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**Traffic Engineering and Planning** 

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#### VILLANOVA UNIVERSITY LANCASTER AVENUE STUDENT RESIDENT HALLS

# TRANSPORTATION IMPACT STUDY

Radnor Township
Delaware County, Pennsylvania

prepared for submission to:

RADNOR TOWNSHIP & PENNDOT DISTRICT 6-0

prepared by:

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#### **EXECUTIVE SUMMARY**

The purpose of this Transportation Impact Study (TIS) is to examine the potential traffic impact of a proposed Villanova University project. The central feature of the project is a collection of undergraduate student residence hall buildings which is proposed to address presently-unmet on-campus housing demands of the existing student body. The project and the results of this study are summarized as follows:

- Key features of the project include 1,138 new beds for undergraduate students, a new performing arts center (PAC), a new 1,289-space garage (Pike Garage), and approximately 20,440 SF of Villanova-centric retail space on either side of Ithan Avenue south of Route 30, all of which is targeted to open in 2019.
- The residential component of the site will result in a reduction of peak hour traffic (since currently-commuting students will now reside on campus) but to be conservative peak hour traffic associated with 1,138 currently-commuting students was left in the road network and site driveways.
- The retail component of the site is estimated to generate <u>60 new vehicle trips</u> during the weekday AM peak hour and <u>99 new vehicle trips</u> during the PM peak hour.
- The project includes elimination of multiple driveways, consolidation of other small parking lots, and some expanded (existing) structured parking on main campus.
- The PAC, when funded, will replace currently-existing, outdated theater space found on the north side of campus and will not result in new weekday peak hour traffic.
- Access to the major components of the project will take place via new driveways along Route 30 and Ithan Avenue. Existing driveways along these roads will be removed, relocated, or altered in some fashion. The access modifications can be summarized as follows:
  - O Between Route 320 and the Church Walk signalized intersection, eight (8) unsignalized and unrestricted driveways will be consolidated to become one (1) new unsignalized right-in/right-out (RIRO) driveway with EB right-turn lane near the proposed West Lancaster parking lot (WLA).
  - o At the existing Church Walk signalized intersection along Route 30:
    - The existing location will be abandoned and a new signalized intersection will be installed approximately 175 feet to the west;
    - New auxiliary turn lanes (an EB right-turn lane and a WB left-turn lane) along Route 30 will be provided;
    - A second exit lane (NB configuration L + LR) will be provided; and
    - A grade-separated pedestrian bridge connecting Church Walk with the existing SEPTA Route 100 pedestrian staircases at the approximate location of the existing signalized intersection will be constructed.
  - At the existing, unsignalized, exit-only driveway along Route 30 just east of Ithan Avenue (PAC Driveway):
    - The driveway shall be modified to two-way operation (entry/exit);
    - A new EB right-turn lane and a new WB left-turn lane along Route 30 will be provided; and
    - Outbound left turns will be prohibited (all other movements allowed).

- o At the four (4) existing, unsignalized driveways serving Main Lot and Pike Lot along Ithan Avenue just south of Route 30:
  - Existing parking lot driveways along Ithan Avenue will be removed;
  - One new two-way driveway serving the parking behind the residential housing (LAH) and one new two-way driveway serving the Pike Garage will be provided on each side of Ithan Avenue, opposite one another, just north of the existing SEPTA Route 100 overpass; and
  - One additional limited access (i.e., emergencies, deliveries, and special event recirculation) driveway on the east side of Ithan Avenue will be provided between the PAC and the Pike Garage.
- More details regarding roadway improvements are as follows:

#### Route 30 and Route 320/Kenilworth Street/Aldwyn Lane

 A contribution toward the cost an Adaptive Traffic Signal controller at this location shall be made by the University.

#### Route 30 and New RIRO Access (near WLA)

- o Channelization islands to prohibit entering and exiting left turns shall be provided.
- A new EB right-turn only lane with 75 feet of taper, 125 feet of storage, and 14 feet width shall be provided.

#### Route 30 and Relocated Church Walk

- o A contribution toward the cost an Adaptive Traffic Signal controller at this location shall be made by the University.
- o A new EB right-turn only lane with 75 feet of taper, 125 feet of storage, and 14 feet width shall be provided.
- O A new WB left-turn only lane with 75 feet of taper, 125 feet of storage, and 10 feet width shall be provided.
- o 11 foot wide inside and 12 foot wide outside through lanes (10-foot travel lanes presently exist) shall be provided.

#### **Route 30 and Ithan Avenue**

- o A contribution toward the cost an Adaptive Traffic Signal controller at this location shall be made by the University.
- o The existing EB left-turn only lane shall be extended to provide a 75 feet of taper, 200 feet of storage, and 10 feet width.
- o The existing NB left-turn only lane shall be extended to provide a 50 feet of taper, 190 feet of storage, and 11 feet width.
- o The existing WB left-turn only lane shall be extended to provide a full-width (10 feet) section of approximately 250 feet (between Ithan Avenue and the PAC driveway) plus an additional full-width section beyond the PAC driveway (to the east) measuring an additional 75 feet with a 75-foot taper.
- o 11-foot wide inside and 12-foot wide outside through lanes (10-foot travel lanes presently exist) shall be provided on each Route 30 approach to this intersection.

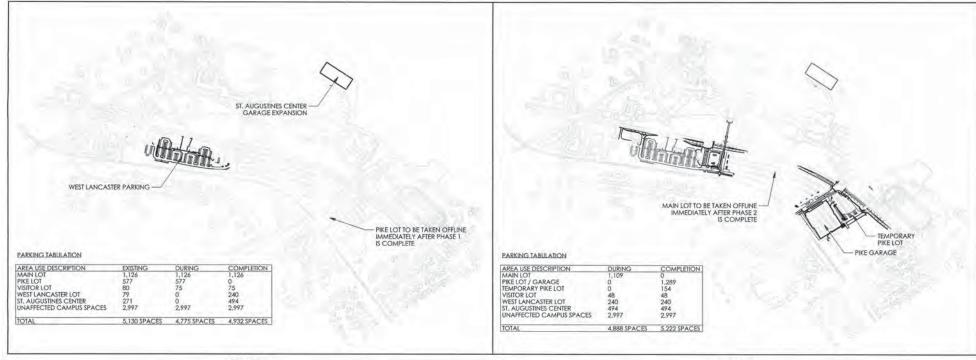
#### **Additional Site Access Points**

- o At the currently-existing exit-only unsignalized driveway along Route 30 just east of Ithan Avenue (PAC Driveway):
  - The driveway shall be modified to provide entry/exit operation;
  - A new EB right-turn only lane with 50 feet of taper, 100 feet of storage, and 12 feet width shall be provided;
  - A new WB left-turn only lane with 75 feet of taper, 75 feet of storage, and 10 feet width (an extension of the existing WB left-turn lane at Ithan Avenue) shall be provided; and
  - Exiting left turns shall be prohibited (signage and channelization features).
- At the proposed new unsignalized intersection serving the LAH rear lot and Pike Garage along Ithan Avenue:
  - A new SB left-turn lane featuring 50 feet of storage and 50 feet of taper shall be provided;
  - A new pedestrian crosswalk (with post-mounted, pedestrian-actuated Rectangular Rapid Flash Beacons [RRFB] on each side) spanning the NB approach of Ithan Avenue connecting the garage and the resident halls shall be provided; and
  - Free-flow operation of Ithan Avenue traffic shall be maintained.

#### Other findings of this study include:

- The measured sight distances at the proposed site driveways will satisfy all PennDOT sight distance requirements.
- Traffic Adaptive signal improvements at additional off-site intersections may occur along Route 30. The University's cost component is subject to a monetary limit as stipulated during the conditional use hearings. The actual improvements will be designed and implemented by the Township.
- Not every offered roadway improvement (pedestrian bridge, Route 30 driveway consolidation west of Church Walk, etc.) is required to mitigate project impacts, but have been included in the project as requested by PennDOT and/or the Township.
- Level of service comparison tables demonstrate no significant impacts to any intersection in the study area, either in terms of overall delay increase or critical movement delay increase.
- Proposed new turn lanes accommodate projected queues.
- Accident investigations reveal no correctable patterns.
- Additional information relative to special event parking and traffic management is provided under separate cover by the University.
- A **Phasing Narrative** which summarizes the proposed phasing of both roadway improvements and building construction as well as level of service (LOS) and queue comparisons tables (**Tables I** and **II**) follow on the next several pages.

Local studies in the Delaware Valley have shown significant reduction in delays when Traffic Adaptive (TA) signal improvements are installed. TA benefits are not directly modeled in this TIS, making the results that much more conservative.



PHASE 1: CONSTRUCT WEST LANCASTER AVENUE PARKING AND ST. AUGUSTINE CENTER GARAGE EXPANSION

PHASE 2: CONSTRUCT PIKE FIELD GARAGE, LANCASTER AVENUE / ITHAN AVENUE WORK AND PEDESTRIAN BRIDGE OVER LANCASTER AVENUE

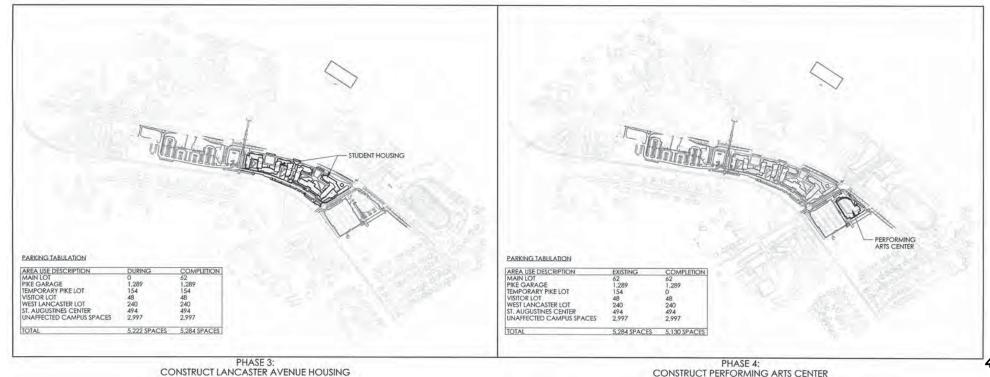


Table I Level of Service Comparisons

	1. La	ncaste	r Aven	ue & Sp	oring N	Aill Roa	d/Ker	nilwort	h Road	l/Aldwy	n Lan	e	
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
Lancaster	Avenue	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Alt Timing	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Alt Timing
	L	F 201	F 117	F 117	F 122	F122		F 283	F 138	F138	F 141	F 140	F 142
Eastbound	TT	D	С	C	C 35	D 35		D	D	D 46	D 51	D 44	D 47
	R	A	A	A	A	A		В	В	A	В	A	A
Westbound	L	D	D	D	D	D		D	E 65	E 60	E 69	E 65	E 62
Westboulid	TTR	F 93	E 76	F 80	F 85	F 89		D	F 81	E 73	F 85	E 65	E 75
Spring Mi	ill Road						red						
Northbound	L	F 121	F 128	F 128	F 122	F 122	Required	F 158	F 126	F 171	F 136	F 238	F 163
Normbound	TR	D	D	D	D	D	Re	D	C	D	C 34	C 37	C 35
Southbound	L	D	E 55	E 55	E 55	E 55	None	D	D	D	D	D	D
Southbound	TR	F 146	F 116	F 117	F 111	F 111	Z	F 352	F 112	F 121	F 115	F 136	F 136
Aldwyn	Lane												
Northbound	LTR	E	F 170	F 170	F 174	F 174		E	F 189	F 236	F 192	F 241	F 241
Kenilwort	th Road												
Southbound	LTR	E	F 86	F 86	F 86	F 86		E	F 83	F 83	F 83	F 83	F 83
0	VERALL:	E 79	E 68	E 69	E 70	E 72		F 99	E 76	E 77	E 79	E 80	E 80

				2. Lanca	aster A	venue	& Chu	ırch W	alk				
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
Lancaster Avenue Existing Base Projected Base Projected W/ Imp's Existing								2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Imp's	
Eastbound	TTR	A	A A A A A						A	A	A	A	p
Westbound	LTT	A	A	A	A	A	Required	A	A	A	A	A	Required
Church	Walk						kequ						keq
Northbound	LR or L LR	С	C	С	C	С	None R	С	C	С	С	С	None R
0	VERALL:	A 3	A 3	A 2	A 3	A 3	Ž	A 6	A 6	A 4	A 6	A 4	Ž

			3	3. Lanca	aster A	venue &	& Itha	n Aven	ues				
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
Lancaster	Avenue	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Alt Timing	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Alt Timing
Easthound	L	C	C	C	C 29	D 35	D 41	C	C	C	C	C	C
Eastbound	TTR	D	D	C	D 36	C 33	D 36	D	D D D D D D D D C D C	D			
Westbound	L	C	C	В	D	В	В	D	D	C	D	C	C
westbound	TTR	C	C	C	C 32	C 32	D 35	C	C	C	C	2025 Projected  C D C C F 216 D 49 E 61	C
Ithan A	venue												
Northbound	L	F 93	F 121	F 81	F 125	F 83	E 66	F 94	F 126	F 154	F 145	F 216	F 98
Northbound	TR	E 68	E 75	F 84	E 75	F 86	E 71	D	E 56	D 53	E 57	D 49	D 43
Southbound	L	D	D 46	F 105	D 46	F 108	E 78	D	D 53	E 70	D 53	E 61	D 50
Southboulld	TR	E 71	E 79	E 64	E 79	E 64	E 57	F 88	F 100	F 96	F 104	F 111	E 76
0	VERALL:	D 43	D 45	D 44	D 46	D 44	D43	D 48	D 48	D 49	D 50	D 52	D 49

