	F	D	E	E	D	C	F	D	D
Approach Vol, veh/h		156			944			1819			1951	
Approach Delay, s/veh		52.3			100.5			45.4			63.5	
Approach LOS		D			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	23.0	74.5	11.0	40.5	17.7	79.8		51.5				
Change Period (Y+Rc), s	5.0	* 7.8	3.0	7.9	* 7.8	* 7.8		7.9				
Max Green Setting (Gmax), s	18.0	* 62	8.0	37.0	* 8	* 72		48.0				
Max Q Clear Time (g_c+I1), s	20.0	58.9	10.0	29.2	5.0	58.2		36.6				
Green Ext Time (p_c), s	0.0	2.7	0.0	0.5	0.0	9.4		3.0				

Intersection Summary			
HCM 6th Ctrl Delay			63.5
HCM 6th LOS			E

Notes

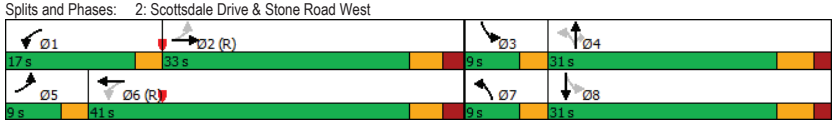
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	577	157	249	683	80	104	161	264	104	172	81
Future Volume (vph)	97	577	157	249	683	80	104	161	264	104	172	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	27.5		0.0	25.0		0.0	30.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			25.0			60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98				0.99		0.99		0.97	0.99	0.99	
Frt		0.968			0.984				0.850		0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3440	0	1787	3383	0	1805	1845	1599	1687	1788	0
Flt Permitted	0.317			0.244			0.362			0.586		
Satd. Flow (perm)	593	3440	0	459	3383	0	678	1845	1551	1026	1788	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			16				284		26	
Link Speed (k/h)		60			60			41			41	
Link Distance (m)		339.3			210.0			117.2			40.4	
Travel Time (s)		20.4			12.6			10.3			3.5	
Confl. Peds. (#/hr)	25					25	22		17	17		22
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	0%	1%	4%	6%	0%	3%	1%	7%	0%	0%
Adj. Flow (vph)	104	620	169	268	734	86	112	173	284	112	185	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	789	0	268	820	0	112	173	284	112	272	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		
Detector Phase	5	2		1	6		7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	10.0	10.0	6.0	10.0	
Minimum Split (s)	9.0	27.1		9.0	27.1		9.0	31.0	31.0	9.0	31.0	
Total Split (s)	9.0	33.0		17.0	41.0		9.0	31.0	31.0	9.0	31.0	
Total Split (%)	10.0%	36.7%		18.9%	45.6%		10.0%	34.4%	34.4%	10.0%	34.4%	
Maximum Green (s)	6.0	26.9		14.0	34.9		6.0	25.0	25.0	6.0	25.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.0	2.0	0.0	2.0	
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)	3.0	6.1		3.0	6.1		3.0	6.0	6.0	3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	
Walk Time (s)		7.0			7.0			9.0	9.0		9.0	
Flash Dont Walk (s)		14.0			14.0			16.0	16.0		16.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effct Green (s)	48.5	38.2		56.1	44.6		25.5	17.7	17.7	25.5	17.7	
Actuated g/C Ratio	0.54	0.42		0.62	0.50		0.28	0.20	0.20	0.28	0.20	
v/c Ratio	0.25	0.53		0.59	0.49		0.42	0.48	0.53	0.33	0.73	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	10.9	22.3		14.6	18.4		25.5	35.3	7.5	23.6	41.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	10.9	22.3		14.6	18.4		25.5	35.3	7.5	23.6	41.6	
LOS	B	C		B	B		C	D	A	C	D	
Approach Delay		20.9			17.5			19.5			36.3	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	6.9	50.7		19.6	50.5		13.5	26.3	0.0	13.5	39.7	
Queue Length 95th (m)	16.0	81.2		38.2	75.7		22.4	40.9	17.5	22.6	59.6	
Internal Link Dist (m)		315.3			186.0			93.2			16.4	
Turn Bay Length (m)	27.5			25.0			30.0			20.0		
Base Capacity (vph)	415	1483		496	1685		267	512	635	335	515	
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	0.25	0.53		0.54	0.49		0.42	0.34	0.45	0.33	0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 35 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 21.4		Intersection LOS: C	
Intersection Capacity Utilization 75.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Scottsdale Drive & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	97	577	157	249	683	80	104	161	264	104	172	81
Future Volume (veh/h)	97	577	157	249	683	80	104	161	264	104	172	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1885	1841	1811	1900	1856	1885	1796	1900	1900
Adj Flow Rate, veh/h	104	620	169	268	734	86	112	173	284	112	185	87
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	2	0	1	4	6	0	3	1	7	0	0
Cap, veh/h	366	1043	284	419	1356	159	313	445	372	337	293	138
Arrive On Green	0.06	0.38	0.38	0.11	0.43	0.43	0.06	0.24	0.24	0.07	0.24	0.24
Sat Flow, veh/h	1810	2738	745	1795	3147	369	1810	1856	1554	1711	1210	569
Grp Volume(v), veh/h	104	402	387	268	408	412	112	173	284	112	0	272
Grp Sat Flow(s),veh/h/ln	1810	1777	1706	1795	1749	1767	1810	1856	1554	1711	0	1779
Q Serve(g_s), s	3.1	16.3	16.4	7.7	15.6	15.6	4.1	7.0	15.3	4.4	0.0	12.3
Cycle Q Clear(g_c), s	3.1	16.3	16.4	7.7	15.6	15.6	4.1	7.0	15.3	4.4	0.0	12.3
Prop In Lane	1.00		0.44	1.00		0.21	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	366	677	650	419	754	762	313	445	372	337	0	431
V/C Ratio(X)	0.28	0.59	0.60	0.64	0.54	0.54	0.36	0.39	0.76	0.33	0.00	0.63
Avail Cap(c_a), veh/h	375	677	650	497	754	762	317	515	432	337	0	494
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	22.3	22.3	15.5	19.0	19.0	24.2	28.7	31.8	23.5	0.0	30.5
Incr Delay (d2), s/veh	0.4	3.8	4.0	2.1	2.8	2.8	0.7	0.6	6.8	0.6	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.8	10.2	9.9	4.4	9.3	9.4	3.1	5.5	10.2	3.1	0.0	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.1	26.1	26.3	17.6	21.8	21.8	24.9	29.2	38.6	24.1	0.0	32.6
LnGrp LOS	B	C	C	B	C	C	C	C	D	C	A	C
Approach Vol, veh/h		893			1088			569			384	
Approach Delay, s/veh		25.0			20.7			33.1			30.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	40.4	9.0	27.6	8.6	44.9	8.8	27.8
Change Period (Y+Rc), s	3.0	* 6.1	3.0	6.0	3.0	* 6.1	3.0	6.0
Max Green Setting (Gmax), s	14.0	* 27	6.0	25.0	6.0	* 35	6.0	25.0
Max Q Clear Time (g_c+I1), s	9.7	18.4	6.4	17.3	5.1	17.6	6.1	14.3
Green Ext Time (p_c), s	0.4	3.6	0.0	1.7	0.0	5.6	0.0	1.4

Intersection Summary		
HCM 6th Ctrl Delay	25.7	
HCM 6th LOS	C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	19	142	147	196	202	22
Future Volume (vph)	19	142	147	196	202	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.881				0.987	
Flt Protected	0.994		0.950			
Satd. Flow (prot)	1599	0	1770	1827	1790	0
Flt Permitted	0.994		0.950			
Satd. Flow (perm)	1599	0	1770	1827	1790	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	74.8			68.1	69.0	
Travel Time (s)	6.7			6.1	6.2	
Confl. Peds. (#/hr)	3	9	11			11
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	19%	2%	2%	4%	3%	21%
Adj. Flow (vph)	22	161	167	223	230	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	183	0	167	223	255	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	142	147	196	202	22
Future Vol, veh/h	19	142	147	196	202	22
Conflicting Peds, #/hr	3	9	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	20	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	19	2	2	4	3	21
Mvmt Flow	22	161	167	223	230	25

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	814	263	266	0	-	0
Stage 1	254	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Critical Hdwy	6.59	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.59	-	-	-	-	-
Critical Hdwy Stg 2	5.59	-	-	-	-	-
Follow-up Hdwy	3.671	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	325	776	1298	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	539	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	278	763	1286	-	-	-
Mov Cap-2 Maneuver	278	-	-	-	-	-
Stage 1	647	-	-	-	-	-
Stage 2	534	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	3.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1286	-	633	-	-
HCM Lane V/C Ratio	0.13	-	0.289	-	-
HCM Control Delay (s)	8.2	-	13	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	7	45	0	53	5	285	48	34	305	5
Future Volume (vph)	5	0	7	45	0	53	5	285	48	34	305	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.923				0.850		0.981			0.997	
Flt Protected		0.979			0.950			0.999		0.950		
Satd. Flow (prot)	0	1331	0	0	1805	1583	0	1809	0	1805	1832	0
Flt Permitted		0.979			0.950			0.999		0.950		
Satd. Flow (perm)	0	1331	0	0	1805	1583	0	1809	0	1805	1832	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		32.3			45.9			70.2			68.1	
Travel Time (s)		2.9			4.1			6.3			6.1	
Confl. Peds. (#/hr)							11		12	12		11
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	29%	2%	29%	0%	2%	2%	25%	3%	0%	0%	3%	25%
Adj. Flow (vph)	6	0	8	51	0	60	6	320	54	38	343	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	0	51	60	0	380	0	38	349	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	35.1%	ICU Level of Service A	
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	7	45	0	53	5	285	48	34	305	5
Future Vol, veh/h	5	0	7	45	0	53	5	285	48	34	305	5
Conflicting Peds, #/hr	0	0	0	0	0	0	11	0	12	12	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	20	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	29	2	29	0	2	2	25	3	0	0	3	25
Mvmt Flow	6	0	8	51	0	60	6	320	54	38	343	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	822	831	357	797	807	359	360	0	0	386	0	0
Stage 1	433	433	-	371	371	-	-	-	-	-	-	-
Stage 2	389	398	-	426	436	-	-	-	-	-	-	-
Critical Hdwy	7.39	6.52	6.49	7.1	6.52	6.22	4.35	-	-	4.1	-	-
Critical Hdwy Stg 1	6.39	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.39	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.761	4.018	3.561	3.5	4.018	3.318	2.425	-	-	2.2	-	-
Pot Cap-1 Maneuver	264	305	630	307	315	685	1082	-	-	1184	-	-
Stage 1	552	582	-	653	620	-	-	-	-	-	-	-
Stage 2	584	603	-	610	580	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	232	288	624	291	297	678	1072	-	-	1172	-	-
Mov Cap-2 Maneuver	232	288	-	291	297	-	-	-	-	-	-	-
Stage 1	543	558	-	642	609	-	-	-	-	-	-	-
Stage 2	529	593	-	583	556	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.2	15	0.1	0.8
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1072	-	-	366	291	678	1172	-	-
HCM Lane V/C Ratio	0.005	-	-	0.037	0.174	0.088	0.033	-	-
HCM Control Delay (s)	8.4	0	-	15.2	20	10.8	8.2	-	-
HCM Lane LOS	A	A	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.6	0.3	0.1	-	-

Appendix F: 2030 Total Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	113	42	223	50	181	10	1079	413	286	1127	15
Future Volume (vph)	27	113	42	223	50	181	10	1079	413	286	1127	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	35.0		0.0	160.0		150.0	195.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor	1.00				0.99							
Frt		0.959			0.882				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1783	0	1719	3008	0	1626	3223	1568	3400	3276	0
Flt Permitted	0.596			0.390			0.950			0.950		
Satd. Flow (perm)	1087	1783	0	706	3008	0	1626	3223	1568	3400	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			197				449		1	
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		101.8			339.3			467.1			460.6	
Travel Time (s)		6.1			20.4			21.0			23.7	
Confl. Peds. (#/hr)	2					2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	0%	8%	5%	7%	4%	11%	12%	3%	3%	10%	7%
Adj. Flow (vph)	29	123	46	242	54	197	11	1173	449	311	1225	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	169	0	242	251	0	11	1173	449	311	1241	0
Turn Type	Perm	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	4	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	53.0	53.0	8.0	53.0	
Minimum Split (s)	44.9	44.9		10.0	44.9		13.0	60.8	60.8	13.0	60.8	
Total Split (s)	44.9	44.9		11.0	55.9		13.0	71.8	71.8	21.0	79.8	
Total Split (%)	30.2%	30.2%		7.4%	37.6%		8.7%	48.3%	48.3%	14.1%	53.7%	
Maximum Green (s)	37.0	37.0		8.0	48.0		8.0	64.0	64.0	16.0	72.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		3.0	5.9	5.9	3.0	5.9	
All-Red Time (s)	2.9	2.9		0.0	2.9		2.0	1.9	1.9	2.0	1.9	
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)	7.9	7.9		3.0	7.9		5.0	7.8	7.8	5.0	7.8	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	3.0	3.0	4.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)	21.0	21.0			21.0			41.0	41.0		41.0	
Flash Dont Walk (s)	16.0	16.0			16.0			12.0	12.0		12.0	
Pedestrian Calls (#/hr)	0	0			0			0	0		0	
Act Effct Green (s)	18.5	18.5		34.4	29.5		8.0	78.3	78.3	20.2	98.3	
Actuated g/C Ratio	0.12	0.12		0.23	0.20		0.05	0.53	0.53	0.14	0.66	
v/c Ratio	0.21	0.73		1.12	0.33		0.13	0.69	0.43	0.67	0.57	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	60.0	75.3		143.1	12.9		70.5	30.4	3.3	68.5	16.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	60.0	75.3		143.1	12.9		70.5	30.4	3.3	68.5	16.8	
LOS	E	E		F	B		E	C	A	E	B	
Approach Delay		73.1			76.8			23.2			27.2	
Approach LOS		E			E			C			C	
Queue Length 50th (m)	7.7	44.7		~71.8	6.8		3.1	130.6	0.0	45.0	85.8	
Queue Length 95th (m)	17.2	66.5		#115.8	17.6		9.8	181.2	18.6	59.1	153.1	
Internal Link Dist (m)		77.8			315.3			443.1			436.6	
Turn Bay Length (m)	65.0			35.0			160.0		150.0	195.0		
Base Capacity (vph)	270	452		217	1104		87	1696	1038	462	2165	
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	0.11	0.37		1.12	0.23		0.13	0.69	0.43	0.67	0.57	

Intersection Summary		
Area Type:	Other	
Cycle Length: 148.7		
Actuated Cycle Length: 148.7		
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.12		
Intersection Signal Delay: 34.2	Intersection LOS: C	
Intersection Capacity Utilization 94.3%	ICU Level of Service F	
Analysis Period (min) 15		
~ 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.		

Splits and Phases: 1: Highway 6 & Stone Road West

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	113	42	223	50	181	10	1079	413	286	1127	15
Future Volume (veh/h)	27	113	42	223	50	181	10	1079	413	286	1127	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1900	1781	1826	1796	1841	1737	1722	1856	1856	1752	1796
Adj Flow Rate, veh/h	29	123	46	242	54	197	11	1173	449	311	1225	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	0	8	5	7	4	11	12	3	3	10	7
Cap, veh/h	133	162	60	180	335	298	269	1835	882	356	1626	21
Arrive On Green	0.12	0.12	0.12	0.05	0.20	0.20	0.16	0.56	0.56	0.10	0.48	0.48
Sat Flow, veh/h	1108	1316	492	1739	1706	1518	1654	3272	1572	3428	3364	44
Grp Volume(v), veh/h	29	0	169	242	54	197	11	1173	449	311	606	635
Grp Sat Flow(s),veh/h/ln	1108	0	1809	1739	1706	1518	1654	1636	1572	1714	1664	1744
Q Serve(g_s), s	3.7	0.0	13.5	8.0	3.9	17.9	0.8	36.6	26.2	13.3	44.1	44.1
Cycle Q Clear(g_c), s	10.6	0.0	13.5	8.0	3.9	17.9	0.8	36.6	26.2	13.3	44.1	44.1
Prop In Lane	1.00		0.27	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	133	0	222	180	335	298	269	1835	882	356	804	843
V/C Ratio(X)	0.22	0.00	0.76	1.35	0.16	0.66	0.04	0.64	0.51	0.87	0.75	0.75
Avail Cap(c_a), veh/h	272	0	449	180	550	489	269	1835	882	368	804	843
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.2	0.0	63.2	61.4	49.7	55.3	52.6	22.4	20.1	65.8	31.3	31.3
Incr Delay (d2), s/veh	0.8	0.0	5.3	187.5	0.2	2.5	0.1	1.7	2.1	20.3	6.5	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.8	0.0	10.2	19.3	2.9	10.8	0.6	18.2	13.6	10.7	23.8	24.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.0	0.0	68.6	248.9	49.9	57.8	52.7	24.1	22.2	86.1	37.7	37.5
LnGrp LOS	E	A	E	F	D	E	D	C	C	F	D	D
Approach Vol, veh/h		198			493			1633			1552	
Approach Delay, s/veh		68.2			150.7			23.8			47.3	
Approach LOS		E			F			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	8
Phs Duration (G+Y+Rc), s	20.5	91.4	11.0	26.2	32.0	79.8	37.2
Change Period (Y+Rc), s	5.0	* 7.8	3.0	7.9	* 7.8	* 7.8	7.9
Max Green Setting (Gmax), s	16.0	* 64	8.0	37.0	* 8	* 72	48.0
Max Q Clear Time (g_c+I1), s	15.3	38.6	10.0	15.5	2.8	46.1	19.9
Green Ext Time (p_c), s	0.1	14.1	0.0	1.2	0.0	11.3	1.9

Intersection Summary	
HCM 6th Ctrl Delay	51.6
HCM 6th LOS	D

Notes

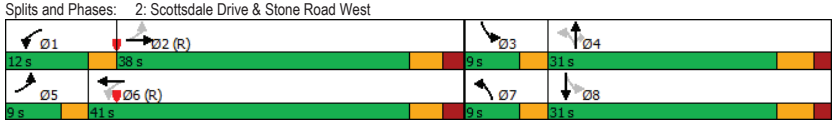
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	659	77	117	328	55	74	165	159	107	108	52
Future Volume (vph)	76	659	77	117	328	55	74	165	159	107	108	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	27.5		0.0	25.0		0.0	30.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			25.0			60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		0.97		0.98	0.99	0.98	
Frt		0.984			0.978				0.850		0.951	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	3362	0	1736	3189	0	1752	1827	1568	1626	1657	0
Flt Permitted	0.491			0.235			0.584			0.477		
Satd. Flow (perm)	837	3362	0	428	3189	0	1045	1827	1529	809	1657	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			25				187		27	
Link Speed (k/h)		60			60			41			41	
Link Distance (m)		339.3			210.0			117.2			40.4	
Travel Time (s)		20.4			12.6			10.3			3.5	
Confl. Peds. (#/hr)	11		14	14		11	37		12	12		37
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	10%	5%	8%	4%	9%	16%	3%	4%	3%	11%	4%	14%
Adj. Flow (vph)	89	775	91	138	386	65	87	194	187	126	127	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	866	0	138	451	0	87	194	187	126	188	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		
Detector Phase	5	2		1	6		7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	10.0	10.0	6.0	10.0	
Minimum Split (s)	9.0	27.1		9.0	27.1		9.0	31.0	31.0	9.0	31.0	
Total Split (s)	9.0	38.0		12.0	41.0		9.0	31.0	31.0	9.0	31.0	
Total Split (%)	10.0%	42.2%		13.3%	45.6%		10.0%	34.4%	34.4%	10.0%	34.4%	
Maximum Green (s)	6.0	31.9		9.0	34.9		6.0	25.0	25.0	6.0	25.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.0	2.0	0.0	2.0	
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)	3.0	6.1		3.0	6.1		3.0	6.0	6.0	3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	
Walk Time (s)		7.0			7.0			9.0	9.0		9.0	
Flash Dont Walk (s)		14.0			14.0			16.0	16.0		16.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effct Green (s)	53.1	42.4		55.6	45.2		24.0	15.0	15.0	24.6	16.8	
Actuated g/C Ratio	0.59	0.47		0.62	0.50		0.27	0.17	0.17	0.27	0.19	
v/c Ratio	0.16	0.54		0.36	0.28		0.27	0.64	0.46	0.46	0.57	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	8.2	19.4		10.1	14.4		24.2	44.2	8.6	29.1	35.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	8.2	19.4		10.1	14.4		24.2	44.2	8.6	29.1	35.6	
LOS	A	B		B	B		C	D	A	C	D	
Approach Delay		18.3			13.4			26.3			33.0	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	5.3	51.6		8.4	21.6		10.9	31.3	0.0	16.3	25.8	
Queue Length 95th (m)	11.9	76.0		17.0	34.8		18.4	45.4	13.1	25.6	40.2	
Internal Link Dist (m)		315.3			186.0			93.2			16.4	
Turn Bay Length (m)	27.5			25.0			30.0			20.0		
Base Capacity (vph)	560	1592		405	1613		325	507	559	275	479	
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	0.16	0.54		0.34	0.28		0.27	0.38	0.33	0.46	0.39	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 20.7		Intersection LOS: C	
Intersection Capacity Utilization 66.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Scottsdale Drive & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	659	77	117	328	55	74	165	159	107	108	52
Future Volume (veh/h)	76	659	77	117	328	55	74	165	159	107	108	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	0.97		0.95	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1826	1781	1841	1767	1663	1856	1841	1856	1737	1841	1693
Adj Flow Rate, veh/h	89	775	91	138	386	65	87	194	187	126	127	61
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	10	5	8	4	9	16	3	4	3	11	4	14
Cap, veh/h	491	1367	161	352	1274	213	349	423	344	317	274	131
Arrive On Green	0.06	0.44	0.44	0.06	0.44	0.44	0.06	0.23	0.23	0.07	0.24	0.24
Sat Flow, veh/h	1668	3121	366	1753	2874	480	1767	1841	1496	1654	1154	554
Grp Volume(v), veh/h	89	431	435	138	224	227	87	194	187	126	0	188
Grp Sat Flow(s),veh/h/ln	1668	1735	1753	1753	1678	1675	1767	1841	1496	1654	0	1709
Q Serve(g_s), s	2.5	16.7	16.7	3.8	7.7	7.9	3.3	8.2	9.9	5.2	0.0	8.5
Cycle Q Clear(g_c), s	2.5	16.7	16.7	3.8	7.7	7.9	3.3	8.2	9.9	5.2	0.0	8.5
Prop In Lane	1.00		0.21	1.00		0.29	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	491	760	768	352	744	742	349	423	344	317	0	405
V/C Ratio(X)	0.18	0.57	0.57	0.39	0.30	0.31	0.25	0.46	0.54	0.40	0.00	0.46
Avail Cap(c_a), veh/h	503	760	768	414	744	742	362	511	416	317	0	475
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.3	18.9	18.9	14.1	16.1	16.1	24.3	29.9	30.5	24.6	0.0	29.4
Incr Delay (d2), s/veh	0.2	3.0	3.0	0.7	1.0	1.1	0.4	0.8	1.3	0.8	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	9.7	9.8	2.1	4.5	4.6	2.4	6.4	6.3	3.6	0.0	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.5	21.9	21.9	14.8	17.1	17.2	24.7	30.6	31.9	25.4	0.0	30.3
LnGrp LOS	B	C	C	B	B	B	C	C	C	C	A	C
Approach Vol, veh/h		955			589			468			314	
Approach Delay, s/veh		21.1			16.6			30.0			28.3	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	45.5	9.0	26.7	8.4	46.0	8.3	27.3
Change Period (Y+Rc), s	3.0	* 6.1	3.0	6.0	3.0	* 6.1	3.0	6.0
Max Green Setting (Gmax), s	9.0	* 32	6.0	25.0	6.0	* 35	6.0	25.0
Max Q Clear Time (g_c+I1), s	5.8	18.7	7.2	11.9	4.5	9.9	5.3	10.5
Green Ext Time (p_c), s	0.1	5.1	0.0	2.0	0.0	3.2	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	22.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	155	106	179	112	31
Future Volume (vph)	16	155	106	179	112	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.878				0.971	
Flt Protected	0.995		0.950			
Satd. Flow (prot)	1532	0	1703	1776	1624	0
Flt Permitted	0.995		0.950			
Satd. Flow (perm)	1532	0	1703	1776	1624	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	74.8			68.1	69.0	
Travel Time (s)	6.7			6.1	6.2	
Confl. Peds. (#/hr)	2	1	26			26
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	21%	7%	6%	7%	6%	41%
Adj. Flow (vph)	23	218	149	252	158	44
Shared Lane Traffic (%)						
Lane Group Flow (vph)	241	0	149	252	202	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	155	106	179	112	31
Future Vol, veh/h	16	155	106	179	112	31
Conflicting Peds, #/hr	2	1	26	0	0	26
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	20	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	21	7	6	7	6	41
Mvmt Flow	23	218	149	252	158	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	758	207	228	0	-	0
Stage 1	206	-	-	-	-	-
Stage 2	552	-	-	-	-	-
Critical Hdwy	6.61	6.27	4.16	-	-	-
Critical Hdwy Stg 1	5.61	-	-	-	-	-
Critical Hdwy Stg 2	5.61	-	-	-	-	-
Follow-up Hdwy	3.689	3.363	2.254	-	-	-
Pot Cap-1 Maneuver	349	821	1317	-	-	-
Stage 1	785	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	295	802	1288	-	-	-
Mov Cap-2 Maneuver	295	-	-	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	529	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1288	-	691	-	-
HCM Lane V/C Ratio	0.116	-	0.349	-	-
HCM Control Delay (s)	8.2	-	13	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.6	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	14	8	0	7	14	267	15	11	245	11
Future Volume (vph)	11	0	14	8	0	7	14	267	15	11	245	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.925				0.850		0.993			0.994	
Flt Protected		0.978			0.950			0.998		0.950		
Satd. Flow (prot)	0	1685	0	0	1203	1615	0	1754	0	1656	1760	0
Flt Permitted		0.978			0.950			0.998		0.950		
Satd. Flow (perm)	0	1685	0	0	1203	1615	0	1754	0	1656	1760	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		32.3			45.9			70.2			68.1	
Travel Time (s)		2.9			4.1			6.3			6.1	
Confl. Peds. (#/hr)			1	1			26		12	12		26
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	2%	2%	2%	50%	2%	0%	14%	7%	7%	9%	7%	14%
Adj. Flow (vph)	15	0	19	11	0	10	19	371	21	15	340	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	11	10	0	411	0	15	355	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	0	14	8	0	7	14	267	15	11	245	11
Future Vol, veh/h	11	0	14	8	0	7	14	267	15	11	245	11
Conflicting Peds, #/hr	0	0	1	1	0	0	26	0	12	12	0	26
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	20	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	50	2	0	14	7	7	9	7	14
Mvmt Flow	15	0	19	11	0	10	19	371	21	15	340	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	829	846	375	820	843	394	381	0	0	404	0	0
Stage 1	404	404	-	432	432	-	-	-	-	-	-	-
Stage 2	425	442	-	388	411	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.6	6.52	6.2	4.24	-	-	4.19	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.6	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.6	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.95	4.018	3.3	2.326	-	-	2.281	-	-
Pot Cap-1 Maneuver	290	299	671	245	300	659	1115	-	-	1118	-	-
Stage 1	623	599	-	518	582	-	-	-	-	-	-	-
Stage 2	607	576	-	549	595	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	272	279	656	229	280	652	1090	-	-	1107	-	-
Mov Cap-2 Maneuver	272	279	-	229	280	-	-	-	-	-	-	-
Stage 1	596	577	-	501	563	-	-	-	-	-	-	-
Stage 2	585	558	-	525	574	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.7	16.4	0.4	0.3
HCM LOS	B	C		