				4. Lanc	aster A	venue	& Lov	wrys La	ne				
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
Lancaster	Avenue	2025 w/ Imp's	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Imp's					
Eastbound	LTTR	A	A	A	A	A	75	A	A	В	A	В	d
Westbound	LTTR	A	A	A	A	A	Required	A	A	A	A	A	Required
Lowrys	Lane						nba						nba
Northbound	LTR	C	C	C	С	C		C	C	C	C	C	
Southbound	LTR	C	C	C	C	C	None	C	C	C	C	C	None
OVER	ALL:	A 7	A 7	A 10	A 7	B 10	Z	A 8	A 7	B 11	A 7	B 11	Z

				5. Con	estoga	Road &	& Spr	oul Roa	ıd				
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
Conestog	a Road	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Imp's	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Imp's
Eastbound	L	D	C	D	D 46	E 57		В	C	C	C	C	
Eastboulld	TR	C	C	C	C	C		C	C	C	C	C	
Westbound	L	C	C	C	C	C	pə.	C	C	C	C	C	pə.
Westbound	TR	F 72	F 65	E 56	F 68	E 59	Required	D	D	D	D	D	Required
Sproul	Road						Rec						Rec
Northbound	L	С	D	D	D	D		В	В	В	В	В	
Northboulld	TR	C	C	C	C	C	None	В	В	В	В	В	None
Southbound	LTR	D	D	D	E 56	E 56		D	D	D	D	D	
OVER	ALL:	D 41	D 42	D 40	D 43	D 42		C 32	C 34	C 34	D 35	D 35	

				6. Con	estoga	Road &	k Ithai	n Aven	ue				
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
Conestog	a Road	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Imp's	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Imp's
Eastbound	LTR	D 51	D 51	E 58	E 60	E 65	75	В	В	В	В	В	7
Westbound	LTR	В	В	В	В	В	Required	В	В	В	В	В	Required
Ithan A	venue						nba						nba
Northbound	LTR	В	C	C	C	C		В	В	В	В	В	
Southbound	LTR	C	С	С	С	С	None	В	В	В	В	В	None
OVER	ALL:	C 29	C 30	C 33	C 33	D 36	Z	B 12	B 12	B 13	B 12	B 13	Z

			,	7. Cones	stoga I	Road &	Garre	ett Ave	nue				
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
Imp's							2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Imp's	
Eastbound	LTR	A	A	A	A	A	75	A	A	A	A	A	3
Westbound	LTR	A	A	A	A	A	Required	A	A	A	A	A	Required
Garrett A	Avenue						nba						nba
Northbound	Garrett Avenue  Northbound LTR C C			С	С	С		С	C	C	С	С	
Southbound	LTR	C	C	C	C	C	None	С	C	C	C	C	None
OVER	ALL:	A 6	A 6	A 6	A 6	A 6	Z	A 7	A 7	A 7	A 8	A 8	N

				8. Cour	ity Lin	e & Spi	ring M	Iill Roa	ds				
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
County Li	County Line Road  2012 Existing Base Projected							2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Imp's
Eastbound	LTR	В	В	В	В	В	7	С	C	C	C	C	7
Westbound	LTR	В	В	В	В	В	Required	В	В	В	В	В	Required
Spring M	ill Road						nba						nba
Northbound	LTR	С						В	C	C	С	С	
Southbound	LTR	C	С	C	С	В	None	С	С	C	C	C	None
OVER	ALL:	B 16	B 17	B 17	B 18	B 18	Z	B 19	C 22	C 22	C 23	C 23	Z

	•	•	9	. Lanca	ster A	venue &	Garı	ett Avo	enue	•	·	•	
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
Lancaster Avenue 2012 2020 2020 2025 2025 w/ Imp's							w/	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Imp's
Westbound	L	В	В	С	C	C	e red	В	В	В	В	С	e red
Northbound	R	C	С	C	C	C	on deni	C	C	C	C	C	None
OVER	ALL:	A 3	A 4	A 4	A 4	A 4	Rec	A 1	A 2	A 2	A 2	A 2	Rec

			10	). Cones	stoga F	Road &	Spring	g Mill l	Road				
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
Conestog	a Road	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Imp's	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Imp's
Eastbound	L	A	A	A	A	A	p	A	A	A	A	A	p
Spring M	ill Road						ne iire						ne iire
Southbound						None equire	С	C	C	D	D	Non	
OVER	ALL:	A 1	A 1	A 1	A 1	A 1	R	A 1	A 1	A 1	A 1	A 1	R

	•		•	11. Cor	nestoga 1	Road	& Lov	vrys La	ne			•	
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
Conestoga Road  2012 2020 2020 2025 2025 w/ Imp's								2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Imp's
Eastbound	L	A	A	A	A	A	p	A	A	A	A	A	7
Westbound	L	A	A	A	A	A	ire	A	A	A	A	A	Required
Lowrys	Lane						Require						nbe
Northbound	LTR	E 38 E 40 E 40 E 41 E 43					С	D	D	D	D		
Southbound	LTR	C	С	С	С	С	None	С	C	С	С	C	None
OVER	ALL:	A 4	A 4	A 4	A 4	A 4	Z	A 3	A 3	A 3	A 3	A 3	Z

			12. (	County	Line R	load &	Ithan	Avenu	e North	1					
Direction	Movement														
County Li	ne Road	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Imp's	2012 Existing	2020   2020   2025   2025   2025   W   Imp						
Eastbound	LR	D	D D D D D D D								D	p			
Ithan A	venue						one						ne iire		
Southbound	Southbound TR DDDDDD							D	D	D	D	D	None equire		
OVER	ALL:	D 30	D 31	D 31	D 31	D 31	~	D 30	D 31	D 31	D 31	D 32	<b>~</b>		

			13. (	County	Line R	Road &	Ithan	Avenu	e South	1			
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
County Li	ne Road	2012 Existing	g Base Projected Base Projected Base Projected										w/
Westbound	LR	C										pa	
Ithan A	venue						ne iired						ne iire
Northbound	forthbound TR C C C C C							С	С	С	С	С	None
OVER	ALL:	C 20	C 21	C 21	C 21	C 21	R	C 20	C 21	D 25	C 21	D 25	R

			1	l4. Cou	nty Lir	ne Road	& Lo	wrys L	ane				
Direction	Movement		AM Peak Hour PM Peak Hour										
County Li	2012 2020 2025 2025 2025 2012 2020 2020						2025 w/ Imp's						
Westbound	L	A	A A A A A A A A								q		
Lowrys	Lane						one						ne iire
Northbound	forthbound LR B B B B B					В	В	В	В	В	None		
OVER	ALL:	A 4	A 4	A 4	A 4	A 4	<b>8</b>	A 2	A 2	A 2	A 2	A 2	<b>~</b>

			1	5. Cour	nty Lin	ne Road	& Air	rdale R	oad				
Direction	Movement		AM Peak Hour PM Peak Hour										
County Li	ne Road	2012 Existing	2020 Base	2020 Projected	2025 2025 2025 2012 2020 2020 2025 2025							w/	
Eastbound	LR	A	A A A A A A A A								A	p	
Airdale	Road						ne iire						ne iire
Northbound L B B B B B Z Z Z I					В	В	В	В	В	None			
OVER	ALL:	A 4	A 4	A 4	A 4	A 4	R	A 4	A 4	A 4	A 4	A 4	R

			1	6. Cour	nty Lin	e Road	& Ro	berts R	load				
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
County Li	ne Road	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	m/						
Eastbound	L	A	A	A	A	A	75	A	A	A	A	A	7
Westbound	L	A	A A A A A A A A A A A A A A A A A A A								Required		
Roberts	Road						nba						nba
Northbound	LTR	F 181	F 207	F 207	F 226	F 226		E	E	E	E	E	
Southbound	LTR	D	E 36 E 36 E 38 E E D D D D D								None		
OVER	ALL:	C 24	D 27	D 27	D 30	D 30		A 3	A 3	A 3	A 3	A 3	Z

				17. Ith	nan Av	enue &	Aldw	yn Lan	ie				
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
Aldwyn	Lane	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 w/ Imp's						
Eastbound	LTR	В	В	В	В	В	7	В	В	В	В	В	7
Westbound	LTR	В	В	В	В	В	ire	В	В	В	В	В	ire
Ithan A	venue						Required						Required
Northbound	L	A	A	A	A	A		A	A	A	A	A	
Southbound	L	A	A A A A B A A A A A A B A A A A A A A A									lon	
OVER	OVERALL: A 2			A 2	A 2	A 2	Z	A 2	A 2	A 2	A 2	A 2	Z

			18.	Lancas	ter Av	enue &	WLA	RIRO	Drive				
Direction	Direction Movement AM Peak Hour PM Peak Hour												
WLA RIR	O Drive	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 ALT	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 ALT
Northbound R B					В	A			В		В	A	
OVER	ALL:			A 1		A 1	Z			A 1		A 1	NA

			19.	Lancast	er Ave	enue & l	PAC I	RILIRO	) Drive	9						
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour					
Lancaster	Avenue	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 ALT	2012 Existing	2020 Base							
Westbound	L		B B B B							В						
PAC RILII	Westbound L PAC RILIRO Drive						∢						∢			
Northbound				В		В	AN			С		C	N			
OVER	ALL:			A 1		A 1				A 1		A 1				

			20	). Ithan	Avenu	ie & LA	H/G	arage I	Drive				
Direction	Movement			AM Pea	k Hour					PM Pea	k Hour		
LAH / Gara	age Drive	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 ALT	2012 Existing	2020 Base	2020 Projected	2025 Base	2025 Projected	2025 ALT
Eastbound	LTR			C		С				C		C	
Westbound	LTR		B C C							С			
Ithan A	venue						A						₽
Northbound	L			A		A	NA			A		A	NA
Southbound	L			A		A				A		A	
OVER	ALL:			A 3		A 4				A 8		A 8	

Base = No-Build Scenario Projected = Build Scenario

## Table II QUEUE COMPARISON TABLE SIGNALIZED INTERSECTIONS

		1. Lanca	ster Avenue	& Spring Mil	I Road/Kenilw	vorth Road/Al	dwyn Lane		
Control Type:	Signalized								
Direction	Movement		AM Pea	k Hour			PM Pea	k Hour	
Lancaste	r Avenue	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected
	L	300 or 560*		428	428	300 or 560*		455	455 - 455
Eastbound	TT	[500]		513	523	[500]		627	599 - 614
	R	350		71	73	350		125	112 - 119
Westbound	L	75		33	34	75		58	54 - 56
Westbourid	TTR	[1600]		767	786	[1600]		581	<b>571 - 593</b>
Spring M	lill Road								
Northbound	L	375		317	317	375		341	386 - 363
Nottribouria	TR	[1100]		338	338	[1100]		153	160 - 156
Southbound	L	75		57	59	75		77	79 - 79
Southbound	TR	[1000]		546	546	[1000]		683	704 - 704
Aldwyr	Lane								
Northbound	LTR	[700]		178	178	[700]		197	205 - 205
Kenilwor	th Road						-		
Southbound	LTR	[900]		44	44	[900]		48	48 - 48

			2. La	ıncaster Ave	enue & Church	Walk			
Control Type:	Signalized								
Direction	Movement		AM Pea	k Hour			PM Pea	k Hour	
Lancaste	r Avenue	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected
Eastbound	TTR or TT	[1600]	1400	102	88	[1600]	1400	208	153
Eastbound	R	none	125		<25	none	125		<25
Westbound	LTT or TT	[1300]	1500	330	317	[1300]	1500	109	12
westbound	L	none	125		<25	none	125		<25
Church	ı Walk								
Northbound	LR or L LR	200++		<25	<25	200++		67	36

			3. La	ncaster Ave	nue & Ithan Av	venues			
Control Type:	Signalized								
Lancaste	r Avenue	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected
Coathound	L	100	200	82	104 - 119	100	200	63	78 - 78
Eastbound	TTR	[1300]		415	365 - 479	[1300]		627	673 - 729
Westbound	L	125	250	105	35 - 38	125	250	105	45 - 50
vvestbourid	TTR	[950]		501	508 - 563	[950]		244	241 - 321
Ithan A	venue								•
Northbound	L	50	190	178	169 - 137	50	190	148	189 - 159
Northbourid	TR	[1050]		347	381 - 330	[1050]		244	185 - 175
Couthbound	L	75		48	160 - 135	75		99	171 - 150
Southbound	TR	[550]		372	292 - 253	[550]		458	464 - 412

### Table II QUEUE COMPARISON TABLE SIGNALIZED INTERSECTIONS

			4. La	ncaster Ave	nue & Lowrys	Lane			
Control Type:	Signalized								
Direction	Movement		AM Pea	k Hour			PM Pea	k Hour	
Lancaste	r Avenue	Available Storage	1 2025 Base   2025 Projected   1 2025 Base   2025 Base						
Eastbound	LTTR	[450]		207	170	[450]		212	277
Westbound	LTTR	[350]		216	224	[350]		173	176
Lowrys	Lane								
Northbound	LTR	[850]		143	143	[850]		52	52
Southbound	LTR	[600]		81	81	[600]		190	190