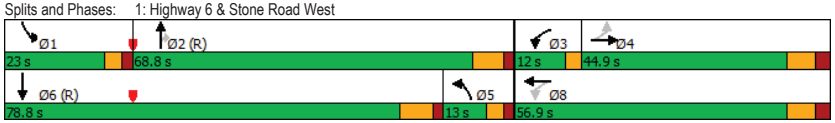
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1090	-	-	405	229	652	1107	-	-
HCM Lane V/C Ratio	0.018	-	-	0.086	0.049	0.015	0.014	-	-
HCM Control Delay (s)	8.4	0	-	14.7	21.5	10.6	8.3	-	-
HCM Lane LOS	A	A	-	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.2	0	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	93	32	377	148	361	35	1305	343	411	1370	19
Future Volume (vph)	20	93	32	377	148	361	35	1305	343	411	1370	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	35.0		0.0	160.0		150.0	195.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor	0.99				0.98							
Frt		0.961			0.894				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1799	0	1787	3127	0	1805	3438	1583	3467	3466	0
Flt Permitted	0.350			0.459			0.950			0.950		
Satd. Flow (perm)	661	1799	0	863	3127	0	1805	3438	1583	3467	3466	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			283				373		1	
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		101.8			339.3			467.1			460.6	
Travel Time (s)		6.1			20.4			21.0			23.7	
Confl. Peds. (#/hr)	12					12						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	1%	2%	1%	0%	5%	2%	1%	4%	0%
Adj. Flow (vph)	22	101	35	410	161	392	38	1418	373	447	1489	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	136	0	410	553	0	38	1418	373	447	1510	0
Turn Type	Perm	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	4	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	53.0	53.0	8.0	53.0	
Minimum Split (s)	44.9	44.9		10.0	44.9		13.0	60.8	60.8	13.0	60.8	
Total Split (s)	44.9	44.9		12.0	56.9		13.0	68.8	68.8	23.0	78.8	
Total Split (%)	30.2%	30.2%		8.1%	38.3%		8.7%	46.3%	46.3%	15.5%	53.0%	
Maximum Green (s)	37.0	37.0		9.0	49.0		8.0	61.0	61.0	18.0	71.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		3.0	5.9	5.9	3.0	5.9	
All-Red Time (s)	2.9	2.9		0.0	2.9		2.0	1.9	1.9	2.0	1.9	
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)	7.9	7.9		3.0	7.9		5.0	7.8	7.8	5.0	7.8	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	3.0	3.0	4.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)	21.0	21.0			21.0			41.0	41.0		41.0	
Flash Dont Walk (s)	16.0	16.0			16.0			12.0	12.0		12.0	
Pedestrian Calls (#/hr)	0	0			0			0	0		0	
Act Effct Green (s)	15.9	15.9		32.8	27.9		8.0	71.0	71.0	29.2	94.7	
Actuated g/C Ratio	0.11	0.11		0.22	0.19		0.05	0.48	0.48	0.20	0.64	
v/c Ratio	0.31	0.68		1.67	0.68		0.39	0.86	0.39	0.66	0.68	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	71.2	74.6		352.1	30.7		80.2	41.7	3.6	60.4	20.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	71.2	74.6		352.1	30.7		80.2	41.7	3.6	60.4	20.7	
LOS	E	E		F	C		F	D	A	E	C	
Approach Delay		74.1			167.5			34.8			29.8	
Approach LOS		E			F			C			C	
Queue Length 50th (m)	6.0	35.6		~173.2	39.0		10.9	187.5	0.0	62.9	148.0	
Queue Length 95th (m)	14.8	55.6		#227.0	56.2		23.2	#257.8	18.1	80.0	193.6	
Internal Link Dist (m)		77.8			315.3			443.1			436.6	
Turn Bay Length (m)	65.0			35.0			160.0		150.0	195.0		
Base Capacity (vph)	164	455		246	1220		97	1641	950	680	2208	
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	0.13	0.30		1.67	0.45		0.39	0.86	0.39	0.66	0.68	

Intersection Summary		
Area Type:	Other	
Cycle Length: 148.7		
Actuated Cycle Length: 148.7		
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.67		
Intersection Signal Delay: 60.1	Intersection LOS: E	
Intersection Capacity Utilization 109.4%	ICU Level of Service H	
Analysis Period (min) 15		
~ 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.		

Splits and Phases: 1: Highway 6 & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	93	32	377	148	361	35	1305	343	411	1370	19
Future Volume (veh/h)	20	93	32	377	148	361	35	1305	343	411	1370	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1885	1856	1885	1870	1885	1900	1826	1870	1885	1841	1900
Adj Flow Rate, veh/h	22	101	35	410	161	392	38	1418	373	447	1489	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	1	3	1	2	1	0	5	2	1	4	0
Cap, veh/h	102	288	100	347	528	465	124	1537	702	421	1682	24
Arrive On Green	0.22	0.22	0.22	0.06	0.30	0.30	0.07	0.44	0.44	0.12	0.48	0.48
Sat Flow, veh/h	864	1332	461	1795	1777	1566	1810	3469	1585	3483	3531	50
Grp Volume(v), veh/h	22	0	136	410	161	392	38	1418	373	447	737	773
Grp Sat Flow(s),veh/h/ln	864	0	1793	1795	1777	1566	1810	1735	1585	1742	1749	1832
Q Serve(g_s), s	3.6	0.0	9.6	9.0	10.4	35.0	3.0	57.4	25.5	18.0	56.8	57.0
Cycle Q Clear(g_c), s	26.6	0.0	9.6	9.0	10.4	35.0	3.0	57.4	25.5	18.0	56.8	57.0
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	102	0	388	347	528	465	124	1537	702	421	833	873
V/C Ratio(X)	0.22	0.00	0.35	1.18	0.30	0.84	0.31	0.92	0.53	1.06	0.88	0.89
Avail Cap(c_a), veh/h	130	0	445	347	584	515	124	1537	702	421	833	873
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.2	0.0	49.5	56.2	40.5	49.1	66.0	39.1	30.2	65.5	35.3	35.3
Incr Delay (d2), s/veh	1.0	0.0	0.5	107.3	0.3	11.2	2.0	10.7	2.9	61.4	13.2	12.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	0.0	7.4	27.0	7.7	20.2	2.5	31.8	14.3	17.0	32.3	33.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.2	0.0	50.0	163.5	40.8	60.3	68.0	49.7	33.1	126.9	48.5	48.1
LnGrp LOS	E	A	D	F	D	E	E	D	C	F	D	D
Approach Vol, veh/h		158			963			1829			1957	
Approach Delay, s/veh		52.6			101.0			46.7			66.2	
Approach LOS		D			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	23.0	73.8	12.0	40.2	18.0	78.8		52.2				
Change Period (Y+Rc), s	5.0	* 7.8	3.0	7.9	* 7.8	* 7.8		7.9				
Max Green Setting (Gmax), s	18.0	* 61	9.0	37.0	* 8	* 71		49.0				
Max Q Clear Time (g_c+I1), s	20.0	59.4	11.0	28.6	5.0	59.0		37.0				
Green Ext Time (p_c), s	0.0	1.5	0.0	0.5	0.0	8.4		3.2				

Intersection Summary	
HCM 6th Ctrl Delay	65.3
HCM 6th LOS	E

Notes

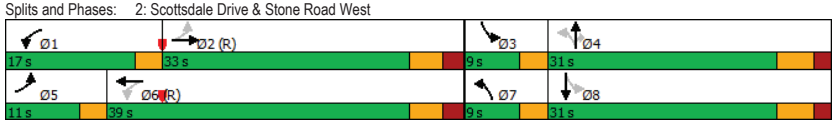
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	577	157	249	683	89	104	161	264	114	172	99
Future Volume (vph)	113	577	157	249	683	89	104	161	264	114	172	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	27.5		0.0	25.0		0.0	30.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			25.0			60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				0.99		0.99		0.97	0.99	0.99	
Frt		0.968			0.983				0.850		0.945	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3440	0	1787	3376	0	1805	1845	1599	1687	1772	0
Flt Permitted	0.283			0.230			0.385			0.557		
Satd. Flow (perm)	530	3440	0	433	3376	0	721	1845	1551	975	1772	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			18				284		32	
Link Speed (k/h)		60			60			41			41	
Link Distance (m)		339.3			210.0			117.2			40.4	
Travel Time (s)		20.4			12.6			10.3			3.5	
Confl. Peds. (#/hr)	25					25	22		17	17		22
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	0%	1%	4%	6%	0%	3%	1%	7%	0%	0%
Adj. Flow (vph)	122	620	169	268	734	96	112	173	284	123	185	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	122	789	0	268	830	0	112	173	284	123	291	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		
Detector Phase	5	2		1	6		7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	10.0	10.0	6.0	10.0	
Minimum Split (s)	9.0	27.1		9.0	27.1		9.0	31.0	31.0	9.0	31.0	
Total Split (s)	11.0	33.0		17.0	39.0		9.0	31.0	31.0	9.0	31.0	
Total Split (%)	12.2%	36.7%		18.9%	43.3%		10.0%	34.4%	34.4%	10.0%	34.4%	
Maximum Green (s)	8.0	26.9		14.0	32.9		6.0	25.0	25.0	6.0	25.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.0	2.0	0.0	2.0	
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)	3.0	6.1		3.0	6.1		3.0	6.0	6.0	3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	
Walk Time (s)		7.0			7.0			9.0	9.0		9.0	
Flash Dont Walk (s)		14.0			14.0			16.0	16.0		16.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effct Green (s)	46.7	35.9		53.6	40.1		27.1	18.1	18.1	27.7	19.9	
Actuated g/C Ratio	0.52	0.40		0.60	0.45		0.30	0.20	0.20	0.31	0.22	
v/c Ratio	0.32	0.57		0.61	0.55		0.39	0.47	0.53	0.35	0.70	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	12.0	23.6		16.2	20.9		23.8	34.5	7.3	23.2	37.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	12.0	23.6		16.2	20.9		23.8	34.5	7.3	23.2	37.8	
LOS	B	C		B	C		C	C	A	C	D	
Approach Delay		22.1			19.8			18.8			33.5	
Approach LOS		C			B			B			C	
Queue Length 50th (m)	8.4	52.0		20.1	52.8		13.3	26.0	0.0	14.8	41.7	
Queue Length 95th (m)	18.6	81.2		39.0	80.0		22.1	40.4	17.3	24.0	62.2	
Internal Link Dist (m)		315.3			186.0			93.2			16.4	
Turn Bay Length (m)	27.5			25.0			30.0			20.0		
Base Capacity (vph)	395	1394		472	1512		289	512	635	347	515	
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	0.31	0.57		0.57	0.55		0.39	0.34	0.45	0.35	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 35 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 75.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Scottsdale Drive & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	577	157	249	683	89	104	161	264	114	172	99
Future Volume (veh/h)	113	577	157	249	683	89	104	161	264	114	172	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1885	1841	1811	1900	1856	1885	1796	1900	1900
Adj Flow Rate, veh/h	122	620	169	268	734	96	112	173	284	123	185	106
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	2	0	1	4	6	0	3	1	7	0	0
Cap, veh/h	364	1042	284	418	1331	174	297	445	372	337	272	156
Arrive On Green	0.06	0.38	0.38	0.11	0.43	0.43	0.06	0.24	0.24	0.07	0.24	0.24
Sat Flow, veh/h	1810	2738	745	1795	3102	406	1810	1856	1554	1711	1121	642
Grp Volume(v), veh/h	122	402	387	268	414	416	112	173	284	123	0	291
Grp Sat Flow(s),veh/h/ln	1810	1777	1706	1795	1749	1759	1810	1856	1554	1711	0	1763
Q Serve(g_s), s	3.6	16.3	16.4	7.7	15.9	15.9	4.1	7.0	15.3	4.8	0.0	13.5
Cycle Q Clear(g_c), s	3.6	16.3	16.4	7.7	15.9	15.9	4.1	7.0	15.3	4.8	0.0	13.5
Prop In Lane	1.00		0.44	1.00		0.23	1.00		1.00	1.00		0.36
Lane Grp Cap(c), veh/h	364	676	650	418	750	755	297	445	372	337	0	427
V/C Ratio(X)	0.34	0.59	0.60	0.64	0.55	0.55	0.38	0.39	0.76	0.36	0.00	0.68
Avail Cap(c_a), veh/h	410	676	650	497	750	755	302	515	432	337	0	490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.8	22.3	22.3	15.5	19.2	19.2	24.3	28.7	31.8	23.7	0.0	30.9
Incr Delay (d2), s/veh	0.5	3.8	4.0	2.1	2.9	2.9	0.8	0.6	6.8	0.7	0.0	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	10.2	9.9	4.4	9.5	9.5	3.1	5.5	10.2	3.4	0.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.4	26.1	26.3	17.6	22.1	22.1	25.1	29.2	38.6	24.3	0.0	34.1
LnGrp LOS	B	C	C	B	C	C	C	C	D	C	A	C
Approach Vol, veh/h		911			1098			569			414	
Approach Delay, s/veh		24.9			21.0			33.1			31.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	40.4	9.0	27.6	8.7	44.7	8.8	27.8
Change Period (Y+Rc), s	3.0	* 6.1	3.0	6.0	3.0	* 6.1	3.0	6.0
Max Green Setting (Gmax), s	14.0	* 27	6.0	25.0	8.0	* 33	6.0	25.0
Max Q Clear Time (g_c+I1), s	9.7	18.4	6.8	17.3	5.6	17.9	6.1	15.5
Green Ext Time (p_c), s	0.4	3.6	0.0	1.7	0.1	5.3	0.0	1.4

Intersection Summary		
HCM 6th Ctrl Delay		25.9
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	19	142	147	219	222	22
Future Volume (vph)	19	142	147	219	222	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.881				0.988	
Flt Protected	0.994		0.950			
Satd. Flow (prot)	1599	0	1770	1827	1794	0
Flt Permitted	0.994		0.950			
Satd. Flow (perm)	1599	0	1770	1827	1794	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	74.8			68.1	69.0	
Travel Time (s)	6.7			6.1	6.2	
Confl. Peds. (#/hr)	3	9	11			11
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	19%	2%	2%	4%	3%	21%
Adj. Flow (vph)	22	161	167	249	252	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	183	0	167	249	277	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	142	147	219	222	22
Future Vol, veh/h	19	142	147	219	222	22
Conflicting Peds, #/hr	3	9	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	20	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	19	2	2	4	3	21
Mvmt Flow	22	161	167	249	252	25

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	862	285	288	0	-	0
Stage 1	276	-	-	-	-	-
Stage 2	586	-	-	-	-	-
Critical Hdwy	6.59	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.59	-	-	-	-	-
Critical Hdwy Stg 2	5.59	-	-	-	-	-
Follow-up Hdwy	3.671	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	304	754	1274	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	259	741	1262	-	-	-
Mov Cap-2 Maneuver	259	-	-	-	-	-
Stage 1	630	-	-	-	-	-
Stage 2	519	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.4	3.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1262	-	608	-	-
HCM Lane V/C Ratio	0.132	-	0.301	-	-
HCM Control Delay (s)	8.3	-	13.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.5	-	1.3	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	0	35	45	0	53	30	285	48	34	305	25
Future Volume (vph)	28	0	35	45	0	53	30	285	48	34	305	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.925				0.850		0.982			0.989	
Flt Protected		0.978			0.950			0.996		0.950		
Satd. Flow (prot)	0	1332	0	0	1805	1583	0	1779	0	1805	1795	0
Flt Permitted		0.978			0.950			0.996		0.950		
Satd. Flow (perm)	0	1332	0	0	1805	1583	0	1779	0	1805	1795	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		32.3			45.9			70.2			68.1	
Travel Time (s)		2.9			4.1			6.3			6.1	
Confl. Peds. (#/hr)							11		12	12		11
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	29%	2%	29%	0%	2%	2%	25%	3%	0%	0%	3%	25%
Adj. Flow (vph)	31	0	39	51	0	60	34	320	54	38	343	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	70	0	0	51	60	0	408	0	38	371	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	57.8%	ICU Level of Service B	
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	0	35	45	0	53	30	285	48	34	305	25
Future Vol, veh/h	28	0	35	45	0	53	30	285	48	34	305	25
Conflicting Peds, #/hr	0	0	0	0	0	0	11	0	12	12	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	20	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	29	2	29	0	2	2	25	3	0	0	3	25
Mvmt Flow	31	0	39	51	0	60	34	320	54	38	343	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	889	898	368	880	885	359	382	0	0	386	0	0
Stage 1	444	444	-	427	427	-	-	-	-	-	-	-
Stage 2	445	454	-	453	458	-	-	-	-	-	-	-
Critical Hdwy	7.39	6.52	6.49	7.1	6.52	6.22	4.35	-	-	4.1	-	-
Critical Hdwy Stg 1	6.39	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.39	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.761	4.018	3.561	3.5	4.018	3.318	2.425	-	-	2.2	-	-
Pot Cap-1 Maneuver	237	279	621	270	284	685	1061	-	-	1184	-	-
Stage 1	544	575	-	610	585	-	-	-	-	-	-	-
Stage 2	543	569	-	590	567	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	202	254	615	236	259	678	1051	-	-	1172	-	-
Mov Cap-2 Maneuver	202	254	-	236	259	-	-	-	-	-	-	-
Stage 1	517	551	-	579	555	-	-	-	-	-	-	-
Stage 2	475	540	-	534	544	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.3	17	0.7	0.8
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1051	-	-	322	236	678	1172	-	-
HCM Lane V/C Ratio	0.032	-	-	0.22	0.214	0.088	0.033	-	-
HCM Control Delay (s)	8.5	0	-	19.3	24.4	10.8	8.2	-	-
HCM Lane LOS	A	A	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.8	0.3	0.1	-	-

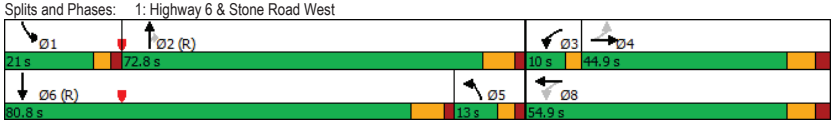
Appendix G: 2035 Background Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	124	45	236	54	192	10	1134	439	306	1185	16
Future Volume (vph)	28	124	45	236	54	192	10	1134	439	306	1185	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	35.0		0.0	160.0		150.0	195.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor	1.00				0.99							
Frt		0.960			0.883				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1786	0	1719	3012	0	1626	3223	1568	3400	3276	0
Flt Permitted	0.587			0.366			0.950			0.950		
Satd. Flow (perm)	1071	1786	0	662	3012	0	1626	3223	1568	3400	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			209				467		1	
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		101.8			339.3			467.1			460.6	
Travel Time (s)		6.1			20.4			21.0			23.7	
Confl. Peds. (#/hr)	2					2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	0%	8%	5%	7%	4%	11%	12%	3%	3%	10%	7%
Adj. Flow (vph)	30	135	49	257	59	209	11	1233	477	333	1288	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	184	0	257	268	0	11	1233	477	333	1305	0
Turn Type	Perm	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	4	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	53.0	53.0	8.0	53.0	
Minimum Split (s)	44.9	44.9		10.0	44.9		13.0	60.8	60.8	13.0	60.8	
Total Split (s)	44.9	44.9		10.0	54.9		13.0	72.8	72.8	21.0	80.8	
Total Split (%)	30.2%	30.2%		6.7%	36.9%		8.7%	49.0%	49.0%	14.1%	54.3%	
Maximum Green (s)	37.0	37.0		7.0	47.0		8.0	65.0	65.0	16.0	73.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		3.0	5.9	5.9	3.0	5.9	
All-Red Time (s)	2.9	2.9		0.0	2.9		2.0	1.9	1.9	2.0	1.9	
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)	7.9	7.9		3.0	7.9		5.0	7.8	7.8	5.0	7.8	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	3.0	3.0	4.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)	21.0	21.0			21.0			41.0	41.0		41.0	
Flash Dont Walk (s)	16.0	16.0			16.0			12.0	12.0		12.0	
Pedestrian Calls (#/hr)	0	0			0			0	0		0	
Act Effct Green (s)	19.8	19.8		34.7	29.8		8.0	76.7	76.7	21.6	98.0	
Actuated g/C Ratio	0.13	0.13		0.23	0.20		0.05	0.52	0.52	0.15	0.66	
v/c Ratio	0.21	0.74		1.26	0.35		0.13	0.74	0.46	0.68	0.60	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	58.7	75.4		194.5	12.9		70.5	33.2	3.8	67.2	17.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	58.7	75.4		194.5	12.9		70.5	33.2	3.8	67.2	17.7	
LOS	E	E		F	B		E	C	A	E	B	
Approach Delay		73.0			101.8			25.3			27.7	
Approach LOS		E			F			C			C	
Queue Length 50th (m)	7.9	48.9		~86.2	7.4		3.1	145.6	1.4	47.8	94.0	
Queue Length 95th (m)	17.3	71.5		#132.8	18.5		9.8	199.8	22.0	62.5	167.3	
Internal Link Dist (m)		77.8			315.3			443.1			436.6	
Turn Bay Length (m)	65.0			35.0			160.0		150.0	195.0		
Base Capacity (vph)	266	453		204	1094		87	1661	1034	493	2160	
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	0.11	0.41		1.26	0.24		0.13	0.74	0.46	0.68	0.60	

Intersection Summary		
Area Type:	Other	
Cycle Length: 148.7		
Actuated Cycle Length: 148.7		
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.26		
Intersection Signal Delay: 38.6	Intersection LOS: D	
Intersection Capacity Utilization 95.8%	ICU Level of Service F	
Analysis Period (min) 15		
~ 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.		

Splits and Phases: 1: Highway 6 & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	124	45	236	54	192	10	1134	439	306	1185	16
Future Volume (veh/h)	28	124	45	236	54	192	10	1134	439	306	1185	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1900	1781	1826	1796	1841	1737	1722	1856	1856	1752	1796
Adj Flow Rate, veh/h	30	135	49	257	59	209	11	1233	477	333	1288	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	0	8	5	7	4	11	12	3	3	10	7
Cap, veh/h	124	173	63	168	337	300	256	1819	874	368	1648	22
Arrive On Green	0.13	0.13	0.13	0.05	0.20	0.20	0.15	0.56	0.56	0.11	0.49	0.49
Sat Flow, veh/h	1091	1328	482	1739	1706	1518	1654	3272	1572	3428	3364	44
Grp Volume(v), veh/h	30	0	184	257	59	209	11	1233	477	333	637	668
Grp Sat Flow(s),veh/h/ln	1091	0	1811	1739	1706	1518	1654	1636	1572	1714	1664	1744
Q Serve(g_s), s	3.9	0.0	14.7	7.0	4.3	19.1	0.8	40.0	28.8	14.3	47.1	47.2
Cycle Q Clear(g_c), s	13.0	0.0	14.7	7.0	4.3	19.1	0.8	40.0	28.8	14.3	47.1	47.2
Prop In Lane	1.00		0.27	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	124	0	236	168	337	300	256	1819	874	368	815	854
V/C Ratio(X)	0.24	0.00	0.78	1.53	0.17	0.70	0.04	0.68	0.55	0.90	0.78	0.78
Avail Cap(c_a), veh/h	253	0	450	168	538	479	256	1819	874	368	815	854
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.3	0.0	62.7	61.8	49.7	55.6	53.6	23.6	21.1	65.7	31.4	31.4
Incr Delay (d2), s/veh	1.0	0.0	5.5	267.6	0.2	2.9	0.1	2.1	2.4	25.3	7.3	7.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.9	0.0	10.9	24.0	3.1	11.4	0.6	19.8	14.8	11.6	25.2	26.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.3	0.0	68.2	329.4	49.9	58.5	53.7	25.6	23.5	91.0	38.7	38.5
LnGrp LOS	E	A	E	F	D	E	D	C	C	F	D	D
Approach Vol, veh/h		214			525			1721			1638	
Approach Delay, s/veh		68.1			190.1			25.2			49.3	
Approach LOS		E			F			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	8
Phs Duration (G+Y+Rc), s	21.0	90.6	10.0	27.4	30.8	80.8	37.4
Change Period (Y+Rc), s	5.0	* 7.8	3.0	7.9	* 7.8	* 7.8	7.9
Max Green Setting (Gmax), s	16.0	* 65	7.0	37.0	* 8	* 73	47.0
Max Q Clear Time (g_c+I1), s	16.3	42.0	9.0	16.7	2.8	49.2	21.1
Green Ext Time (p_c), s	0.0	14.1	0.0	1.2	0.0	11.5	2.0

Intersection Summary	
HCM 6th Ctrl Delay	58.2
HCM 6th LOS	E

Notes

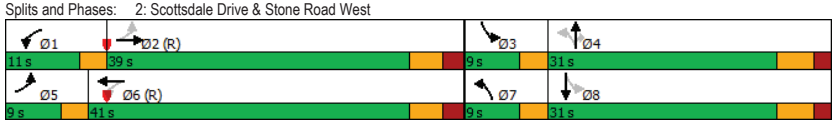
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	710	82	126	353	57	80	178	171	112	117	49
Future Volume (vph)	77	710	82	126	353	57	80	178	171	112	117	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	27.5		0.0	25.0		0.0	30.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			25.0			60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		0.97		0.98	0.99	0.98	
Frt		0.985			0.979				0.850		0.956	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	3366	0	1736	3194	0	1752	1827	1568	1626	1673	0
Flt Permitted	0.477			0.204			0.570			0.452		
Satd. Flow (perm)	814	3366	0	372	3194	0	1021	1827	1529	767	1673	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			23				201		23	
Link Speed (k/h)		60			60			41			41	
Link Distance (m)		339.3			210.0			117.2			40.4	
Travel Time (s)		20.4			12.6			10.3			3.5	
Confl. Peds. (#/hr)	11		14	14		11	37		12	12		37
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	10%	5%	8%	4%	9%	16%	3%	4%	3%	11%	4%	14%
Adj. Flow (vph)	91	835	96	148	415	67	94	209	201	132	138	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	931	0	148	482	0	94	209	201	132	196	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		
Detector Phase	5	2		1	6		7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	10.0	10.0	6.0	10.0	
Minimum Split (s)	9.0	27.1		9.0	27.1		9.0	31.0	31.0	9.0	31.0	
Total Split (s)	9.0	39.0		11.0	41.0		9.0	31.0	31.0	9.0	31.0	
Total Split (%)	10.0%	43.3%		12.2%	45.6%		10.0%	34.4%	34.4%	10.0%	34.4%	
Maximum Green (s)	6.0	32.9		8.0	34.9		6.0	25.0	25.0	6.0	25.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.0	2.0	0.0	2.0	
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)	3.0	6.1		3.0	6.1		3.0	6.0	6.0	3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	
Walk Time (s)		7.0			7.0			9.0	9.0		9.0	
Flash Dont Walk (s)		14.0			14.0			16.0	16.0		16.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effct Green (s)	52.1	41.5		55.0	44.5		24.7	15.7	15.7	25.3	17.5	
Actuated g/C Ratio	0.58	0.46		0.61	0.49		0.27	0.17	0.17	0.28	0.19	
v/c Ratio	0.17	0.60		0.41	0.30		0.29	0.66	0.46	0.48	0.57	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	8.7	21.0		11.5	15.2		23.7	43.9	8.2	29.1	35.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	8.7	21.0		11.5	15.2		23.7	43.9	8.2	29.1	35.6	
LOS	A	C		B	B		C	D	A	C	D	
Approach Delay		19.9			14.3			25.9			33.0	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	5.6	58.5		9.3	24.2		11.7	33.6	0.0	16.9	27.6	
Queue Length 95th (m)	12.7	85.5		19.2	38.3		19.1	47.3	13.2	25.7	41.6	
Internal Link Dist (m)		315.3			186.0			93.2			16.4	
Turn Bay Length (m)	27.5			25.0			30.0			20.0		
Base Capacity (vph)	540	1560		365	1590		329	507	569	273	481	
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	0.17	0.60		0.41	0.30		0.29	0.41	0.35	0.48	0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 21.4		Intersection LOS: C	
Intersection Capacity Utilization 68.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Scottsdale Drive & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	710	82	126	353	57	80	178	171	112	117	49
Future Volume (veh/h)	77	710	82	126	353	57	80	178	171	112	117	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	0.97		0.95	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1826	1781	1841	1767	1663	1856	1841	1856	1737	1841	1693
Adj Flow Rate, veh/h	91	835	96	148	415	67	94	209	201	132	138	58
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	10	5	8	4	9	16	3	4	3	11	4	14
Cap, veh/h	473	1349	155	331	1270	203	349	430	350	310	290	122
Arrive On Green	0.06	0.43	0.43	0.07	0.44	0.44	0.06	0.23	0.23	0.07	0.24	0.24
Sat Flow, veh/h	1668	3129	360	1753	2893	464	1767	1841	1498	1654	1211	509
Grp Volume(v), veh/h	91	463	468	148	239	243	94	209	201	132	0	196
Grp Sat Flow(s),veh/h/ln	1668	1735	1754	1753	1678	1678	1767	1841	1498	1654	0	1720
Q Serve(g_s), s	2.6	18.6	18.6	4.2	8.4	8.5	3.6	8.8	10.7	5.5	0.0	8.8
Cycle Q Clear(g_c), s	2.6	18.6	18.6	4.2	8.4	8.5	3.6	8.8	10.7	5.5	0.0	8.8
Prop In Lane	1.00		0.21	1.00		0.28	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	473	748	756	331	737	737	349	430	350	310	0	412
V/C Ratio(X)	0.19	0.62	0.62	0.45	0.33	0.33	0.27	0.49	0.57	0.43	0.00	0.48
Avail Cap(c_a), veh/h	485	748	756	368	737	737	360	511	416	310	0	478
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.7	19.9	19.9	14.9	16.5	16.6	24.1	29.8	30.5	24.5	0.0	29.3
Incr Delay (d2), s/veh	0.2	3.8	3.8	0.9	1.2	1.2	0.4	0.9	1.5	0.9	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	10.8	10.9	2.3	4.9	5.0	2.6	6.9	6.9	3.8	0.0	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.9	23.7	23.7	15.9	17.7	17.8	24.5	30.7	32.0	25.4	0.0	30.2
LnGrp LOS	B	C	C	B	B	B	C	C	C	C	A	C
Approach Vol, veh/h		1022			630			504			328	
Approach Delay, s/veh		22.7			17.3			30.1			28.3	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	44.9	9.0	27.0	8.4	45.6	8.4	27.6
Change Period (Y+Rc), s	3.0	* 6.1	3.0	6.0	3.0	* 6.1	3.0	6.0
Max Green Setting (Gmax), s	8.0	* 33	6.0	25.0	6.0	* 35	6.0	25.0
Max Q Clear Time (g_c+I1), s	6.2	20.6	7.5	12.7	4.6	10.5	5.6	10.8
Green Ext Time (p_c), s	0.1	5.3	0.0	2.1	0.0	3.5	0.0	1.1