			5. C	onestoga R	oad & Sproul I	Road			
Control Type:	Signalized								
Direction	Movement		AM Pea	k Hour			PM Pea	k Hour	
Conesto	ga Road	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected
Eastbound	L	75		169	180	75		65	65
Eastbound	TR	[450]		655	660	[450]		702	707
Westbound	L	75		48	48	75		43	43
westbound	TR	[150]		705	692	[150]		569	563
Sproul	Road								
Northbound	L	75		231	231	75		66	66
Northbound	TR	[1250]		224	224	[1250]		122	122
Southbound	LTR	[1200]		416	416	[1200]		446	447

			6. C	onestoga Ro	oad & Ithan A	venue			
Control Type:	Signalized								
Direction	Movement		AM Pea	k Hour			PM Pea	k Hour	
Conesto	ga Road	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected
Eastbound	LTR	[750]		469	424	[750]		315	325
Westbound	LTR	[500]		269	260	[500]		231	236
Ithan A	venue								
Northbound	LTR	[+1500]		120	126	[+1500]		28	31
Southbound	LTR	[500]		157	177	[500]		182	204

#### Table II

# QUEUE COMPARISON TABLE SIGNALIZED INTERSECTIONS

			7. Co	nestoga Roa	ad & Garrett A	venue			
Control Type:	Signalized								
Direction	Movement		AM Pea	k Hour			PM Pea	k Hour	
Conesto	ga Road	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected				
Eastbound	LTR	[200]		130	131	[200]		189	194
Westbound	LTR	[300]		114	116	[300]		189	193
Garrett	Avenue								
Northbound	LTR	[500]		29	29	[500]		33	33
Southbound	LTR	[1400]		59	59	[1400]		84	84

			8. Ce	ounty Line &	& Spring Mill F	Roads			
Control Type:	Signalized								
Direction	Movement		AM Pea	k Hour			PM Pea	k Hour	
County L	ine Road	Available Storage	2025 Base   2025 Projected   1 1 1 1 1 2 2 2 3 5 Base						
Eastbound	LTR	[+1500]		276	270	[+1500]		408	393
Westbound	LTR	[900]		187	189	[900]		193	178
Spring M	Iill Road								
Northbound	LTR	[450]		196	204	[450]		373	386
Southbound	LTR	[+1500]		263	272	[+1500]		292	313

Base = No-Build Scenario
Projected = Build Scenario

All values shown in feet. If queue is is less than one car it is shown as <25

If timing alternatives were considered those associated queues are shown as 2nd entries

Storage values with ++ mean minimum value shown, additional storage available within parking lot, parking garage, etc.

[] values in brackets are approximate distance to next significant upstream intersection.

If distance exceeds 1500 feet then +1500 is shown

<sup>\*</sup> indicates additional left-turn lane storage available in another left-turn lane at immediately adjacent upstream intersection.

#### Table II

# QUEUE COMPARISON TABLE UNSIGNALIZED INTERSECTIONS

	9. Lancaster Avenue & Garrett Avenue												
Control Type:	Unsignalized												
Direction	Movement		AM Pea	ak Hour			PM Pea	k Hour					
Lancaste	er Avenue	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected				
Westbound	L	[600]		<25	<25	[600]		<25	<25				
Garrett	Avenue												
Northbound	LR	[400]		<25	<25	[400]		<25	<25				

	10. Conestoga Road & Spring Mill Road												
Control Type:	Unsignalized												
Direction	Movement		AM Pea	ık Hour			PM Pea	k Hour					
Conesto	oga Road	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected				
Eastbound	L	[150]		<25	<25	[150]		<25	<25				
Spring I	Mill Road												
Southbound	LR	[1150]		<25	<25	[1150]		<25	<25				

			11. C	onestoga Ro	oad & Lowrys	Lane					
Control Type:	Unsignalized										
Direction	Movement		AM Pea	k Hour			PM Pea	k Hour			
Conesto	oga Road	Available Storage	2025 Base   2025 Projected   1 2025 Base   2025 Base								
Eastbound	L	[275]		<25	<25	[275]		<25	<25		
Westbound	L	[750]		<25	<25	[750]		<25	<25		
Lowry	s Lane										
Northbound	LTR	[1000]		33	35	[1000]		<25	<25		
Southbound	LTR	[300]		40	40	[300]		<25	<25		

	12. County Line Road & Ithan Avenue North													
Control Type:	Unsignalized													
Direction	Movement		AM Pea	ak Hour			PM Pea	k Hour						
County L	ine Road	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected					
Eastbound	LR	[900]		n/a	n/a	[900]		n/a	n/a					
Ithan A	Avenue													
Southbound	TR	[250]		n/a	n/a	[250]		n/a	n/a					

# Table II QUEUE COMPARISON TABLE UNSIGNALIZED INTERSECTIONS

	13. County Line Road & Ithan Avenue South													
Control Type:	Unsignalized													
Direction	Movement		AM Pea	ık Hour			PM Pea	k Hour						
County L	ine Road	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected					
Westbound	LR	[+1500]		n/a	n/a	[+1500]		n/a	n/a					
Ithan A	Avenue													
Northbound	TR	[400]		n/a	n/a	[400]		n/a	n/a					

	14. County Line Road & Lowrys Lane												
Control Type:	Unsignalized												
Direction	Movement		AM Pea	ık Hour			PM Pea	k Hour					
County L	ine Road	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected				
Westbound	L	[300]		<25	<25	[300]		<25	<25				
Lowry	s Lane												
Northbound	LR	[350]		28	28	[350]		<25	<25				

	15. County Line Road & Airdale Road												
Control Type:	Unsignalized												
Direction	Movement		AM Pea	ık Hour			PM Pea	k Hour					
County L	ine Road	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected				
Eastbound	LR	[1000]		25	25	[1000]		<25	<25				
Airdale	e Road												
Northbound	L	[100]		<25	<25	[100]		<25	<25				

16. County Line Road & Roberts Road											
Control Type:	Unsignalized										
Direction	Movement		AM Pea	ık Hour			PM Pea	k Hour			
County L	ine Road	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected		
Eastbound	L	[200]		<25	<25	[200]		<25	<25		
Westbound	L	[400]		<25	<25	[400]		<25	<25		
Robert	ts Road										
Northbound	LTR	[350]		300	300	[350]		50	50		
Southbound	LTR	[300]		<25	<25	[300]		25	25		

# Table II QUEUE COMPARISON TABLE UNSIGNALIZED INTERSECTIONS

	17. Ithan Avenue & Aldwyn Lane										
Control Type:	Unsignalized										
Direction	Movement		AM Peak Hour PM Peak Hour								
Aldwyn Lane		Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected		
Eastbound	LTR	[500]		<25	<25	[500]		<25	<25		
Westbound	LTR	[200++]		<25	<25	[200++]		<25	<25		
Ithan /	Avenue										
Northbound	L	[550]		<25	<25	[550]		<25	<25		
Southbound	L	[950]		<25	<25	[950]		<25	<25		

	18. Lancaster Avenue & WLA RI/RO Drive										
Control Type:	Unsignalized										
Direction	Movement		AM Pea	ak Hour			PM Pea	ık Hour			
WLL RIRO Drive  Available Storage (If Different)  Proposed Storage 2025 Base 2025 Projected Storage (If Different)			Proposed Storage (If Different)	2025 Base	2025 Projected						
Eastbound	R	none	125		<25	none	125		<25		

	19. Lancaster Avenue & PAC RI/LI/RO Drive										
Control Type:	Unsignalized										
Direction	Direction Movement AM Peak Hour PM Peak Hour										
Lancaster Avenue		Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected		
Eastbound	R	none	100		<25	none	100		<25		
Westbound	L	none	75		<25	none	75		<25		
PAC RIL	PAC RILIRO Drive										
Northbound	R	none	290		<25	none	290		<25		

	20. Ithan Avenue & LAH / Garage Drive										
Control Type:	Unsignalized										
Direction	Movement		AM Pea	k Hour			PM Pea	k Hour			
LAH / Ga	rage Drive	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected	Available Storage	Proposed Storage (If Different)	2025 Base	2025 Projected		
Eastbound	LTR	100++			25	100++			<25		
Westbound	LTR	100++			<25	100++			<25		
Ithan /	Avenue										
Northbound	L	none			<25	none			<25		
Southbound	L	none	50		<25	none	50		<25		

Base = No-Build Scenario

Storage values with ++ mean minimum value shown, additional storage available within parking lot

Projected = Build Scenario

[] values in brackets are approximate distance to next upstream intersection or driveway

All values shown in feet

#### **INTRODUCTION**

Villanova University ("Villanova") proposes construction of new undergraduate student residence halls on the site of an existing parking lot (known as "Main Lot") near the intersection of Lancaster Avenue and Ithan Avenue. Construction of the new halls will displace 1,126 existing surface parking spaces currently found on the Main Lot. The majority of replacement parking is provided in a new parking structure to be constructed east of Ithan Avenue in an area currently occupied by a surface parking lot having a capacity of 577 spaces ("Pike Lot"). The project also includes plans for a performing art center and approximately 20,440 SF of Villanova-centric retail space. This transportation impact study was prepared per the requirements of the zoning ordinance of Radnor Township as adopted in January 2014. The ordinance features a requirement for traffic investigations pursuant to PennDOT Strike Off Letter (SOL) 470-09-4.

Traffic investigations and related due diligence with the Township and PennDOT began well before ordinance adoption. Radnor Township provided input on scope of work in 2012 with most data collection taking place that fall. See **Appendix A** for more details and other project correspondence. Additional efforts unfolded as ordinance adoption efforts continued through 2013. With the ordinance adopted and a conditional use hearing completed in 2014, additional comments have been received from both PennDOT and the Township and are reflected herein.

The new student residence halls will provide a total of 1,138 new beds and are intended to address currently-unmet undergraduate student housing demand. This unmet demand results in students living off campus and commuting to classes. Construction of the new halls will result in reduced student commuting activity. Regardless of their location and the possibility of more-distanced students 'backfilling' nearby off-campus student housing, the number of peak hour commuting trips will be less after the project is constructed as 1,138 currently-commuting students – near or far – will become campus-residing (non-commuting) students. The study area and the project location are shown in **Figure 1**. An excerpt of the site plan is shown in **Figure 2**.

#### **EXISTING ROAD NETWORK**

A field review of the existing roadway system in the study area was conducted. The existing roadway characteristics are summarized in Table 1. Photographs of the study area are provided in **Appendix B**.

TABLE 1
ROADWAY CHARACTERISTICS WITHIN STUDY AREA

Roadway Name	Route #	Smart Trans. Guidelines Roadway Class/Type	Directional Orientation	Posted Speed Limit	AADT per iTMS (09/2014)
Lancaster Avenue	SR 0030	Regional Arterial	E-W	25	17,264

# TABLE 1 (continued) ROADWAY CHARACTERISTICS WITHIN STUDY AREA

Roadway Name	Route #	Smart Trans. Guidelines Roadway Class/Type	Directional Orientation	Posted Speed Limit	AADT per iTMS (09/2014)
Conestoga Road	SR 1019	Regional Arterial	E-W	25-35	10,000
County Line Road	G 847	Community Collector	E-W	25	1,906
Spring Mill Road / Sproul Road	SR 0320	Regional Arterial	N-S	25-45	8,449
Ithan Avenue	G 309	Neighborhood Collector	N-S	25	1,814
remaining streets	none	Local	N-S and E-W	25 (typical)	not available

#### LAND USE CONTEXT

Land use context guidance is provided in Chapter 4 of the <u>Smart Transportation Guidebook</u> (March 2008). The immediate area surrounding Villanova University most closely resembles the Suburban Center definition.

#### ROADWAY CLASSIFICATION

Roadway type guidance is provided in Chapter 5 of the <u>Smart Transportation Guidebook</u> (March 2008). The roadways closest to the project are Lancaster Avenue and Ithan Avenue. As summarized in **Table 1**, these roadways are defined as Regional Arterials and Neighborhood Collectors.

Applicable excerpts from the **Smart Transportation Guidebook** are provided in **Appendix C**.

#### PEDESTRIAN, MASS TRANSIT, AND BICYCLE FACILITIES

Both the Villanova campus and the roadways closest to the project provide sidewalks, painted pedestrian crosswalks, bicycle facilities, and/or designated pedestrian-only paths. There are also several mass transit opportunities in the area:

- SEPTA Regional Rail Paoli/Thorndale (formerly R5) line, north side of Route 30;
- SEPTA Norristown High Speed Line (formerly RT 100) line, south side of Route 30; and
- SEPTA Bus Routes 105 & 106 along Route 30 (stops near Ithan Avenue & Church Walk).

Additional details are provided in **Appendix D**.

#### **EXISTING TRAFFIC VOLUMES**

The site will generate traffic at various times throughout the day, though typical weekday commuter peak periods (i.e., 7:00-9:00 AM and 4:00-6:00 PM) are when the demands of the site plus existing traffic at study area intersections will be at a combined maximum. Data collection for this study was scheduled reflective of this and was performed by FTA principally in the fall of 2012 following receipt of a scope of work by the Township in June 2012.

#### MANUAL TURNING MOVEMENT COUNTS

Manual traffic counts were conducted using 15-minute intervals during weekday commuter peak periods (7:00-9:00 AM and 4:00-6:00 PM) at the following locations:

- 1) Lancaster Avenue and Spring Mill Road / Kenilworth Road / Aldwyn Lane
- 2) Lancaster Avenue and Church Walk
- 3) Lancaster Avenue and Ithan Avenue
- 4) Lancaster Avenue and Lowrys Lane
- 5) Lancaster Avenue and Garrett Avenue
- 6) Conestoga Road and Sproul Road
- 7) Conestoga Road and Spring Mill Road
- 8) Conestoga Road and Ithan Avenue
- 9) Conestoga Road and Lowrys Lane
- 10) Conestoga Road and Garrett Avenue
- 11) County Line Road and Spring Mill Road
- 12) County Line Road and Ithan Avenue North
- 13) County Line Road and Ithan Avenue South
- 14) County Line Road and Lowrys Lane
- 15) County Line Road and Airedale Road
- 16) County Line Road and Roberts Road
- 17) Ithan Avenue and Aldwyn Lane

In addition, counts were also conducted at the unsignalized driveways serving Villanova's main parking lots (Main Lot and Pike Lot) which are located on either side of Ithan Avenue south of Lancaster Avenue. These driveways were counted twice – in 2011 and in 2013.

The analyzed peak hours were 7:30 to 8:30 AM and 5:00 to 6:00. Turning movement peak hour volumes are presented in **Figures 3** and **4**. Pedestrian crossing activity was also counted and is presented in separate figures. The counts were conducted during ordinary class days.

Additional information regarding existing traffic volumes – including count data – is provided in the **Appendix E**. Note that "Special event" data collection was also conducted namely during Homecoming (10-26-12) and a weekday evening during a basketball game (St. Joes 12-11-12) and is referenced in the appendix. In all cases, the data collection efforts were also selected during normal weather and when no area road construction or detours were underway.

#### **BASE CONDITIONS**

The opening date of the project is expected to be 2019 but 2020 was chosen to be conservative. This time frame reflects approximately eight (8) years from the date of the data collection of the site (Fall 2012). This timeframe includes engineering, land

development approvals, construction, fit out, and occupancy of the site. PennDOT regulations require adding five (5) additional years to the full build condition to arrive at a Design Year (2025). Thus this report includes two base conditions:

- 2.02% (0.25% per year for 8 years) for Full-Build (2020), and
- 3.30% (0.25% per year for 13 years) for Design Year (2025).

#### **BACKGROUND GROWTH**

In 2013 the Delaware Valley Regional Planning Commission (DVRPC) performed studies which resulted in a recommended growth rate for the study area. This TIS incorporates the recommended rate (0.25% per annum) and was approved by PennDOT. DVRPC growth rate documentation is provided in **Appendix A**.

#### NEARBY PROPOSED DEVELOPMENTS

At this time there are no other significant approved land development projects in the immediate vicinity of the project. The Base (No Build) scenario includes existing traffic volumes and either 8 or 13 years of compounded growth at 0.25% per year applied to all through movements (i.e., excluding driveways and dead-end streets). 2020 and 2025 Base Condition turning movement peak hour volumes are presented in **Figures 5** thru **8**.

#### PROJECT DESCRIPTION

One significant component of the project is the new residence halls which yield 1,138 new beds on campus. These beds will be used by existing commuting undergraduate students, many of whom currently use Main Lot. In the future, while many 'converted' campusresiding (former-commuting) students will continue to own automobiles, these cars will – in large part – not be moving during weekday commuter peak periods. This is but one of a few fundamental changes in traffic which will result from the project. Other changes include:

- added parking to an existing garage (SAC<sup>1</sup>) on the north side of campus,
- consolidation of several small parking lots plus added supply west of Church Walk,
- elimination of several unregulated driveways along Route 30 west of Church Walk,
- construction of a new grade-separated pedestrian bridge at Church Walk, and
- other capacity-adding and mobility-improving features.

See Appendix F for map figure which identifies names and locations of buildings and parking lots throughout the Villanova University campus.

Note that even though the automobiles owned by the new campus-residing students will typically not be active or moving during weekday peak periods, this TIS assumes all parking spaces continue to be active during peak hours, just as they are today (without the new residence halls). This adds a significant measure of conservativeness to the Projected Condition scenarios.

#### TRIP GENERATION

Trip generation activity for many land uses can be investigated utilizing the Institute of Transportation Engineers' (ITE) publication entitled Trip Generation Manual and land use

<sup>&</sup>lt;sup>1</sup> Saint Augustine Center

code 550 (University/College) is available for review. However, the data is intended to reflect entirely new universities / new students. This project provides for the conversion of currently-commuting students to campus-residing students – not net-new students – so a different approach is needed.

The project will result in no change in total parking supply, but does include significant shifts both in the location of parking spaces as well as their function. For example, there currently exists 1,126 parking spaces in the Main Lot (west side of Ithan Avenue) and 577 spaces in Pike Lot (east side of Ithan Avenue). With the project constructed, there will be 62 parking spaces in the 'former' Main Lot and 1,289 spaces in a structure on the 'former' 577-space Pike Lot (many of which will be occupied by non-moving student-owned vehicles).

The main exercise of the study is to reassign turning movement traffic volumes to reflect parking supply location changes. As mentioned earlier, the project continues to assume parking space activity 'turns over' in the same manner as it does today (i.e., as it does with currently-commuting students). The trip generation for the project is thus conservatively based upon the trip generating characteristics of the existing parking spaces in Main and Pike Lots and is effectively a reallocation of current peak hour activity based on the location of new parking spaces throughout campus, including at the new Pike garage, at the expanded SAC garage, and at the 'new' West Lancaster surface lot (WLA). More details about trip generation rates for existing parking is provided in **Appendix G** and are summarized below.

TABLE 2
PARKING SPACE TRIP GENERATION

Trip	AM	I Peak Hou	r	PM Peak Hour			
Generation (Parking Spaces)	<u>IN</u>	<u>OUT</u>	TOTAL	<u>IN</u>	<u>OUT</u>	TOTAL	
Rates	0.227	0.028	0.255	0.199	0.225	0.424	

In addition to parking / traffic redistribution analysis, the Township traffic engineer requested (in letters provided in **Appendix A**) that the trip generation potential of the university-centric retail space be examined and discussed. Trip generation associated with similar contemporary retail space at St. Joe's University was observed and documented in 2014 and was compared with three scenarios which utilized ITE trip generation predictions for non-university-centric retail space (see **Appendix A**). A January 2015 review letter from the Township traffic engineer directed that ITE Scenario 1 (which resulted in more conservative trip generation estimates than the St. Joe's observations) be utilized in a revised TIS. **Table 3** summarizes the retail AM and PM peak hour new vehicular trip generation potential of the site as gathered from that scenario. As shown, the retail component of the site is estimated to generate 60 new vehicle trips during the weekday AM peak hour and 99 new vehicle trips during the weekday PM peak hour.

TABLE 3
RETAIL TRIP GENERATION (NEW VEHICULAR TRIPS)

Trip Component	A	M Peak Ho	our	PM Peak Hour			
	<u>IN</u>	OUT	TOTAL	<u>IN</u>	OUT	TOTAL	
Retail	31	29	60	51	48	99	

#### **TRIP DISTRIBUTION**

The first distribution of site traffic is an extensive redistribution of existing traffic due to the reassignment of parking supply in different locations throughout the core campus area (SAC garage, WLA, Pike Garage, etc). In addition there are proposed changes to driveway locations and functionality, such as the Lancaster Avenue inbound access to the Pike Lot garage (which currently exists but is presently exit-only). As a result, several different models were created to track traffic assignments which result from parking changes in different locations which are affected by the project. The principal parking locations affected include:

- Pike Lot (Garage),
- LAH surface parking and the West Lancaster Lot, and
- the expanded SAC Garage.

More information regarding the derivation of trip distribution models is provided in **Appendix H**. Essentially, trips are added or subtracted throughout the network proportionate to existing driveway volumes and adjacent intersections. Retail traffic was added as described in the appendix. **Appendix H** includes the results of all individual peak hour worksheets in summary figures presented at the end of the Appendix. Proposed road improvements are described later but are summarized in **Figures 9** and **10**. The combination of site traffic with Base Condition volumes yield Projected Conditions peak hour volumes, **Figures 11** thru **14**.

#### **CAPACITY ANALYSIS METHODOLOGY**

Capacity analyses were conducted for the weekday AM and PM peak hours at the study area intersections. These analyses were conducted according to the methodologies contained in the 2010 *Highway Capacity Manual* (where applicable) and using *Synchro* 8 software. The following conditions were analyzed:

- 2012 Existing Conditions,
- 2020 Base Conditions,
- 2020 Projected Conditions,
- 2025 Base Conditions, and
- 2025 Projected Conditions.

In addition, capacity analyses were conducted at the proposed site driveway intersections under the Projected Condition scenarios.

PennDOT's transportation impact study guidelines outlined in Strike Off Letter 470-09-4, dated February 2009 last updated December 2013 contain the following criteria regarding levels of service:

- Page 29 of the Guidelines describes that if evaluation of the Base Condition to the Projected Condition results in an overall level of service increase greater than 10 seconds then the Applicant will be required to mitigate the impact.
- Page 31 of the Guidelines states that new driveways shall be designed to operate at LOS C in rural areas and LOS D in urban areas.

Base Condition analysis signal timings were optimized. Overall PHFs were utilized.

#### **LEVELS OF SERVICE IN THE STUDY AREA**

Levels of service (LOS) at the study area intersections for the weekday AM and PM peak hours are summarized in **Tables I** as found in the **Executive Summary**. As revealed in the tables, all levels of service at the study area intersections comply with the requirements outlined in the PennDOT SOL (for both overall intersection impacts as well as critical movement impacts), meaning no improvements are required. Even so, a number of roadway improvements and pedestrian benefits are offered (see **Recommendations**).

More details regarding capacity analyses are explained in **Appendix I**. The signal plans utilized in the analyses are provided in **Appendix L**.

#### **QUEUE LENGTH ANALYSIS**

Projected 95<sup>th</sup> percentile queues were produced using *Synchro* and were presented in **Table** II in the **Executive Summary**. Predicted 2025 queue lengths are accommodated where new (or extended existing) turn lanes are proposed.

#### **TURN LANE WARRANT ANALYSIS**

The project includes providing new auxiliary left- and right-turn lanes as appropriate all proposed points of access. PennDOT's XLSX spreadsheet "Turn Lane Warrant and Length Analysis Workbook" were utilized in analysis of all WLA, Visitor Lot, LAH, and Pike Garage driveways. The details of the investigations are included in **Appendix J**. Note that in many cases, turn lanes are included in the plans even though they are not required per the warrants. Additionally, in many cases where turn lanes are warranted, the storage length shown on the plans exceeds the required storage length per the warrant analysis.

Note that at the Route 30 WLA driveway, no WB left-turn lane analysis is included since the movement is prohibited (i.e., the driveway is proposed as a right-in/right-out driveway.

#### **CRASH DATA INVESTIGATIONS**

Crash history investigations using PennDOT-supplied cluster list, homogenous report, crash resumes, and a crash summary for 01/2008 to 12/2012 data along the Lancaster Avenue corridor (from Spring Mill Road to County Line Road) were conducted.

The study area featured 112 reportable accidents. Highlights of the data include:

- 0 accidents involved fatalities
- 6 accidents involved pedestrians
- 8 accidents involved injuries classified as moderate or major
- 24 accidents involved injuries classified *minor*
- 13 accidents involved environmental conditions such as ice- or snow-covered roadways

The segment in question covers approximately 1.23 miles and is classified as an urban, NFAC (non full-access control) roadway. The calculated crash rate (C) of the study corridor is 2.40 crashes per million vehicle miles whereas the latest Department-provided homogenous report gives a rate of 2.25 crashes per million vehicle miles for similar

roadways which are undivided, are 41-99 feet wide, and which feature 10-99k ADT. The difference in crash rates (between the study area and similar roadways per the homogenous report) is not significant. It is also appropriate to eliminate certain crashes given the involvement of conditions unrelated to the design of the roadway including – but not limited to – environmental factors such as snow, ice, etc. Eliminating the 13 accidents (per the last bullet point above) which involve these conditions, for example, produces a redacted crash rate (C') of 2.12 crashes per million vehicle miles, which is lower than the homogenous report rate for similar roadways.

Whether using C or C', the crash history of the corridor is consistent with the crash history of other roadways having similar attributes. The absence of any crash involving a fatality and the relatively low number of accidents involving major injuries, moderate injuries, and pedestrians also supports this conclusion.

Note that the individual crash data for the 6 accidents involving pedestrians were reviewed and no correctable pattern or element was discovered.

Crash data is not provided in any appendix but will be kept on file should PennDOT or the Township traffic engineer wish to review it.

#### **PARKING**

Parking demands have been documented throughout the entire campus under both 'ordinary class' conditions and 'special event' conditions, including home basketball games. Copies of detailed campus-wide parking tabulations (including summaries of observed demand and available supply) on more than a dozen different days are provided in **Appendix K**. These spreadsheets show that there typically exist hundreds of unused parking spaces throughout campus no matter what time of day or circumstance.