Intersection Summary		
HCM 6th Ctrl Delay	23.6	
HCM 6th LOS	C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	18	167	115	186	113	33
Future Volume (vph)	18	167	115	186	113	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.878				0.970	
Flt Protected	0.995		0.950			
Satd. Flow (prot)	1532	0	1703	1776	1619	0
Flt Permitted	0.995		0.950			
Satd. Flow (perm)	1532	0	1703	1776	1619	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	74.8			68.1	69.0	
Travel Time (s)	6.7			6.1	6.2	
Confl. Peds. (#/hr)	2	1	26			26
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	21%	7%	6%	7%	6%	41%
Adj. Flow (vph)	25	235	162	262	159	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	260	0	162	262	205	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	167	115	186	113	33
Future Vol, veh/h	18	167	115	186	113	33
Conflicting Peds, #/hr	2	1	26	0	0	26
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	20	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	21	7	6	7	6	41
Mvmt Flow	25	235	162	262	159	46

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	796	209	231	0	-	0
Stage 1	208	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Critical Hdwy	6.61	6.27	4.16	-	-	-
Critical Hdwy Stg 1	5.61	-	-	-	-	-
Critical Hdwy Stg 2	5.61	-	-	-	-	-
Follow-up Hdwy	3.689	3.363	2.254	-	-	-
Pot Cap-1 Maneuver	331	819	1314	-	-	-
Stage 1	784	-	-	-	-	-
Stage 2	520	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	277	800	1285	-	-	-
Mov Cap-2 Maneuver	277	-	-	-	-	-
Stage 1	670	-	-	-	-	-
Stage 2	509	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.6	3.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1285	-	676	-	-
HCM Lane V/C Ratio	0.126	-	0.385	-	-
HCM Control Delay (s)	8.2	-	13.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.8	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	5	8	0	7	6	291	15	11	265	4
Future Volume (vph)	3	0	5	8	0	7	6	291	15	11	265	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.914				0.850		0.993			0.998	
Flt Protected		0.982			0.950			0.999		0.950		
Satd. Flow (prot)	0	1672	0	0	1203	1615	0	1759	0	1656	1770	0
Flt Permitted		0.982			0.950			0.999		0.950		
Satd. Flow (perm)	0	1672	0	0	1203	1615	0	1759	0	1656	1770	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		32.3			45.9			70.2			68.1	
Travel Time (s)		2.9			4.1			6.3			6.1	
Confl. Peds. (#/hr)			1	1			26		12	12		26
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	2%	2%	2%	50%	2%	0%	14%	7%	7%	9%	7%	14%
Adj. Flow (vph)	4	0	7	11	0	10	8	404	21	15	368	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	11	10	0	433	0	15	374	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.6%	ICU Level of Service A	
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	5	8	0	7	6	291	15	11	265	4
Future Vol, veh/h	3	0	5	8	0	7	6	291	15	11	265	4
Conflicting Peds, #/hr	0	0	1	1	0	0	26	0	12	12	0	26
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	20	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	50	2	0	14	7	7	9	7	14
Mvmt Flow	4	0	7	11	0	10	8	404	21	15	368	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	863	880	398	849	873	427	400	0	0	437	0	0
Stage 1	427	427	-	443	443	-	-	-	-	-	-	-
Stage 2	436	453	-	406	430	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.6	6.52	6.2	4.24	-	-	4.19	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.6	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.6	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.95	4.018	3.3	2.326	-	-	2.281	-	-
Pot Cap-1 Maneuver	275	286	652	233	289	632	1096	-	-	1086	-	-
Stage 1	606	585	-	511	576	-	-	-	-	-	-	-
Stage 2	599	570	-	537	583	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	260	270	637	224	273	626	1072	-	-	1075	-	-
Mov Cap-2 Maneuver	260	270	-	224	273	-	-	-	-	-	-	-
Stage 1	587	564	-	501	564	-	-	-	-	-	-	-
Stage 2	584	559	-	523	562	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14	16.7	0.2	0.3
HCM LOS	B	C		

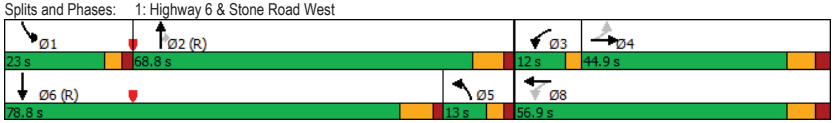
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1072	-	-	413	224	626	1075	-	-
HCM Lane V/C Ratio	0.008	-	-	0.027	0.05	0.016	0.014	-	-
HCM Control Delay (s)	8.4	0	-	14	21.9	10.8	8.4	-	-
HCM Lane LOS	A	A	-	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	100	33	393	160	382	37	1371	360	437	1440	20
Future Volume (vph)	21	100	33	393	160	382	37	1371	360	437	1440	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	35.0		0.0	160.0		150.0	195.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor	0.99				0.98							
Frt		0.963			0.894				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1803	0	1787	3127	0	1805	3438	1583	3467	3466	0
Flt Permitted	0.297			0.437			0.950			0.950		
Satd. Flow (perm)	561	1803	0	822	3127	0	1805	3438	1583	3467	3466	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			281				391		1	
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		101.8			339.3			467.1			460.6	
Travel Time (s)		6.1			20.4			21.0			23.7	
Confl. Peds. (#/hr)	12					12						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	1%	2%	1%	0%	5%	2%	1%	4%	0%
Adj. Flow (vph)	23	109	36	427	174	415	40	1490	391	475	1565	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	145	0	427	589	0	40	1490	391	475	1587	0
Turn Type	Perm	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	4	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	53.0	53.0	8.0	53.0	
Minimum Split (s)	44.9	44.9		10.0	44.9		13.0	60.8	60.8	13.0	60.8	
Total Split (s)	44.9	44.9		12.0	56.9		13.0	68.8	68.8	23.0	78.8	
Total Split (%)	30.2%	30.2%		8.1%	38.3%		8.7%	46.3%	46.3%	15.5%	53.0%	
Maximum Green (s)	37.0	37.0		9.0	49.0		8.0	61.0	61.0	18.0	71.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		3.0	5.9	5.9	3.0	5.9	
All-Red Time (s)	2.9	2.9		0.0	2.9		2.0	1.9	1.9	2.0	1.9	
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)	7.9	7.9		3.0	7.9		5.0	7.8	7.8	5.0	7.8	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	3.0	3.0	4.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)	21.0	21.0			21.0			41.0	41.0		41.0	
Flash Dont Walk (s)	16.0	16.0			16.0			12.0	12.0		12.0	
Pedestrian Calls (#/hr)	0	0			0			0	0		0	
Act Effct Green (s)	16.5	16.5		33.4	28.5		8.0	67.5	67.5	32.0	94.1	
Actuated g/C Ratio	0.11	0.11		0.22	0.19		0.05	0.45	0.45	0.22	0.63	
v/c Ratio	0.37	0.69		1.76	0.71		0.41	0.96	0.42	0.64	0.72	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	76.2	75.2		390.7	33.4		81.2	53.5	3.9	57.8	22.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	76.2	75.2		390.7	33.4		81.2	53.5	3.9	57.8	22.4	
LOS	E	E		F	C		F	D	A	E	C	
Approach Delay		75.3			183.6			44.0			30.6	
Approach LOS		E			F			D			C	
Queue Length 50th (m)	6.3	38.2		~184.2	45.2		11.5	212.1	0.0	66.4	164.3	
Queue Length 95th (m)	15.5	58.7		#238.9	62.7		24.1	#291.0	19.2	83.6	214.7	
Internal Link Dist (m)		77.8			315.3			443.1			436.6	
Turn Bay Length (m)	65.0			35.0			160.0		150.0	195.0		
Base Capacity (vph)	139	456		243	1218		97	1560	931	746	2193	
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	0.17	0.32		1.76	0.48		0.41	0.96	0.42	0.64	0.72	

Intersection Summary		
Area Type:	Other	
Cycle Length: 148.7		
Actuated Cycle Length: 148.7		
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.76		
Intersection Signal Delay: 67.1	Intersection LOS: E	
Intersection Capacity Utilization 110.8%	ICU Level of Service H	
Analysis Period (min) 15		
~ 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.		

Splits and Phases: 1: Highway 6 & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	100	33	393	160	382	37	1371	360	437	1440	20
Future Volume (veh/h)	21	100	33	393	160	382	37	1371	360	437	1440	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1885	1856	1885	1870	1885	1900	1826	1870	1885	1841	1900
Adj Flow Rate, veh/h	23	109	36	427	174	415	40	1490	391	475	1565	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	1	3	1	2	1	0	5	2	1	4	0
Cap, veh/h	96	306	101	354	546	481	106	1503	687	421	1683	24
Arrive On Green	0.23	0.23	0.23	0.06	0.31	0.31	0.06	0.43	0.43	0.12	0.48	0.48
Sat Flow, veh/h	837	1350	446	1795	1777	1566	1810	3469	1585	3483	3531	50
Grp Volume(v), veh/h	23	0	145	427	174	415	40	1490	391	475	774	813
Grp Sat Flow(s),veh/h/ln	837	0	1796	1795	1777	1566	1810	1735	1585	1742	1749	1832
Q Serve(g_s), s	4.0	0.0	10.1	9.0	11.2	37.2	3.2	63.6	27.7	18.0	62.0	62.2
Cycle Q Clear(g_c), s	29.2	0.0	10.1	9.0	11.2	37.2	3.2	63.6	27.7	18.0	62.0	62.2
Prop In Lane	1.00		0.25	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	96	0	407	354	546	481	106	1503	687	421	833	873
V/C Ratio(X)	0.24	0.00	0.36	1.21	0.32	0.86	0.38	0.99	0.57	1.13	0.93	0.93
Avail Cap(c_a), veh/h	115	0	446	354	584	515	106	1503	687	421	833	873
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.1	0.0	48.5	55.6	39.7	48.7	67.5	42.0	31.8	65.5	36.6	36.7
Incr Delay (d2), s/veh	1.3	0.0	0.5	117.2	0.3	13.4	3.1	21.3	3.4	83.9	18.1	17.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	0.0	7.7	29.0	8.1	21.5	2.7	37.2	15.4	19.1	35.8	37.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.3	0.0	49.0	172.8	40.0	62.1	70.6	63.2	35.2	149.4	54.7	54.4
LnGrp LOS	E	A	D	F	D	E	E	E	D	F	D	D
Approach Vol, veh/h		168			1016			1921			2062	
Approach Delay, s/veh		51.8			104.8			57.7			76.4	
Approach LOS		D			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	23.0	72.3	12.0	41.7	16.5	78.8		53.7				
Change Period (Y+Rc), s	5.0	* 7.8	3.0	7.9	* 7.8	* 7.8		7.9				
Max Green Setting (Gmax), s	18.0	* 61	9.0	37.0	* 8	* 71		49.0				
Max Q Clear Time (g_c+I1), s	20.0	65.6	11.0	31.2	5.2	64.2		39.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.4	0.0	5.4		3.0				

Intersection Summary	
HCM 6th Ctrl Delay	74.2
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