West Campus has some similarities with the proposed student resident halls since it is principally occupied by undergraduate upperclassmen. The unconstrained parking demand rate at West Campus is ~55% (2013) and auto ownership at the proposed student resident halls may be comparable. The number of spaces in the garage which will not be moving during weekday commuter peak periods could potentially total about 500 to 600 spaces. Regardless and as previously explained, *all* parking in the garage is assumed to be "peak hour moving" to provide the most conservative results.

Questions regarding midday vehicular activity (turnover) by the proposed student hall residents have been raised. The likelihood that campus-residing students are any more (or less) likely to make midday trips is debatable, but regardless West Campus midday parking turnover was examined in an attempt to quantify midday trip making. Investigations occurred on Tuesday, 30 April 2013. Traffic counts were conducted at the only driveway which is used by student residents to gain access to / from West Campus student parking areas between 10 AM to 12 PM. In addition, during the counts, a random sample of approximately 5% of the available parking spaces (30 out of 596 spaces) were monitored for turnover. The investigations determined:

- The peak hour was 11:00 AM to 12:00 PM.
- During the peak hour, 30 entering vehicles and 23 exiting vehicles (53 total trips) were recorded at the driveway.

• During the same hour, there was turnover at 2 of the 30 parking spaces which were monitored and the turnover activity at these spaces amounted to 2 arriving (entering) vehicles and 2 departing (exiting) vehicles (4 total trips).

The results suggest that midday peak hour parking turnover – and thus trip generation – is on the order of about 1 out of every 10 parking spaces during class days. This activity is much lower than AM and PM peak hour trip generation. AM peak hour trip generation is approximately 1 trip for every 4 parking spaces and PM peak hour trip generation is approximately 1 trip for every 3 parking spaces.

More details on the study are provided in **Appendix K**.

#### **SIGHT DISTANCE ANALYSIS**

A sight distance analysis was prepared for the proposed site driveways. In general, recommended sight distances depend upon the posted speed limit and roadway grades. Existing sight distances were measured in accordance with PennDOT Publication 282 and compared to PennDOT's desirable (aka tabular) and SSSD (aka formulaic) sight distance as found in Title 67 Chapter 441 of the PA Code. Comparisons with available sight distances at the proposed unsignalized site accesses are presented below. Note that the posted speed limit along both Lancaster Avenue and Ithan Avenue is 25 mph. Note also that if the available sight distance is well beyond the required minimum then the full extent of available sight distance was not documented. Grades are field estimates.

#### TABLE 6 SIGHT DISTANCES

RT 30	DIRECTION	GRADE	SIGHT DISTANCE (FT)			
WLA RIRO	DIRECTION	(APPROX)	DES	SSSD	EXIST	
EXITING	Looking to the left	0%	300	265	500+	
EAITING	Looking to the right	NOT APPL	ICABLE; LEF	TS OUT PRO	HIBITED	
ENTERING	Approaching same direction	NOT ADDI	ICADI E. I E	ETC IN DDA	LIDITED	
ENTERING	Approaching opposite direction	NOT APPLICABLE; LEFTS IN PROHIBITED				

RT 30	DIRECTION	GRADE	SIGHT	SIGHT DISTANCE (FT)			
PAC RILIRO	DIRECTION	(APPROX)	DES	SSSD	EXIST(1)		
EXITING	Looking to the left	0%	300	265	470		
EAITING	Looking to the right	NOT APPL	ICABLE; LEF	TS OUT PRO	HIBITED		
ENTERING	Approaching same direction	0%	N/A	265	500+		
ENTERING	Approaching opposite direction	0%	320	265	500+		

LAH (W. SIDE	DIRECTION	GRADE	SIGHT DISTANCE (FT)			
OF ITHAN)	DIRECTION	(APPROX)	DES	SSSD	EXIST	
EXICING	Looking to the left	-2%	440	274	500+	
EXITING	Looking to the right	-2%	350	274	500+	
ENTERING	Approaching same direction	-2%	N/A	274	500+	
ENTERING	Approaching opposite direction	-2%	300	274	450	

GAR (E. SIDE OF ITHAN)	DIRECTION	GRADE	SIGHT DISTANCE (FT)		
		(APPROX)	DES	SSSD	EXIST
EXITING	Looking to the left	-2%	440	274	500+
	Looking to the right	-2%	350	274	450
ENTERING	Approaching same direction	-2%	N/A	274	500+
	Approaching opposite direction	-2%	300	274	500+

EMR (E. SIDE OF ITHAN)	DIRECTION	GRADE	SIGHT DISTANCE (FT)			
		(APPROX)	DES	SSSD	<b>EXIST</b>	
EXITING	Looking to the left	NOT APPLICABLE;				
	Looking to the right	ENTRY-ONLY DRIVEWAY				
ENTERING	Approaching same direction	0%	N/A	274	500+	
	Approaching opposite direction	+2%	300	256	500+	

DES based on posted speed limit + 10

(1) existing wrought iron fence assumed to be removed or set back ~ 3 feet from current location

SSSD based on posted speed limit + 10

The site plans may evolve throughout land development and these sight distances will be measured again by the site civil engineer and included with the HOP application which will later be made by the site civil engineer.

#### SPECIAL EVENT TRAFFIC AND PARKING MANAGEMENT

Radnor Police Department and Villanova Public Safety are present to direct traffic and chaperone motorists (and pedestrians) during events such as basketball games, homecoming, graduation events, etc. Since either Radnor Police, Villanova Public Safety, or both are present directing traffic / controlling intersection operation at most of these events, level of service analyses cannot be modeled or conducted. In addition, total intersection volumes during special events have been demonstrated to be comparable to or less than weekday peak hour traffic, and the Township traffic engineer has previously given an opinion that LOS analyses are not required, but that a special event management plan *is* necessary as requested in past review letters (see **Appendix A**). Villanova University will provide a Special Event Management Plan under separate cover.

#### **RECOMMENDATIONS**

A comprehensive suite of roadway improvements, new pedestrian facilities, existing driveway removal, and new driveway installation will mitigate the impact of the site. More details are as follows:

#### **Most Intersections in the Study Area**

While the project includes some new retail space, the majority of the traffic impact of the site is the redistribution of traffic patterns caused by significant changes to parking locations as well as many changes to parking lot / garage driveways.

The intersections closest to the Main Lot / Pike Lot will have the most noticeable changes. The more remote intersections have greatly reduced impact – whether because of the diluted impact of the redistribution of traffic or the diluted impacts of the new retail traffic. Most intersections – even including relatively nearby intersections such as Route 30 and Route 320/Kenilworth Street/Aldwyn Lane will not warrant any improvements, whether examined in terms of overall delay changes or critical movement delay changes. Despite this, a number of locations do feature proposed improvements.

#### Route 30 and Route 320/Kenilworth Street/Aldwyn Lane

o A contribution toward the cost an Adaptive Traffic Signal controller and related hardware at this location shall be made by the University.

#### Route 30 and New RIRO Access (near WLA)

- o Channelization islands to prohibit entering and exiting left turns shall be provided.
- A new EB right-turn only lane with 75 feet of taper, 125 feet of storage, and 14 feet width shall be provided.

#### Route 30 and Relocated Church Walk

- o A contribution toward the cost an Adaptive Traffic Signal controller and related hardware at this location shall be made by the University.
- o A new EB right-turn only lane with 75 feet of taper, 125 feet of storage, and 14 feet width shall be provided.
- o A new WB left-turn only lane with 75 feet of taper, 125 feet of storage, and 10 feet width shall be provided.

o 11 foot wide inside and 12 foot wide outside through lanes (10-foot travel lanes presently exist) shall be provided.

#### Route 30 and Ithan Avenue

- o A contribution toward the cost an Adaptive Traffic Signal controller and related hardware at this location shall be made by the University.
- The existing EB left-turn only lane shall be extended to provide a 75 feet of taper, 200 feet of storage, and 10 feet width.
- o The existing NB left-turn only lane shall be extended to provide a 50 feet of taper, 190 feet of storage, and 11 feet width.
- o The existing WB left-turn only lane shall be extended to provide a full-width (10 feet) section of approximately 250 feet (between Ithan Avenue and the PAC driveway) plus an additional full-width section beyond the PAC driveway (to the east) measuring an additional 75 feet with a 75-foot taper.
- o 11-foot wide inside and 12-foot wide outside through lanes (10-foot travel lanes presently exist) shall be provided on each Route 30 approach to this intersection.
- O While there is either no change or a projected <u>decrease</u> in overall delay between Base and Projected conditions (both in both build years), 2025 Projected conditions include alternate signal timings which reduces some delays even further. Actual signal timing revisions may not be needed since Traffic Adaptive signal controller installation at this location will reduce delays as explained at the end of this section.

#### **Additional Site Access Points**

- At the currently-existing exit-only unsignalized driveway along Route 30 just east of Ithan Avenue (PAC Driveway):
  - The driveway shall be modified to provide entry/exit operation;
  - A new EB right-turn only lane with 50 feet of taper, 100 feet of storage, and 12 feet width shall be provided;
  - A new WB left-turn only lane with 75 feet of taper, 75 feet of storage, and 10 feet width (an extension of the existing WB left-turn lane at Ithan Avenue) shall be provided; and
  - Exiting left turns shall be prohibited (signage and channelization features).
- At the proposed new unsignalized intersection serving the LAH rear lot and Pike Garage along Ithan Avenue:
  - A new SB left-turn lane featuring 50 feet of storage and 50 feet of taper shall be provided;
  - A new pedestrian crosswalk (with post-mounted, pedestrian-actuated Rectangular Rapid Flash Beacons [RRFB] on each side) spanning the NB approach of Ithan Avenue and connecting the garage with the resident halls shall be provided; and
  - Free-flow operation of Ithan Avenue traffic shall be maintained.

A **Phasing Narrative Figure** found in the Executive Summary and **Figures 9** and **10** provide added details.

It should be noted that no specific adjustments were made for the installation of Traffic Adaptive signal controllers at any intersection as there is no current consensus at PennDOT regarding modeling such intersections. Local studies in the Delaware Valley have shown a reduction in delay between 27% and 38% in before-and-after studies<sup>2</sup>. Thus the year 2020 and 2025 Projected delays found in this report are likely overstated when compared with real world delays which may be found when Traffic Adaptive signal controllers are installed.

#### **CONCLUSIONS**

Based on the results of this transportation impact study, FTA offers the following conclusions:

- The project is forecasted to generate a small amount of net new vehicular traffic. Even with conservative assumptions and retail trip generation estimates, fewer than 100 new vehicular trips during either the AM or PM weekday peak hour are expected.
- The project will result in a more equitable distribution of parking and the traffic associated therewith as compared with present day conditions. Some turning movements will feature a reduction in volume.
- The project includes access points which will adequately serve the projected weekday peak hour traffic volumes associated with the project.
- Available sight distances exceed requirements.
- Proposed new turn lanes accommodate projected queues.
- Crash history investigations reveal no correctable patterns.
- Not every offered roadway improvement (pedestrian bridge, Route 30 driveway consolidation west of Church Walk, etc.) is required to mitigate project impacts, but have been included in the project as requested by PennDOT and/or the Township.
- Traffic Adaptive signal controller installation will serve as an Alternative Transportation Plan improvement for all project-affected intersections along the Lancaster Avenue corridor.