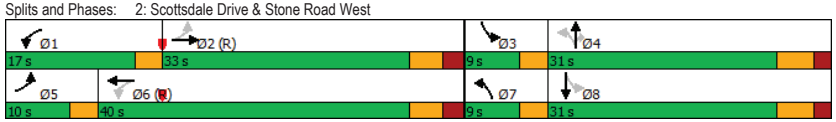
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	622	170	269	736	86	112	173	284	112	185	87
Future Volume (vph)	105	622	170	269	736	86	112	173	284	112	185	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	27.5		0.0	25.0		0.0	30.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			25.0			60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				0.99		0.99		0.97	0.99	0.99	
Frt		0.968			0.984				0.850		0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3440	0	1787	3383	0	1805	1845	1599	1687	1788	0
Flt Permitted	0.287			0.191			0.337			0.564		
Satd. Flow (perm)	538	3440	0	359	3383	0	632	1845	1551	988	1788	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			16				305		26	
Link Speed (k/h)		60			60			41			41	
Link Distance (m)		339.3			210.0			117.2			40.4	
Travel Time (s)		20.4			12.6			10.3			3.5	
Confl. Peds. (#/hr)	25					25	22		17	17		22
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	0%	1%	4%	6%	0%	3%	1%	7%	0%	0%
Adj. Flow (vph)	113	669	183	289	791	92	120	186	305	120	199	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	113	852	0	289	883	0	120	186	305	120	293	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		
Detector Phase	5	2		1	6		7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	10.0	10.0	6.0	10.0	
Minimum Split (s)	9.0	27.1		9.0	27.1		9.0	31.0	31.0	9.0	31.0	
Total Split (s)	10.0	33.0		17.0	40.0		9.0	31.0	31.0	9.0	31.0	
Total Split (%)	11.1%	36.7%		18.9%	44.4%		10.0%	34.4%	34.4%	10.0%	34.4%	
Maximum Green (s)	7.0	26.9		14.0	33.9		6.0	25.0	25.0	6.0	25.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.0	2.0	0.0	2.0	
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)	3.0	6.1		3.0	6.1		3.0	6.0	6.0	3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	
Walk Time (s)		7.0			7.0			9.0	9.0		9.0	
Flash Dont Walk (s)		14.0			14.0			16.0	16.0		16.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effct Green (s)	44.2	33.7		53.3	41.7		27.7	18.7	18.7	27.7	18.7	
Actuated g/C Ratio	0.49	0.37		0.59	0.46		0.31	0.21	0.21	0.31	0.21	
v/c Ratio	0.31	0.65		0.68	0.56		0.44	0.49	0.54	0.34	0.75	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	12.3	26.7		19.9	20.7		25.1	34.8	7.2	22.8	42.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	12.3	26.7		19.9	20.7		25.1	34.8	7.2	22.8	42.1	
LOS	B	C		B	C		C	C	A	C	D	
Approach Delay		25.0			20.5			19.1			36.5	
Approach LOS		C			C			B			D	
Queue Length 50th (m)	7.7	61.2		22.1	57.5		14.3	28.1	0.0	14.3	43.0	
Queue Length 95th (m)	17.6	89.5		#49.9	84.9		23.4	43.2	17.9	23.6	63.8	
Internal Link Dist (m)		315.3			186.0			93.2			16.4	
Turn Bay Length (m)	27.5			25.0			30.0			20.0		
Base Capacity (vph)	371	1312		448	1574		272	512	651	350	515	
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	0.30	0.65		0.65	0.56		0.44	0.36	0.47	0.34	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 35 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 23.7		Intersection LOS: C	
Intersection Capacity Utilization 78.9%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 2: Scottsdale Drive & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	622	170	269	736	86	112	173	284	112	185	87
Future Volume (veh/h)	105	622	170	269	736	86	112	173	284	112	185	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1885	1841	1811	1900	1856	1885	1796	1900	1900
Adj Flow Rate, veh/h	113	669	183	289	791	92	120	186	305	120	199	94
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	2	0	1	4	6	0	3	1	7	0	0
Cap, veh/h	339	996	272	400	1331	155	308	458	384	334	298	141
Arrive On Green	0.06	0.36	0.36	0.12	0.42	0.42	0.07	0.25	0.25	0.07	0.25	0.25
Sat Flow, veh/h	1810	2734	747	1795	3149	366	1810	1856	1555	1711	1208	571
Grp Volume(v), veh/h	113	435	417	289	439	444	120	186	305	120	0	293
Grp Sat Flow(s),veh/h/ln	1810	1777	1705	1795	1749	1767	1810	1856	1555	1711	0	1779
Q Serve(g_s), s	3.4	18.5	18.6	8.5	17.4	17.4	4.4	7.6	16.5	4.7	0.0	13.4
Cycle Q Clear(g_c), s	3.4	18.5	18.6	8.5	17.4	17.4	4.4	7.6	16.5	4.7	0.0	13.4
Prop In Lane	1.00		0.44	1.00		0.21	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	339	647	621	400	739	747	308	458	384	334	0	439
V/C Ratio(X)	0.33	0.67	0.67	0.72	0.59	0.59	0.39	0.41	0.79	0.36	0.00	0.67
Avail Cap(c_a), veh/h	366	647	621	462	739	747	308	515	432	334	0	494
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.8	24.1	24.1	17.2	20.0	20.0	23.8	28.4	31.7	23.2	0.0	30.5
Incr Delay (d2), s/veh	0.6	5.5	5.7	4.6	3.5	3.5	0.8	0.6	8.9	0.6	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	11.6	11.3	5.4	10.3	10.4	3.3	5.9	11.1	3.3	0.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.3	29.6	29.8	21.8	23.5	23.5	24.6	28.9	40.6	23.8	0.0	33.5
LnGrp LOS	B	C	C	C	C	C	C	C	D	C	A	C
Approach Vol, veh/h		965			1172			611			413	
Approach Delay, s/veh		28.2			23.1			33.9			30.7	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.9	38.9	9.0	28.2	8.6	44.1	9.0	28.2
Change Period (Y+Rc), s	3.0	* 6.1	3.0	6.0	3.0	* 6.1	3.0	6.0
Max Green Setting (Gmax), s	14.0	* 27	6.0	25.0	7.0	* 34	6.0	25.0
Max Q Clear Time (g_c+I1), s	10.5	20.6	6.7	18.5	5.4	19.4	6.4	15.4
Green Ext Time (p_c), s	0.4	3.1	0.0	1.6	0.0	5.5	0.0	1.5

Intersection Summary		
HCM 6th Ctrl Delay		27.8
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	153	158	211	218	24
Future Volume (vph)	20	153	158	211	218	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.881				0.987	
Flt Protected	0.994		0.950			
Satd. Flow (prot)	1600	0	1770	1827	1790	0
Flt Permitted	0.994		0.950			
Satd. Flow (perm)	1600	0	1770	1827	1790	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	74.8			68.1	69.0	
Travel Time (s)	6.7			6.1	6.2	
Confl. Peds. (#/hr)	3	9	11			11
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	19%	2%	2%	4%	3%	21%
Adj. Flow (vph)	23	174	180	240	248	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	197	0	180	240	275	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	153	158	211	218	24
Future Vol, veh/h	20	153	158	211	218	24
Conflicting Peds, #/hr	3	9	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	20	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	19	2	2	4	3	21
Mvmt Flow	23	174	180	240	248	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	876	282	286	0	-	0
Stage 1	273	-	-	-	-	-
Stage 2	603	-	-	-	-	-
Critical Hdwy	6.59	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.59	-	-	-	-	-
Critical Hdwy Stg 2	5.59	-	-	-	-	-
Follow-up Hdwy	3.671	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	298	757	1276	-	-	-
Stage 1	735	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	251	744	1264	-	-	-
Mov Cap-2 Maneuver	251	-	-	-	-	-
Stage 1	625	-	-	-	-	-
Stage 2	510	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.8	3.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1264	-	606	-	-
HCM Lane V/C Ratio	0.142	-	0.324	-	-
HCM Control Delay (s)	8.3	-	13.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.5	-	1.4	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	7	45	0	53	5	311	48	34	332	5
Future Volume (vph)	5	0	7	45	0	53	5	311	48	34	332	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.923				0.850		0.982			0.998	
Flt Protected		0.979			0.950			0.999		0.950		
Satd. Flow (prot)	0	1331	0	0	1805	1583	0	1811	0	1805	1835	0
Flt Permitted		0.979			0.950			0.999		0.950		
Satd. Flow (perm)	0	1331	0	0	1805	1583	0	1811	0	1805	1835	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		32.3			45.9			70.2			68.1	
Travel Time (s)		2.9			4.1			6.3			6.1	
Confl. Peds. (#/hr)							11		12	12		11
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	29%	2%	29%	0%	2%	2%	25%	3%	0%	0%	3%	25%
Adj. Flow (vph)	6	0	8	51	0	60	6	349	54	38	373	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	0	51	60	0	409	0	38	379	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	7	45	0	53	5	311	48	34	332	5
Future Vol, veh/h	5	0	7	45	0	53	5	311	48	34	332	5
Conflicting Peds, #/hr	0	0	0	0	0	0	11	0	12	12	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	20	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	29	2	29	0	2	2	25	3	0	0	3	25
Mvmt Flow	6	0	8	51	0	60	6	349	54	38	373	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	881	890	387	856	866	388	390	0	0	415	0	0
Stage 1	463	463	-	400	400	-	-	-	-	-	-	-
Stage 2	418	427	-	456	466	-	-	-	-	-	-	-
Critical Hdwy	7.39	6.52	6.49	7.1	6.52	6.22	4.35	-	-	4.1	-	-
Critical Hdwy Stg 1	6.39	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.39	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.761	4.018	3.561	3.5	4.018	3.318	2.425	-	-	2.2	-	-
Pot Cap-1 Maneuver	240	282	606	280	291	660	1054	-	-	1155	-	-
Stage 1	531	564	-	630	602	-	-	-	-	-	-	-
Stage 2	563	585	-	588	562	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	210	266	600	265	274	653	1044	-	-	1143	-	-
Mov Cap-2 Maneuver	210	266	-	265	274	-	-	-	-	-	-	-
Stage 1	523	540	-	619	592	-	-	-	-	-	-	-
Stage 2	508	575	-	561	538	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.1	16	0.1	0.8
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1044	-	-	338	265	653	1143	-	-
HCM Lane V/C Ratio	0.005	-	-	0.04	0.191	0.091	0.033	-	-
HCM Control Delay (s)	8.5	0	-	16.1	21.8	11.1	8.3	-	-
HCM Lane LOS	A	A	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0.3	0.1	-	-

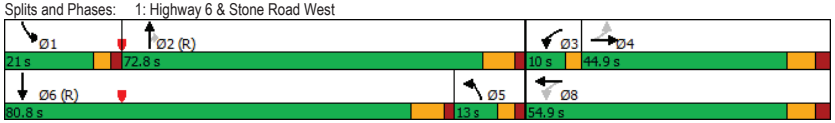
Appendix H: 2035 Total Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	125	45	239	55	194	10	1134	442	307	1185	16
Future Volume (vph)	28	125	45	239	55	194	10	1134	442	307	1185	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	35.0		0.0	160.0		150.0	195.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor	1.00				0.99							
Frt		0.960			0.883				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1786	0	1719	3012	0	1626	3223	1568	3400	3276	0
Flt Permitted	0.585			0.365			0.950			0.950		
Satd. Flow (perm)	1067	1786	0	660	3012	0	1626	3223	1568	3400	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			211				465		1	
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		101.8			339.3			467.1			460.6	
Travel Time (s)		6.1			20.4			21.0			23.7	
Confl. Peds. (#/hr)	2					2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	0%	8%	5%	7%	4%	11%	12%	3%	3%	10%	7%
Adj. Flow (vph)	30	136	49	260	60	211	11	1233	480	334	1288	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	185	0	260	271	0	11	1233	480	334	1305	0
Turn Type	Perm	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	4	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	53.0	53.0	8.0	53.0	
Minimum Split (s)	44.9	44.9		10.0	44.9		13.0	60.8	60.8	13.0	60.8	
Total Split (s)	44.9	44.9		10.0	54.9		13.0	72.8	72.8	21.0	80.8	
Total Split (%)	30.2%	30.2%		6.7%	36.9%		8.7%	49.0%	49.0%	14.1%	54.3%	
Maximum Green (s)	37.0	37.0		7.0	47.0		8.0	65.0	65.0	16.0	73.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		3.0	5.9	5.9	3.0	5.9	
All-Red Time (s)	2.9	2.9		0.0	2.9		2.0	1.9	1.9	2.0	1.9	
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)	7.9	7.9		3.0	7.9		5.0	7.8	7.8	5.0	7.8	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	3.0	3.0	4.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)	21.0	21.0			21.0			41.0	41.0		41.0	
Flash Dont Walk (s)	16.0	16.0			16.0			12.0	12.0		12.0	
Pedestrian Calls (#/hr)	0	0			0			0	0		0	
Act Effct Green (s)	19.9	19.9		34.8	29.9		8.0	76.5	76.5	21.7	97.9	
Actuated g/C Ratio	0.13	0.13		0.23	0.20		0.05	0.51	0.51	0.15	0.66	
v/c Ratio	0.21	0.74		1.27	0.35		0.13	0.74	0.47	0.67	0.60	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	58.6	75.2		199.8	13.0		70.5	33.3	4.0	67.1	17.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	58.6	75.2		199.8	13.0		70.5	33.3	4.0	67.1	17.7	
LOS	E	E		F	B		E	C	A	E	B	
Approach Delay		72.9			104.4			25.4			27.8	
Approach LOS		E			F			C			C	
Queue Length 50th (m)	7.9	49.2		~88.2	7.5		3.1	146.1	2.1	47.9	94.1	
Queue Length 95th (m)	17.2	71.8		#135.8	18.6		9.8	200.0	23.2	62.7	167.6	
Internal Link Dist (m)		77.8			315.3			443.1			436.6	
Turn Bay Length (m)	65.0			35.0			160.0		150.0	195.0		
Base Capacity (vph)	265	453		204	1096		87	1657	1032	495	2158	
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	0.11	0.41		1.27	0.25		0.13	0.74	0.47	0.67	0.60	

Intersection Summary		
Area Type:	Other	
Cycle Length: 148.7		
Actuated Cycle Length: 148.7		
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.27		
Intersection Signal Delay: 39.1	Intersection LOS: D	
Intersection Capacity Utilization 96.1%	ICU Level of Service F	
Analysis Period (min) 15		
~ 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.		