-

<sup>&</sup>lt;sup>2</sup> Pennoni Associates memorandum to Ashwin Patel, P.E. (PennDOT) dated 14 December 2010, gathered from: http://rhythmtraffic.com/insyncs-performance/deployments

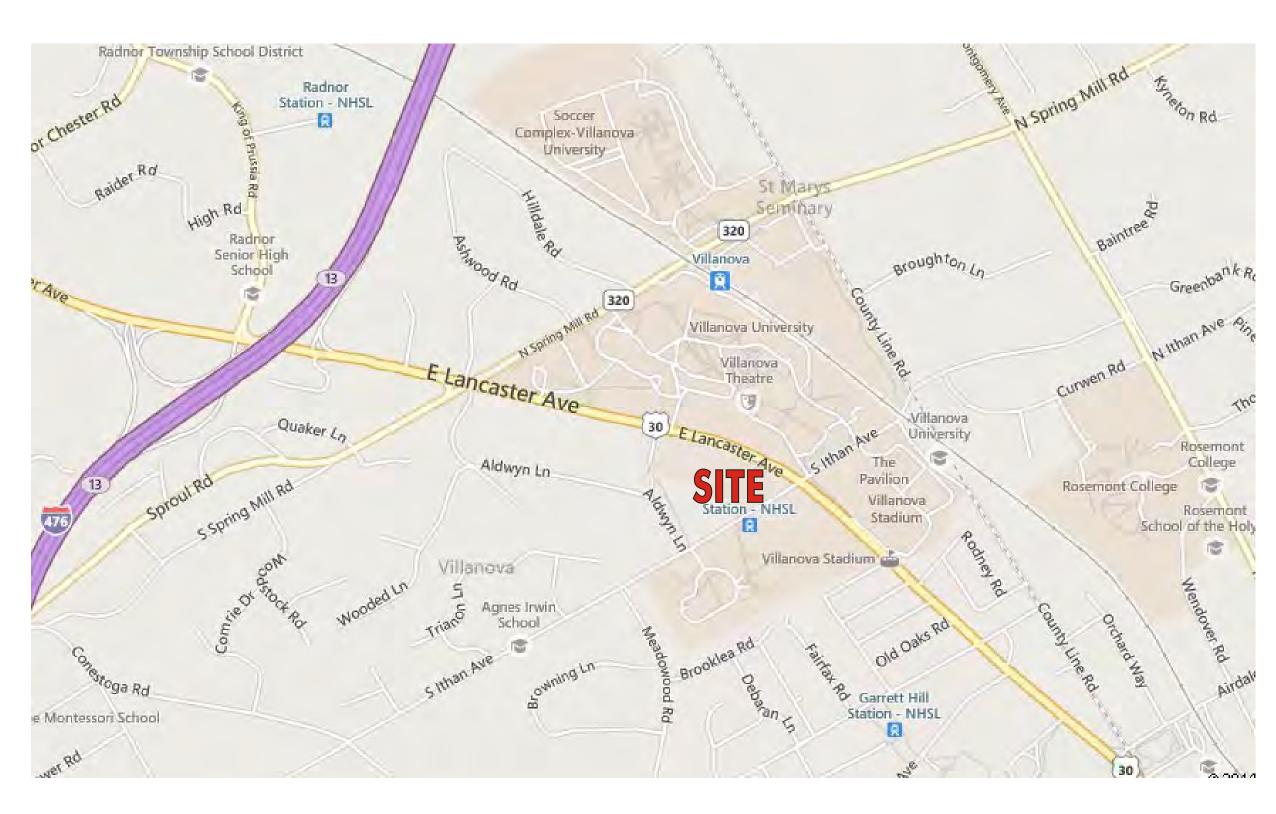


## **Study Area / Project Location**

### Villanova University Lancaster Avenue Residence Halls Radnor Township, Delaware County, Pennsylvania

#### March 2015\*





<sup>\*</sup> figure preparation date

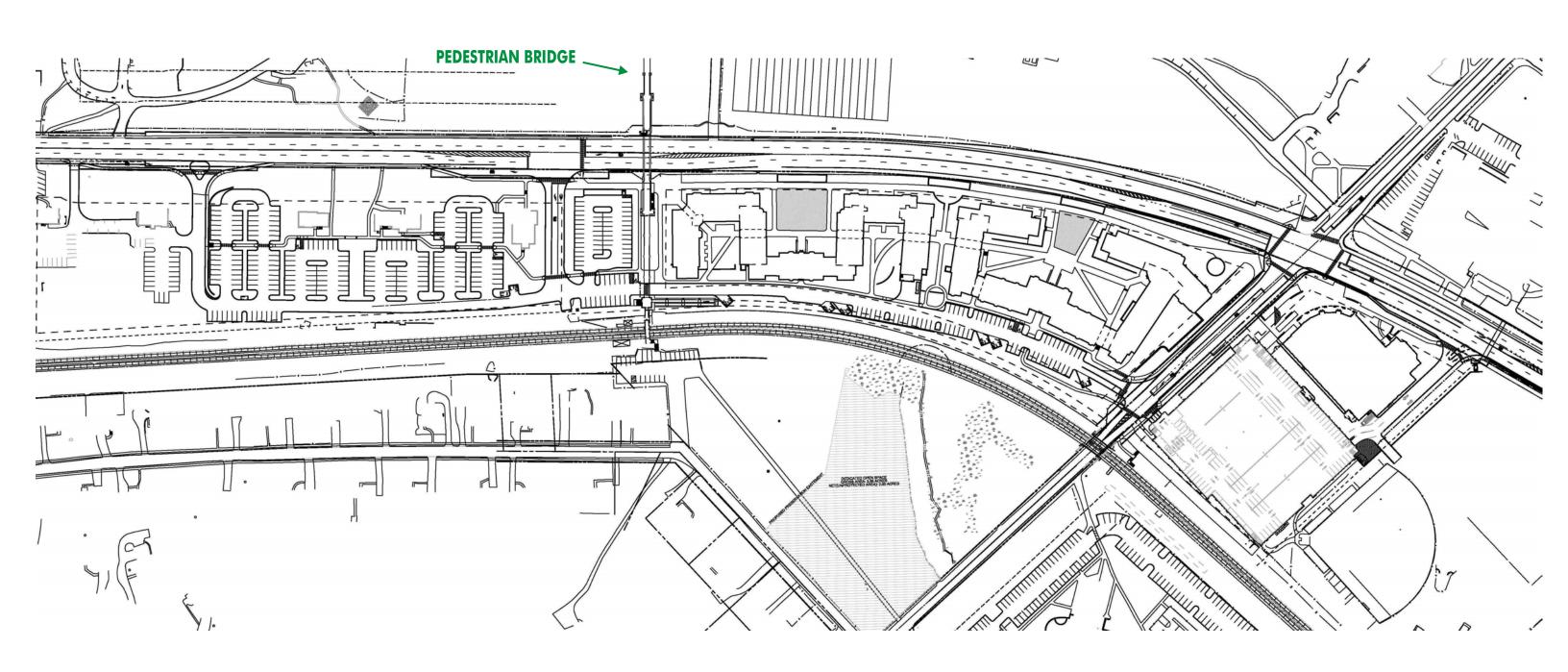


# **Site Plan Excerpt**

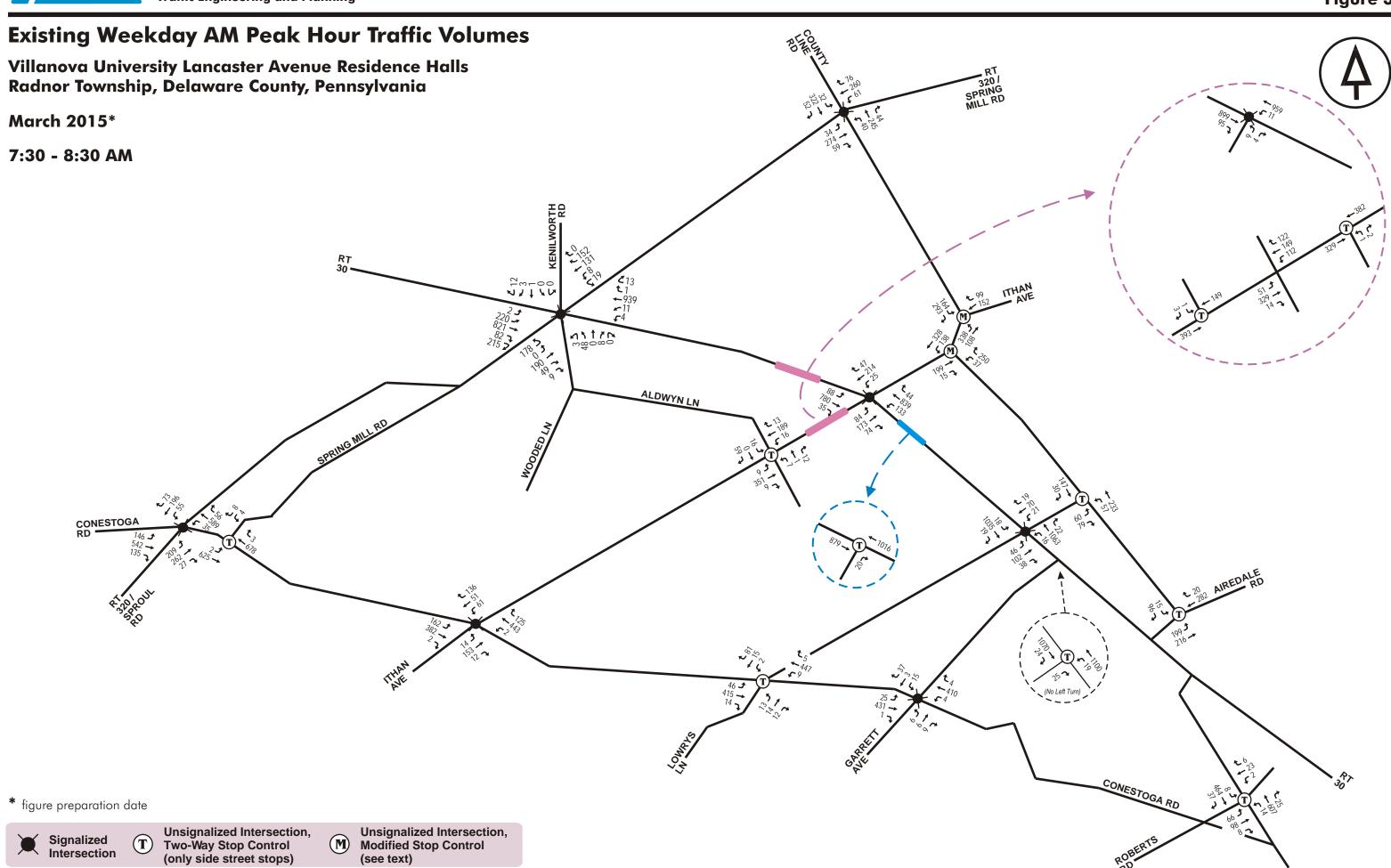
Villanova University Lancaster Avenue Residence Halls Radnor Township, Delaware County, Pennsylvania

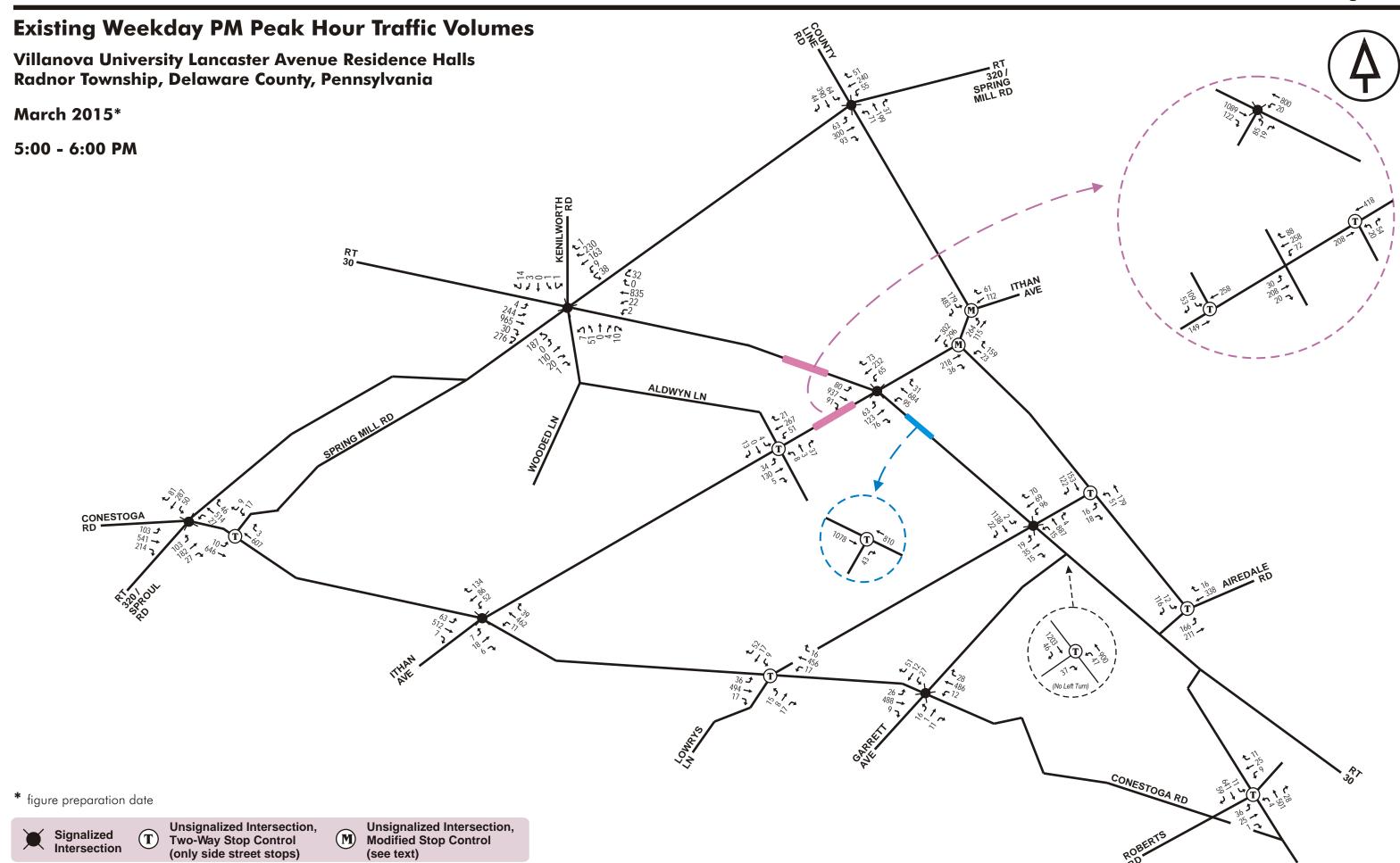
March 2015\*



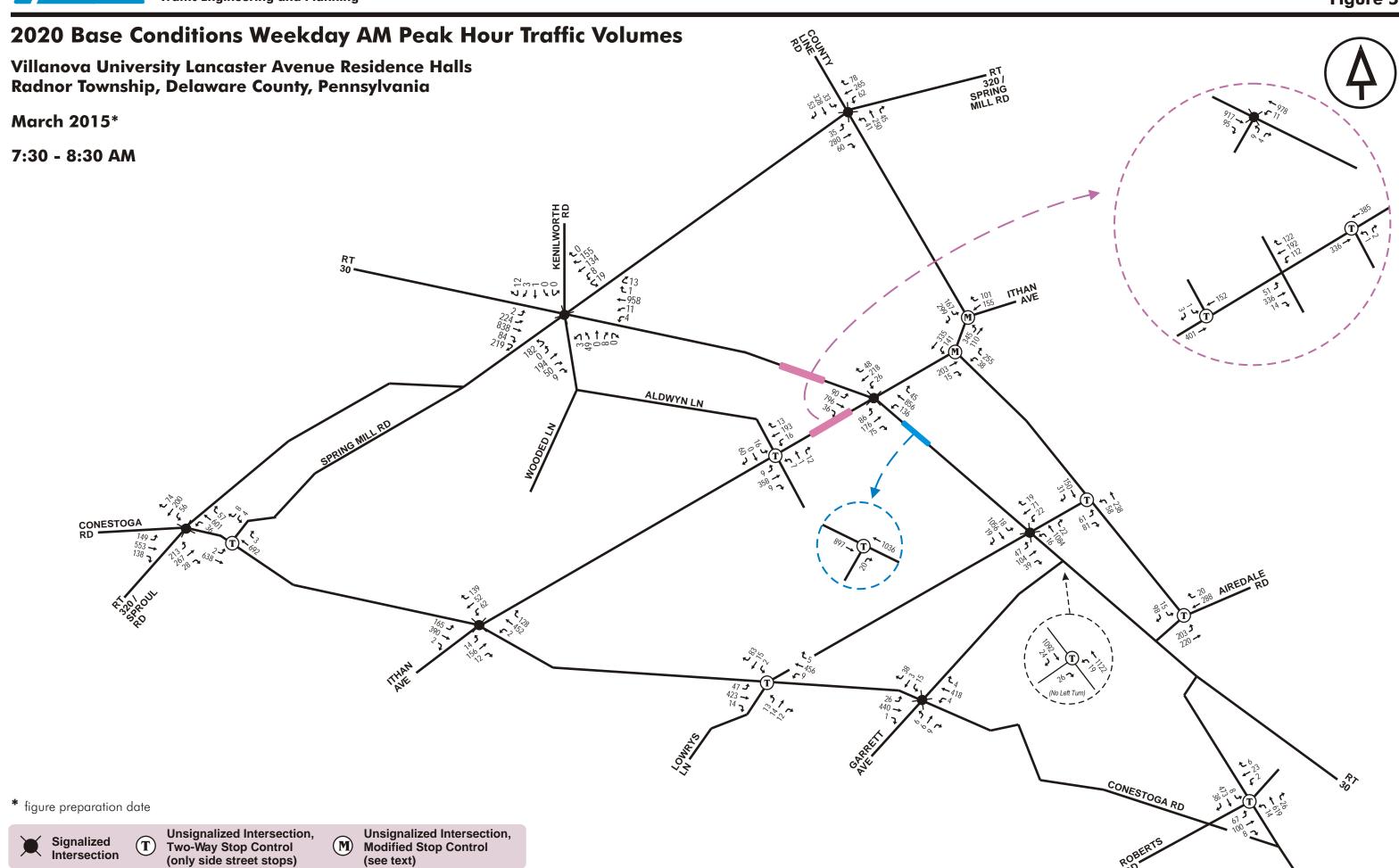


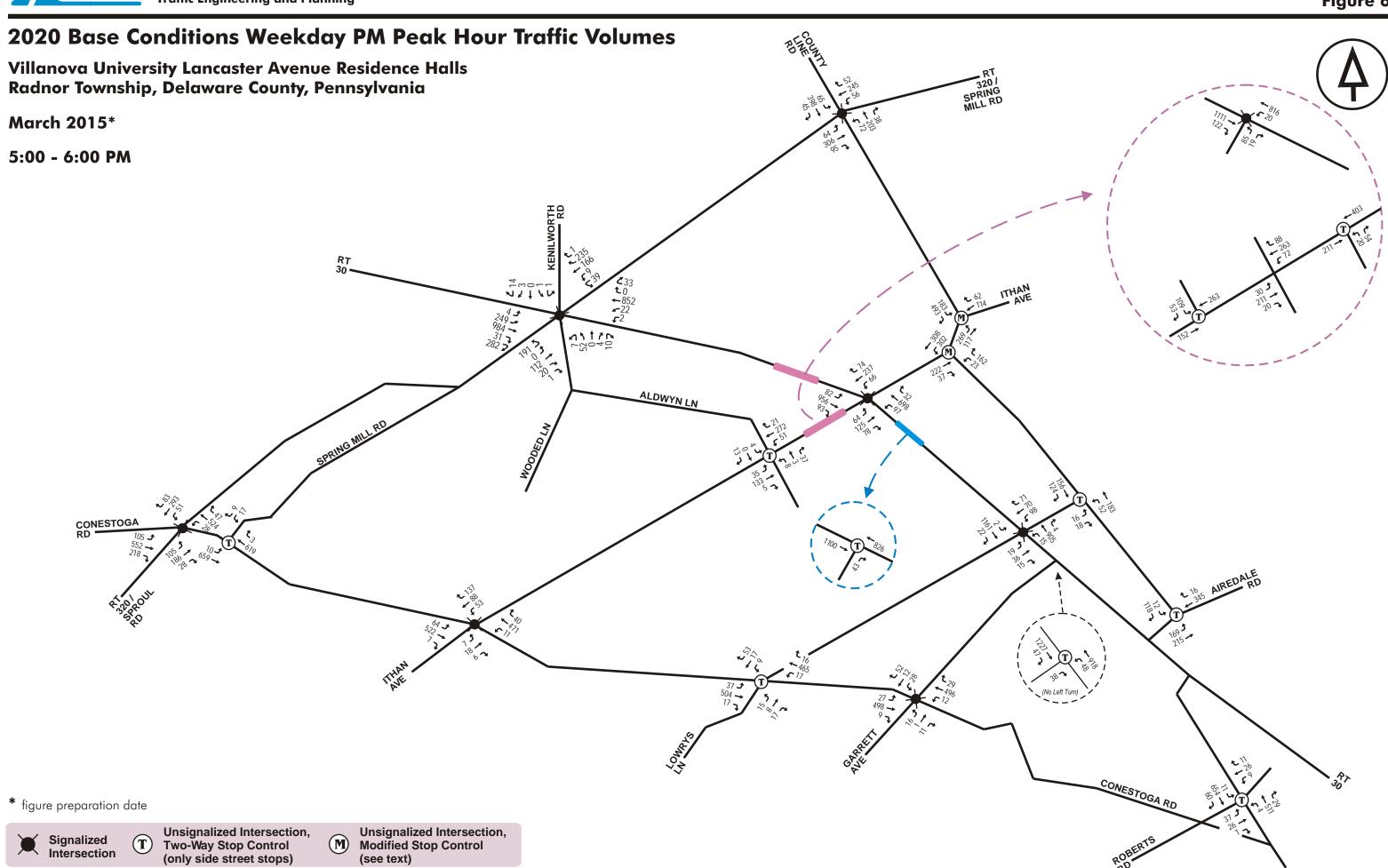
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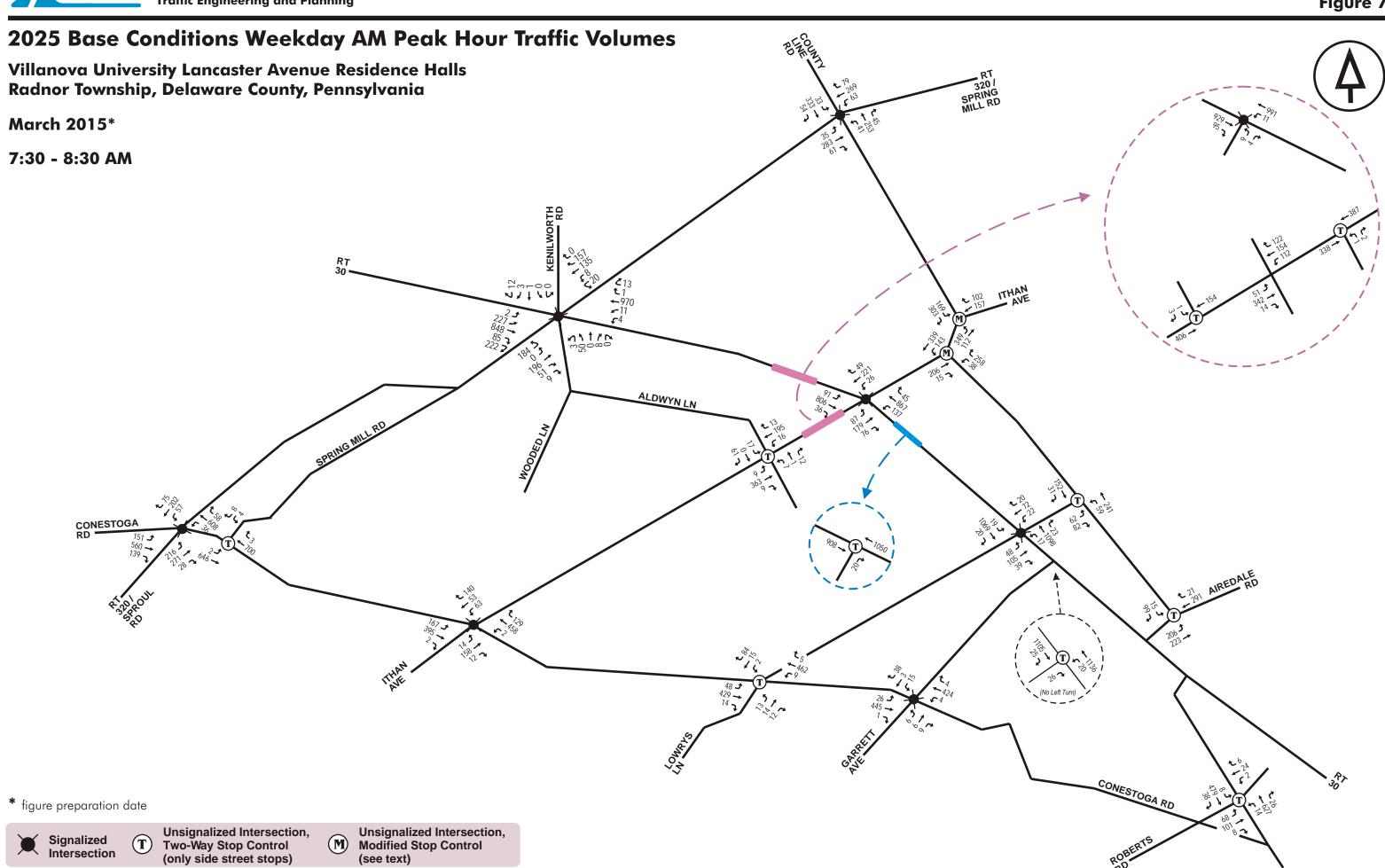