Splits and Phases: 1: Highway 6 & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	125	45	239	55	194	10	1134	442	307	1185	16
Future Volume (veh/h)	28	125	45	239	55	194	10	1134	442	307	1185	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1900	1781	1826	1796	1841	1737	1722	1856	1856	1752	1796
Adj Flow Rate, veh/h	30	136	49	260	60	211	11	1233	480	334	1288	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	0	8	5	7	4	11	12	3	3	10	7
Cap, veh/h	123	174	63	168	338	301	255	1818	874	368	1648	22
Arrive On Green	0.13	0.13	0.13	0.05	0.20	0.20	0.15	0.56	0.56	0.11	0.49	0.49
Sat Flow, veh/h	1088	1331	480	1739	1706	1518	1654	3272	1572	3428	3364	44
Grp Volume(v), veh/h	30	0	185	260	60	211	11	1233	480	334	637	668
Grp Sat Flow(s),veh/h/ln	1088	0	1811	1739	1706	1518	1654	1636	1572	1714	1664	1744
Q Serve(g_s), s	3.9	0.0	14.7	7.0	4.4	19.3	0.8	40.0	29.1	14.4	47.1	47.2
Cycle Q Clear(g_c), s	13.2	0.0	14.7	7.0	4.4	19.3	0.8	40.0	29.1	14.4	47.1	47.2
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	123	0	237	168	338	301	255	1818	874	368	815	854
V/C Ratio(X)	0.24	0.00	0.78	1.55	0.18	0.70	0.04	0.68	0.55	0.91	0.78	0.78
Avail Cap(c_a), veh/h	251	0	450	168	538	479	255	1818	874	368	815	854
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.5	0.0	62.7	61.8	49.6	55.6	53.7	23.6	21.2	65.8	31.4	31.4
Incr Delay (d2), s/veh	1.0	0.0	5.5	275.3	0.2	3.0	0.1	2.1	2.5	25.8	7.3	7.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.9	0.0	11.0	24.5	3.2	11.5	0.6	19.8	15.0	11.6	25.2	26.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.5	0.0	68.1	337.1	49.9	58.6	53.8	25.7	23.7	91.5	38.7	38.5
LnGrp LOS	E	A	E	F	D	E	D	C	C	F	D	D
Approach Vol, veh/h		215			531			1724			1639	
Approach Delay, s/veh		68.0			194.0			25.3			49.4	
Approach LOS		E			F			C			D	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	21.0	90.6	10.0	27.4	30.8	80.8		37.4				
Change Period (Y+Rc), s	5.0	* 7.8	3.0	7.9	* 7.8	* 7.8		7.9				
Max Green Setting (Gmax), s	16.0	* 65	7.0	37.0	* 8	* 73		47.0				
Max Q Clear Time (g_c+I1), s	16.4	42.0	9.0	16.7	2.8	49.2		21.3				
Green Ext Time (p_c), s	0.0	14.1	0.0	1.3	0.0	11.5		2.0				

Intersection Summary	
HCM 6th Ctrl Delay	58.9
HCM 6th LOS	E

Notes

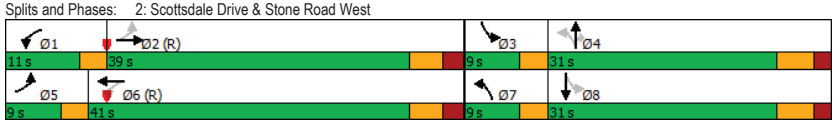
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	710	82	126	353	60	80	178	171	115	117	55
Future Volume (vph)	82	710	82	126	353	60	80	178	171	115	117	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	27.5		0.0	25.0		0.0	30.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			25.0			60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		0.97		0.98	0.99	0.98	
Frt		0.985			0.978				0.850		0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	3366	0	1736	3189	0	1752	1827	1568	1626	1660	0
Flt Permitted	0.475			0.204			0.552			0.452		
Satd. Flow (perm)	811	3366	0	372	3189	0	989	1827	1529	767	1660	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			25				201		26	
Link Speed (k/h)		60			60			41			41	
Link Distance (m)		339.3			210.0			117.2			40.4	
Travel Time (s)		20.4			12.6			10.3			3.5	
Confl. Peds. (#/hr)	11		14	14		11	37		12	12		37
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	10%	5%	8%	4%	9%	16%	3%	4%	3%	11%	4%	14%
Adj. Flow (vph)	96	835	96	148	415	71	94	209	201	135	138	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	931	0	148	486	0	94	209	201	135	203	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		
Detector Phase	5	2		1	6		7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	10.0	10.0	6.0	10.0	
Minimum Split (s)	9.0	27.1		9.0	27.1		9.0	31.0	31.0	9.0	31.0	
Total Split (s)	9.0	39.0		11.0	41.0		9.0	31.0	31.0	9.0	31.0	
Total Split (%)	10.0%	43.3%		12.2%	45.6%		10.0%	34.4%	34.4%	10.0%	34.4%	
Maximum Green (s)	6.0	32.9		8.0	34.9		6.0	25.0	25.0	6.0	25.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.0	2.0	0.0	2.0	
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)	3.0	6.1		3.0	6.1		3.0	6.0	6.0	3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	
Walk Time (s)		7.0			7.0			9.0	9.0		9.0	
Flash Dont Walk (s)		14.0			14.0			16.0	16.0		16.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effct Green (s)	52.2	41.5		54.9	44.4		24.7	15.7	15.7	25.3	17.5	
Actuated g/C Ratio	0.58	0.46		0.61	0.49		0.27	0.17	0.17	0.28	0.19	
v/c Ratio	0.18	0.60		0.41	0.31		0.29	0.66	0.46	0.49	0.59	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	8.8	21.0		11.5	15.2		23.9	43.9	8.2	29.5	36.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	8.8	21.0		11.5	15.2		23.9	43.9	8.2	29.5	36.0	
LOS	A	C		B	B		C	D	A	C	D	
Approach Delay		19.9			14.3			25.9			33.4	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	5.9	58.5		9.3	24.3		11.7	33.6	0.0	17.3	28.4	
Queue Length 95th (m)	13.3	85.5		19.2	38.5		19.1	47.3	13.2	26.2	42.4	
Internal Link Dist (m)		315.3			186.0			93.2			16.4	
Turn Bay Length (m)	27.5			25.0			30.0			20.0		
Base Capacity (vph)	539	1560		365	1586		322	507	569	273	479	
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	0.18	0.60		0.41	0.31		0.29	0.41	0.35	0.49	0.42	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 21.5		Intersection LOS: C	
Intersection Capacity Utilization 68.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Scottsdale Drive & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	710	82	126	353	60	80	178	171	115	117	55
Future Volume (veh/h)	82	710	82	126	353	60	80	178	171	115	117	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	0.97		0.95	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1826	1781	1841	1767	1663	1856	1841	1856	1737	1841	1693
Adj Flow Rate, veh/h	96	835	96	148	415	71	94	209	201	135	138	65
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	10	5	8	4	9	16	3	4	3	11	4	14
Cap, veh/h	472	1349	155	331	1255	213	343	430	350	310	279	131
Arrive On Green	0.06	0.43	0.43	0.07	0.44	0.44	0.06	0.23	0.23	0.07	0.24	0.24
Sat Flow, veh/h	1668	3129	360	1753	2865	486	1767	1841	1498	1654	1163	548
Grp Volume(v), veh/h	96	463	468	148	242	244	94	209	201	135	0	203
Grp Sat Flow(s),veh/h/ln	1668	1735	1754	1753	1678	1674	1767	1841	1498	1654	0	1711
Q Serve(g_s), s	2.8	18.6	18.6	4.2	8.5	8.6	3.6	8.8	10.7	5.6	0.0	9.2
Cycle Q Clear(g_c), s	2.8	18.6	18.6	4.2	8.5	8.6	3.6	8.8	10.7	5.6	0.0	9.2
Prop In Lane	1.00		0.21	1.00		0.29	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	472	748	756	331	735	733	343	430	350	310	0	410
V/C Ratio(X)	0.20	0.62	0.62	0.45	0.33	0.33	0.27	0.49	0.57	0.44	0.00	0.49
Avail Cap(c_a), veh/h	482	748	756	368	735	733	354	511	416	310	0	475
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.7	19.9	19.9	14.9	16.6	16.6	24.2	29.8	30.5	24.5	0.0	29.5
Incr Delay (d2), s/veh	0.2	3.8	3.8	0.9	1.2	1.2	0.4	0.9	1.5	1.0	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	10.8	10.9	2.3	5.0	5.1	2.6	6.9	6.9	3.9	0.0	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.9	23.7	23.7	15.9	17.8	17.9	24.6	30.7	32.0	25.5	0.0	30.4
LnGrp LOS	B	C	C	B	B	B	C	C	C	C	A	C
Approach Vol, veh/h		1027			634			504			338	
Approach Delay, s/veh		22.7			17.4			30.1			28.5	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	44.9	9.0	27.0	8.5	45.5	8.4	27.6
Change Period (Y+Rc), s	3.0	* 6.1	3.0	6.0	3.0	* 6.1	3.0	6.0
Max Green Setting (Gmax), s	8.0	* 33	6.0	25.0	6.0	* 35	6.0	25.0
Max Q Clear Time (g_c+I1), s	6.2	20.6	7.6	12.7	4.8	10.6	5.6	11.2
Green Ext Time (p_c), s	0.1	5.3	0.0	2.1	0.0	3.5	0.0	1.2

Intersection Summary		
HCM 6th Ctrl Delay	23.6	
HCM 6th LOS	C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	18	167	115	194	120	33
Future Volume (vph)	18	167	115	194	120	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.878				0.971	
Flt Protected	0.995		0.950			
Satd. Flow (prot)	1532	0	1703	1776	1626	0
Flt Permitted	0.995		0.950			
Satd. Flow (perm)	1532	0	1703	1776	1626	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	74.8			68.1	69.0	
Travel Time (s)	6.7			6.1	6.2	
Confl. Peds. (#/hr)	2	1	26			26
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	21%	7%	6%	7%	6%	41%
Adj. Flow (vph)	25	235	162	273	169	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	260	0	162	273	215	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	167	115	194	120	33
Future Vol, veh/h	18	167	115	194	120	33
Conflicting Peds, #/hr	2	1	26	0	0	26
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	20	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	21	7	6	7	6	41
Mvmt Flow	25	235	162	273	169	46

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	817	219	241	0	-	0
Stage 1	218	-	-	-	-	-
Stage 2	599	-	-	-	-	-
Critical Hdwy	6.61	6.27	4.16	-	-	-
Critical Hdwy Stg 1	5.61	-	-	-	-	-
Critical Hdwy Stg 2	5.61	-	-	-	-	-
Follow-up Hdwy	3.689	3.363	2.254	-	-	-
Pot Cap-1 Maneuver	321	808	1302	-	-	-
Stage 1	775	-	-	-	-	-
Stage 2	513	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	268	790	1273	-	-	-
Mov Cap-2 Maneuver	268	-	-	-	-	-
Stage 1	662	-	-	-	-	-
Stage 2	502	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	3.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1273	-	664	-	-
HCM Lane V/C Ratio	0.127	-	0.392	-	-
HCM Control Delay (s)	8.2	-	13.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.9	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	14	8	0	7	14	291	15	11	265	11
Future Volume (vph)	11	0	14	8	0	7	14	291	15	11	265	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.925				0.850		0.994			0.994	
Flt Protected		0.978			0.950			0.998		0.950		
Satd. Flow (prot)	0	1685	0	0	1203	1615	0	1757	0	1656	1761	0
Flt Permitted		0.978			0.950			0.998		0.950		
Satd. Flow (perm)	0	1685	0	0	1203	1615	0	1757	0	1656	1761	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		32.3			45.9			70.2			68.1	
Travel Time (s)		2.9			4.1			6.3			6.1	
Confl. Peds. (#/hr)			1	1			26		12	12		26
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	2%	2%	2%	50%	2%	0%	14%	7%	7%	9%	7%	14%
Adj. Flow (vph)	15	0	19	11	0	10	19	404	21	15	368	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	11	10	0	444	0	15	383	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.8%	ICU Level of Service A	
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	0	14	8	0	7	14	291	15	11	265	11
Future Vol, veh/h	11	0	14	8	0	7	14	291	15	11	265	11
Conflicting Peds, #/hr	0	0	1	1	0	0	26	0	12	12	0	26
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	20	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	50	2	0	14	7	7	9	7	14
Mvmt Flow	15	0	19	11	0	10	19	404	21	15	368	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	890	907	403	881	904	427	409	0	0	437	0	0
Stage 1	432	432	-	465	465	-	-	-	-	-	-	-
Stage 2	458	475	-	416	439	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.6	6.52	6.2	4.24	-	-	4.19	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.6	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.6	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.95	4.018	3.3	2.326	-	-	2.281	-	-
Pot Cap-1 Maneuver	264	276	647	221	277	632	1088	-	-	1086	-	-
Stage 1	602	582	-	496	563	-	-	-	-	-	-	-
Stage 2	583	557	-	529	578	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	247	258	632	206	258	626	1064	-	-	1075	-	-
Mov Cap-2 Maneuver	247	258	-	206	258	-	-	-	-	-	-	-
Stage 1	575	561	-	480	544	-	-	-	-	-	-	-
Stage 2	561	539	-	505	557	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	17.6	0.4	0.3
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1064	-	-	375	206	626	1075	-	-
HCM Lane V/C Ratio	0.018	-	-	0.093	0.054	0.016	0.014	-	-
HCM Control Delay (s)	8.4	0	-	15.6	23.5	10.8	8.4	-	-
HCM Lane LOS	A	A	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.2	0	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	102	33	403	163	387	37	1371	369	442	1440	20
Future Volume (vph)	21	102	33	403	163	387	37	1371	369	442	1440	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	35.0		0.0	160.0		150.0	195.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor	0.99				0.98							
Frt		0.963			0.894				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1803	0	1787	3127	0	1805	3438	1583	3467	3466	0
Flt Permitted	0.285			0.433			0.950			0.950		
Satd. Flow (perm)	538	1803	0	815	3127	0	1805	3438	1583	3467	3466	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			281				401		1	
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		101.8			339.3			467.1			460.6	
Travel Time (s)		6.1			20.4			21.0			23.7	
Confl. Peds. (#/hr)	12					12						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	1%	2%	1%	0%	5%	2%	1%	4%	0%
Adj. Flow (vph)	23	111	36	438	177	421	40	1490	401	480	1565	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	147	0	438	598	0	40	1490	401	480	1587	0
Turn Type	Perm	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	4	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	53.0	53.0	8.0	53.0	
Minimum Split (s)	44.9	44.9		10.0	44.9		13.0	60.8	60.8	13.0	60.8	
Total Split (s)	44.9	44.9		12.0	56.9		13.0	68.8	68.8	23.0	78.8	
Total Split (%)	30.2%	30.2%		8.1%	38.3%		8.7%	46.3%	46.3%	15.5%	53.0%	
Maximum Green (s)	37.0	37.0		9.0	49.0		8.0	61.0	61.0	18.0	71.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		3.0	5.9	5.9	3.0	5.9	
All-Red Time (s)	2.9	2.9		0.0	2.9		2.0	1.9	1.9	2.0	1.9	
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)	7.9	7.9		3.0	7.9		5.0	7.8	7.8	5.0	7.8	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	3.0	3.0	4.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)	21.0	21.0			21.0			41.0	41.0		41.0	
Flash Dont Walk (s)	16.0	16.0			16.0			12.0	12.0		12.0	
Pedestrian Calls (#/hr)	0	0			0			0	0		0	
Act Effct Green (s)	16.7	16.7		33.6	28.7		8.0	66.9	66.9	32.4	93.9	
Actuated g/C Ratio	0.11	0.11		0.23	0.19		0.05	0.45	0.45	0.22	0.63	
v/c Ratio	0.38	0.70		1.80	0.72		0.41	0.96	0.43	0.64	0.73	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	77.6	75.6		409.9	33.9		81.2	55.5	3.9	57.5	22.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	77.6	75.6		409.9	33.9		81.2	55.5	3.9	57.5	22.6	
LOS	E	E		F	C		F	E	A	E	C	
Approach Delay		75.9			192.9			45.3			30.7	
Approach LOS		E			F			D			C	
Queue Length 50th (m)	6.3	39.1		~190.9	46.7		11.5	213.7	0.0	67.0	165.0	
Queue Length 95th (m)	15.6	59.8		#245.6	64.2		24.1	#291.0	19.3	84.6	215.5	
Internal Link Dist (m)		77.8			315.3			443.1			436.6	
Turn Bay Length (m)	65.0			35.0			160.0		150.0	195.0		
Base Capacity (vph)	133	456		243	1218		97	1546	932	755	2188	
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	0.17	0.32		1.80	0.49		0.41	0.96	0.43	0.64	0.73	

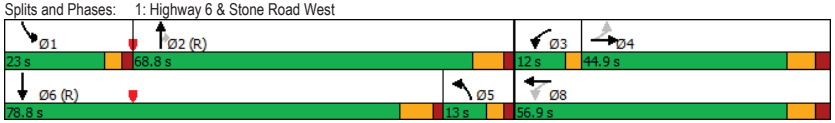
Intersection Summary

Area Type: Other
Cycle Length: 148.7
Actuated Cycle Length: 148.7
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.80
Intersection Signal Delay: 69.9 Intersection LOS: E
Intersection Capacity Utilization 111.1% ICU Level of Service H
Analysis Period (min) 15

~ 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.

Splits and Phases: 1: Highway 6 & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	102	33	403	163	387	37	1371	369	442	1440	20
Future Volume (veh/h)	21	102	33	403	163	387	37	1371	369	442	1440	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1885	1856	1885	1870	1885	1900	1826	1870	1885	1841	1900
Adj Flow Rate, veh/h	23	111	36	438	177	421	40	1490	401	480	1565	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	1	3	1	2	1	0	5	2	1	4	0
Cap, veh/h	95	311	101	355	550	485	102	1494	683	421	1683	24
Arrive On Green	0.23	0.23	0.23	0.06	0.31	0.31	0.06	0.43	0.43	0.12	0.48	0.48
Sat Flow, veh/h	830	1357	440	1795	1777	1567	1810	3469	1585	3483	3531	50
Grp Volume(v), veh/h	23	0	147	438	177	421	40	1490	401	480	774	813
Grp Sat Flow(s),veh/h/ln	830	0	1798	1795	1777	1567	1810	1735	1585	1742	1749	1832
Q Serve(g_s), s	4.0	0.0	10.2	9.0	11.4	37.8	3.2	63.9	28.7	18.0	62.0	62.2
Cycle Q Clear(g_c), s	29.8	0.0	10.2	9.0	11.4	37.8	3.2	63.9	28.7	18.0	62.0	62.2
Prop In Lane	1.00		0.24	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	95	0	412	355	550	485	102	1494	683	421	833	873
V/C Ratio(X)	0.24	0.00	0.36	1.23	0.32	0.87	0.39	1.00	0.59	1.14	0.93	0.93
Avail Cap(c_a), veh/h	111	0	446	355	584	515	102	1494	683	421	833	873
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.3	0.0	48.2	55.4	39.4	48.6	67.9	42.3	32.3	65.5	36.6	36.7
Incr Delay (d2), s/veh	1.3	0.0	0.5	126.9	0.3	14.1	3.5	22.6	3.7	88.2	18.1	17.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	0.0	7.8	30.5	8.2	21.9	2.7	37.7	16.0	19.5	35.8	37.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.6	0.0	48.8	182.4	39.8	62.7	71.3	64.9	36.0	153.7	54.7	54.4
LnGrp LOS	E	A	D	F	D	E	E	E	D	F	D	D
Approach Vol, veh/h		170			1036			1931			2067	
Approach Delay, s/veh		51.6			109.4			59.0			77.6	
Approach LOS		D			F			E			E	
Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	23.0	72.0	12.0	42.0	16.2	78.8		54.0				
Change Period (Y+Rc), s	5.0	* 7.8	3.0	7.9	* 7.8	* 7.8		7.9				
Max Green Setting (Gmax), s	18.0	* 61	9.0	37.0	* 8	* 71		49.0				
Max Q Clear Time (g_c+I1), s	20.0	65.9	11.0	31.8	5.2	64.2		39.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.4	0.0	5.4		3.0				
Intersection Summary												
HCM 6th Ctrl Delay			76.2									
HCM 6th LOS			E									

Notes

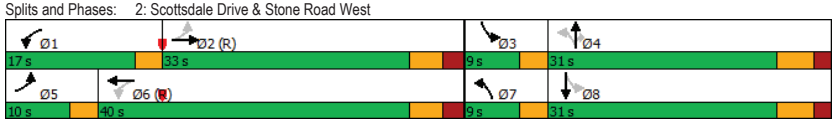
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	622	170	269	736	95	112	173	284	122	185	105
Future Volume (vph)	121	622	170	269	736	95	112	173	284	122	185	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	27.5		0.0	25.0		0.0	30.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			25.0			60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				0.99		0.99		0.97	0.99	0.99	
Frt		0.968			0.983				0.850		0.946	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3440	0	1787	3376	0	1805	1845	1599	1687	1774	0
Flt Permitted	0.259			0.188			0.310			0.569		
Satd. Flow (perm)	486	3440	0	354	3376	0	581	1845	1551	996	1774	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			18				305		31	
Link Speed (k/h)		60			60			41			41	
Link Distance (m)		339.3			210.0			117.2			40.4	
Travel Time (s)		20.4			12.6			10.3			3.5	
Confl. Peds. (#/hr)	25					25	22		17	17		22
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	0%	1%	4%	6%	0%	3%	1%	7%	0%	0%
Adj. Flow (vph)	130	669	183	289	791	102	120	186	305	131	199	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	852	0	289	893	0	120	186	305	131	312	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		
Detector Phase	5	2		1	6		7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	10.0	10.0	6.0	10.0	
Minimum Split (s)	9.0	27.1		9.0	27.1		9.0	31.0	31.0	9.0	31.0	
Total Split (s)	10.0	33.0		17.0	40.0		9.0	31.0	31.0	9.0	31.0	
Total Split (%)	11.1%	36.7%		18.9%	44.4%		10.0%	34.4%	34.4%	10.0%	34.4%	
Maximum Green (s)	7.0	26.9		14.0	33.9		6.0	25.0	25.0	6.0	25.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.0	2.0	0.0	2.0	
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)	3.0	6.1		3.0	6.1		3.0	6.0	6.0	3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	
Walk Time (s)		7.0			7.0			9.0	9.0		9.0	
Flash Dont Walk (s)		14.0			14.0			16.0	16.0		16.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effct Green (s)	44.0	33.3		52.7	39.0		28.3	19.3	19.3	28.3	19.3	
Actuated g/C Ratio	0.49	0.37		0.59	0.43		0.31	0.21	0.21	0.31	0.21	
v/c Ratio	0.37	0.66		0.69	0.61		0.45	0.47	0.53	0.37	0.77	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	13.4	27.1		20.9	22.5		25.2	33.9	7.0	22.9	42.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	13.4	27.1		20.9	22.5		25.2	33.9	7.0	22.9	42.6	
LOS	B	C		C	C		C	C	A	C	D	
Approach Delay		25.3			22.1			18.8			36.8	
Approach LOS		C			C			B			D	
Queue Length 50th (m)	9.3	62.2		22.8	60.1		14.0	27.7	0.0	15.5	45.2	
Queue Length 95th (m)	19.7	89.5		#52.9	86.1		23.4	43.2	17.9	25.4	67.7	
Internal Link Dist (m)		315.3			186.0			93.2			16.4	
Turn Bay Length (m)	27.5			25.0			30.0			20.0		
Base Capacity (vph)	353	1296		441	1472		264	512	651	358	515	
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	0.37	0.66		0.66	0.61		0.45	0.36	0.47	0.37	0.61	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 35 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 24.4		Intersection LOS: C	
Intersection Capacity Utilization 79.4%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Scottsdale Drive & Stone Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	622	170	269	736	95	112	173	284	122	185	105
Future Volume (veh/h)	121	622	170	269	736	95	112	173	284	122	185	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1885	1841	1811	1900	1856	1885	1796	1900	1900
Adj Flow Rate, veh/h	130	669	183	289	791	102	120	186	305	131	199	113
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	2	0	1	4	6	0	3	1	7	0	0
Cap, veh/h	337	996	272	400	1308	169	292	458	384	334	278	158
Arrive On Green	0.06	0.36	0.36	0.12	0.42	0.42	0.07	0.25	0.25	0.07	0.25	0.25
Sat Flow, veh/h	1810	2734	747	1795	3108	401	1810	1856	1555	1711	1125	639
Grp Volume(v), veh/h	130	435	417	289	445	448	120	186	305	131	0	312
Grp Sat Flow(s),veh/h/ln	1810	1777	1705	1795	1749	1760	1810	1856	1555	1711	0	1764
Q Serve(g_s), s	4.0	18.5	18.6	8.5	17.8	17.8	4.4	7.6	16.5	5.1	0.0	14.6
Cycle Q Clear(g_c), s	4.0	18.5	18.6	8.5	17.8	17.8	4.4	7.6	16.5	5.1	0.0	14.6
Prop In Lane	1.00		0.44	1.00		0.23	1.00		1.00	1.00		0.36
Lane Grp Cap(c), veh/h	337	647	621	400	736	741	292	458	384	334	0	436
V/C Ratio(X)	0.39	0.67	0.67	0.72	0.60	0.60	0.41	0.41	0.79	0.39	0.00	0.72
Avail Cap(c_a), veh/h	362	647	621	462	736	741	292	515	432	334	0	490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.0	24.1	24.1	17.2	20.2	20.2	24.0	28.4	31.7	23.3	0.0	31.0
Incr Delay (d2), s/veh	0.7	5.5	5.7	4.6	3.7	3.6	0.9	0.6	8.9	0.7	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.4	11.6	11.3	5.4	10.5	10.6	3.3	5.9	11.1	3.6	0.0	10.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.7	29.6	29.8	21.8	23.9	23.9	25.0	28.9	40.6	24.1	0.0	35.3
LnGrp LOS	B	C	C	C	C	C	C	C	D	C	A	D
Approach Vol, veh/h		982			1182			611			443	
Approach Delay, s/veh		28.1			23.4			34.0			32.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.9	38.9	9.0	28.2	8.8	44.0	9.0	28.2
Change Period (Y+Rc), s	3.0	* 6.1	3.0	6.0	3.0	* 6.1	3.0	6.0
Max Green Setting (Gmax), s	14.0	* 27	6.0	25.0	7.0	* 34	6.0	25.0
Max Q Clear Time (g_c+I1), s	10.5	20.6	7.1	18.5	6.0	19.8	6.4	16.6
Green Ext Time (p_c), s	0.4	3.1	0.0	1.6	0.0	5.5	0.0	1.4

Intersection Summary		
HCM 6th Ctrl Delay		28.0
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	153	158	234	238	24
Future Volume (vph)	20	153	158	234	238	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.881				0.988	
Flt Protected	0.994		0.950			
Satd. Flow (prot)	1600	0	1770	1827	1794	0
Flt Permitted	0.994		0.950			
Satd. Flow (perm)	1600	0	1770	1827	1794	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	74.8			68.1	69.0	
Travel Time (s)	6.7			6.1	6.2	
Confl. Peds. (#/hr)	3	9	11			11
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	19%	2%	2%	4%	3%	21%
Adj. Flow (vph)	23	174	180	266	270	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	197	0	180	266	297	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	153	158	234	238	24
Future Vol, veh/h	20	153	158	234	238	24
Conflicting Peds, #/hr	3	9	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	20	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	19	2	2	4	3	21
Mvmt Flow	23	174	180	266	270	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	924	304	308	0	-	0
Stage 1	295	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Critical Hdwy	6.59	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.59	-	-	-	-	-
Critical Hdwy Stg 2	5.59	-	-	-	-	-
Follow-up Hdwy	3.671	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	279	736	1253	-	-	-
Stage 1	718	-	-	-	-	-
Stage 2	500	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	234	724	1241	-	-	-
Mov Cap-2 Maneuver	234	-	-	-	-	-
Stage 1	608	-	-	-	-	-
Stage 2	496	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.3	3.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1241	-	583	-	-
HCM Lane V/C Ratio	0.145	-	0.337	-	-
HCM Control Delay (s)	8.4	-	14.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.5	-	1.5	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	0	35	45	0	53	30	311	48	34	332	25
Future Volume (vph)	28	0	35	45	0	53	30	311	48	34	332	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.925				0.850		0.983			0.990	
Flt Protected		0.978			0.950			0.996		0.950		
Satd. Flow (prot)	0	1332	0	0	1805	1583	0	1783	0	1805	1799	0
Flt Permitted		0.978			0.950			0.996		0.950		
Satd. Flow (perm)	0	1332	0	0	1805	1583	0	1783	0	1805	1799	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		32.3			45.9			70.2			68.1	
Travel Time (s)		2.9			4.1			6.3			6.1	
Confl. Peds. (#/hr)							11		12	12		11
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	29%	2%	29%	0%	2%	2%	25%	3%	0%	0%	3%	25%
Adj. Flow (vph)	31	0	39	51	0	60	34	349	54	38	373	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	70	0	0	51	60	0	437	0	38	401	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	0	35	45	0	53	30	311	48	34	332	25
Future Vol, veh/h	28	0	35	45	0	53	30	311	48	34	332	25
Conflicting Peds, #/hr	0	0	0	0	0	0	11	0	12	12	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	20	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	29	2	29	0	2	2	25	3	0	0	3	25
Mvmt Flow	31	0	39	51	0	60	34	349	54	38	373	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	948	957	398	939	944	388	412	0	0	415	0	0
Stage 1	474	474	-	456	456	-	-	-	-	-	-	-
Stage 2	474	483	-	483	488	-	-	-	-	-	-	-
Critical Hdwy	7.39	6.52	6.49	7.1	6.52	6.22	4.35	-	-	4.1	-	-
Critical Hdwy Stg 1	6.39	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.39	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.761	4.018	3.561	3.5	4.018	3.318	2.425	-	-	2.2	-	-
Pot Cap-1 Maneuver	215	258	597	246	262	660	1033	-	-	1155	-	-
Stage 1	523	558	-	588	568	-	-	-	-	-	-	-
Stage 2	523	553	-	569	550	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	183	234	591	214	238	653	1023	-	-	1143	-	-
Mov Cap-2 Maneuver	183	234	-	214	238	-	-	-	-	-	-	-
Stage 1	496	535	-	557	538	-	-	-	-	-	-	-
Stage 2	455	524	-	513	527	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.9	18.4	0.7	0.7
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1023	-	-	297	214	653	1143	-	-
HCM Lane V/C Ratio	0.033	-	-	0.238	0.236	0.091	0.033	-	-
HCM Control Delay (s)	8.6	0	-	20.9	27	11.1	8.3	-	-
HCM Lane LOS	A	A	-	C	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.9	0.3	0.1	-	-