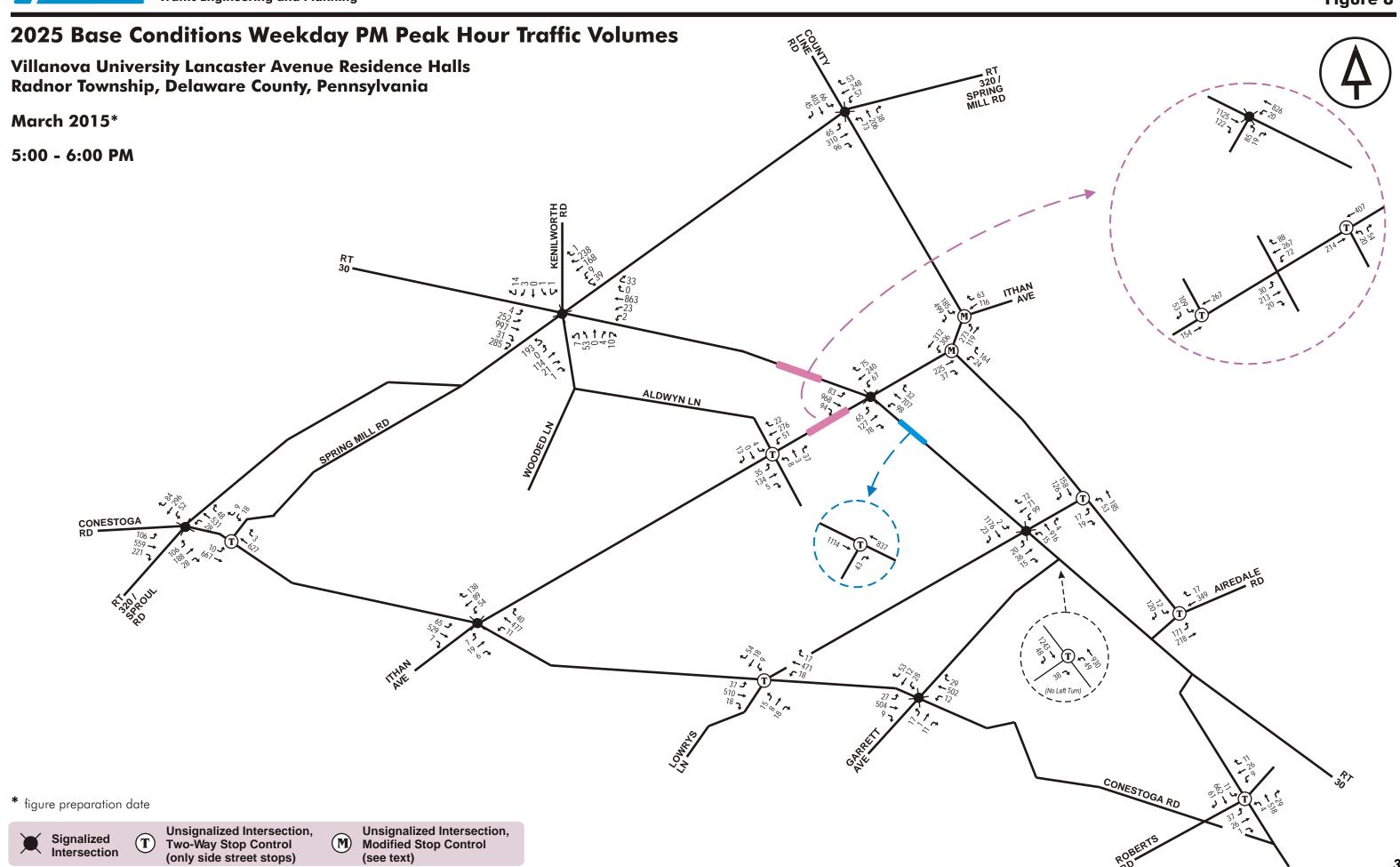
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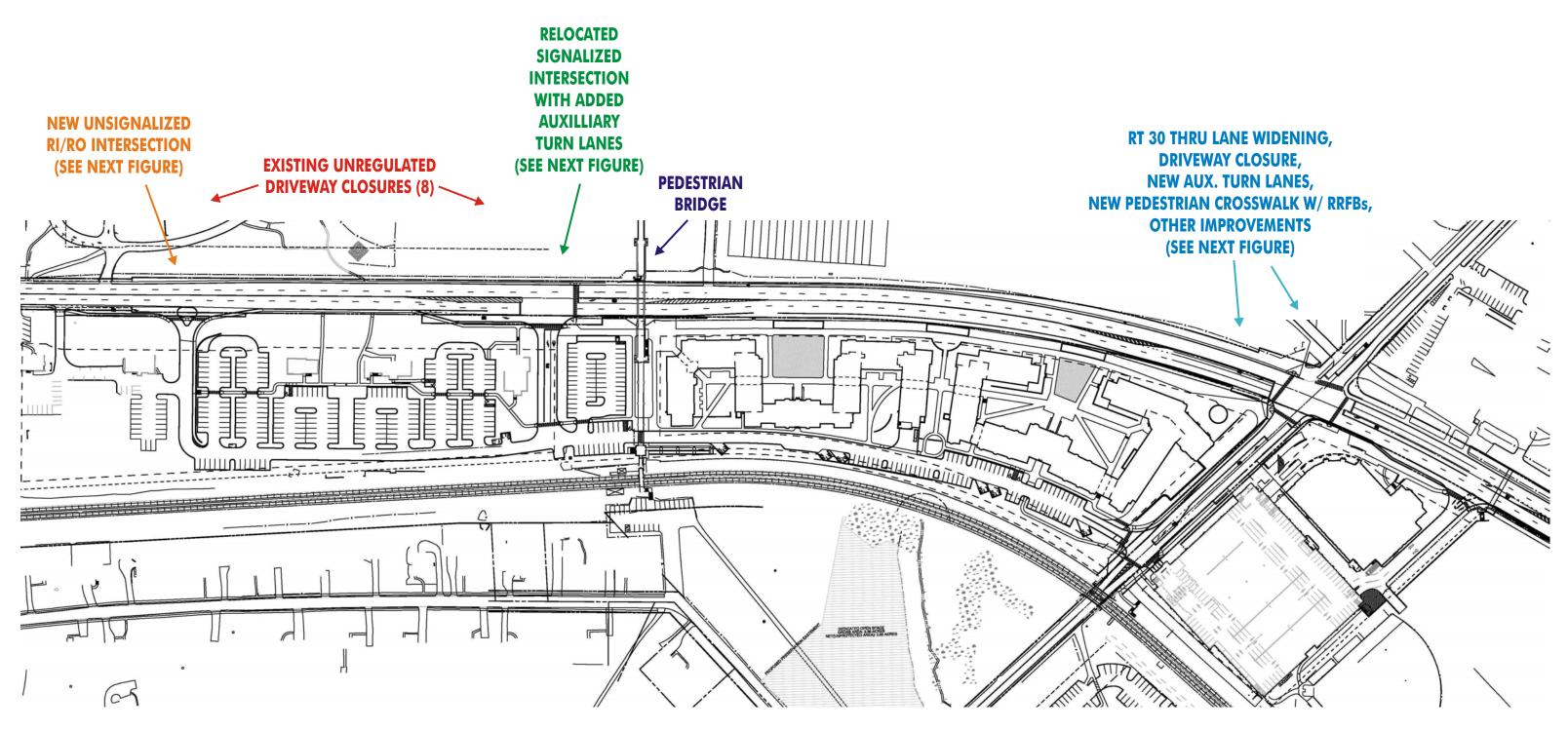


# **Proposed Traffic Improvements, Overview**

Villanova University Lancaster Avenue Residence Halls Radnor Township, Delaware County, Pennsylvania

March 2015\*



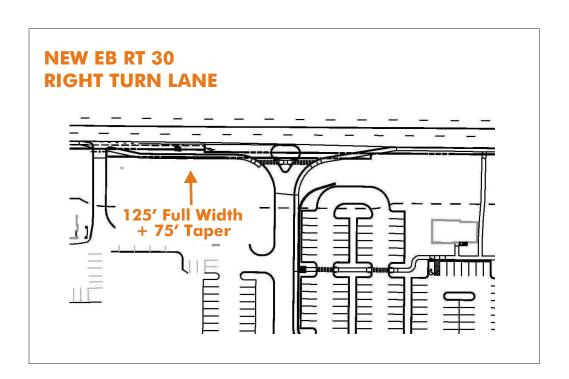


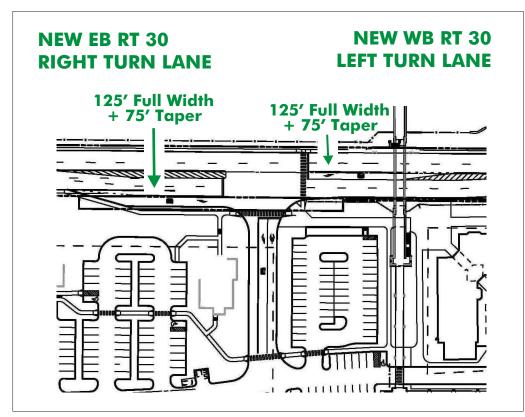
<sup>\*</sup> figure preparation date

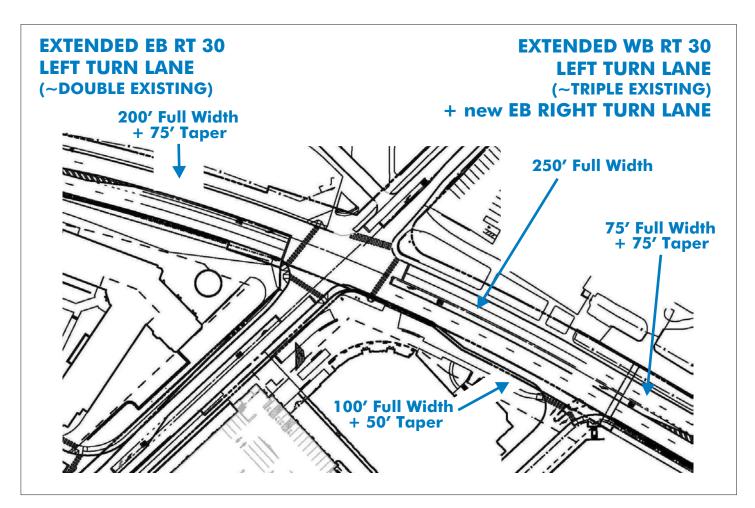
# **Proposed Traffic Improvements, Selected Details**

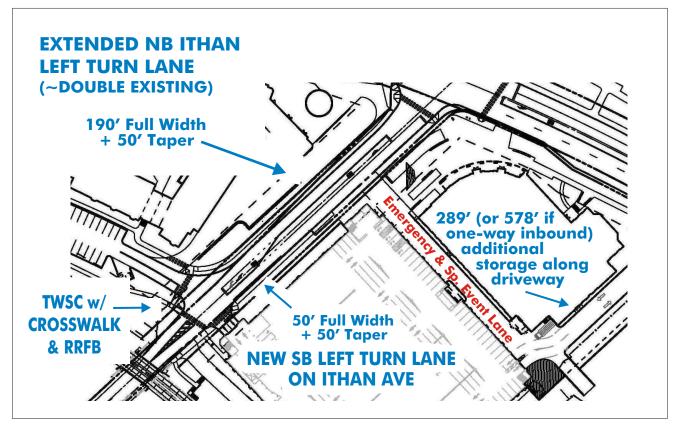
Villanova University Lancaster Avenue Residence Halls Radnor Township, Delaware County, Pennsylvania

March 2015\*





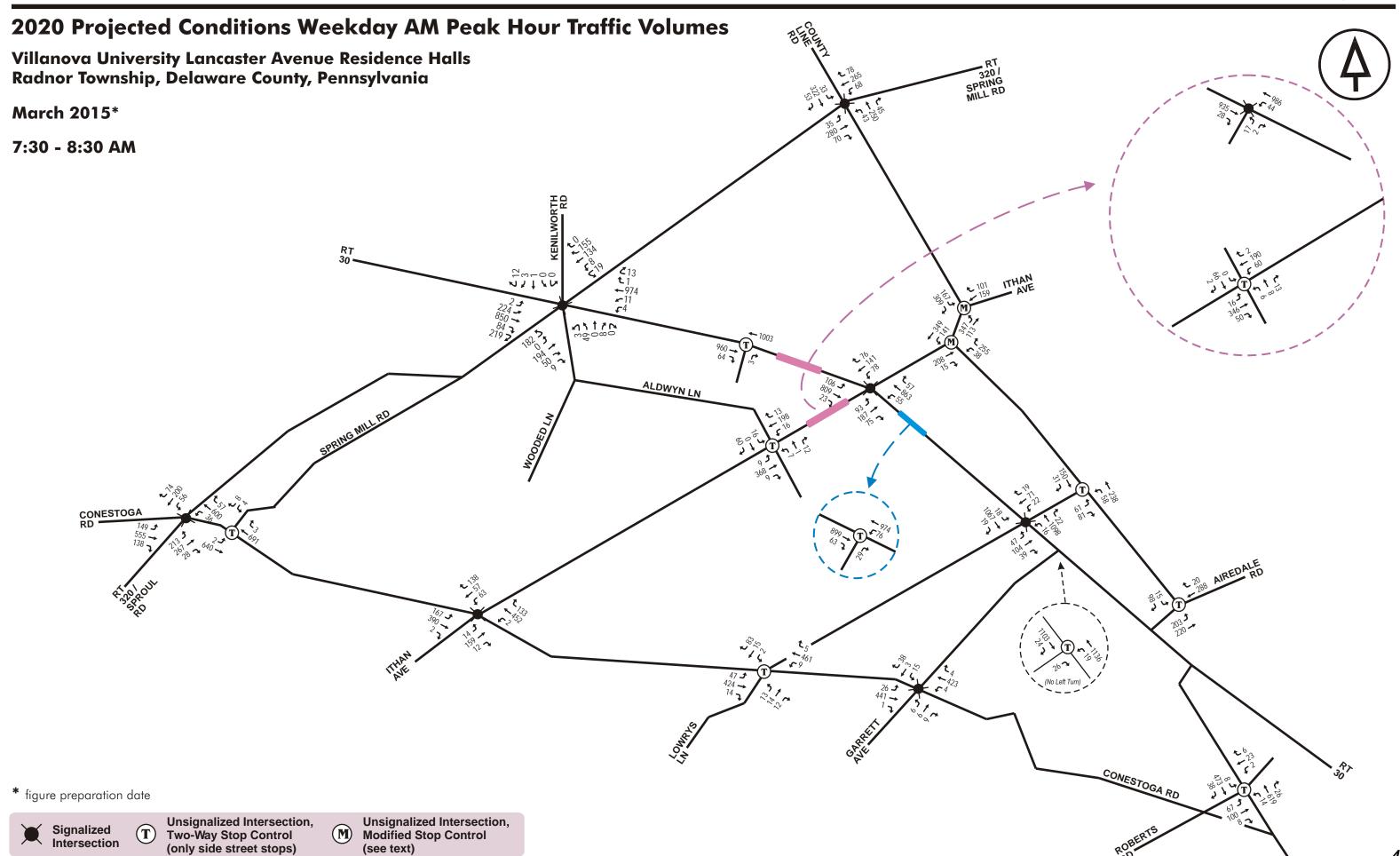




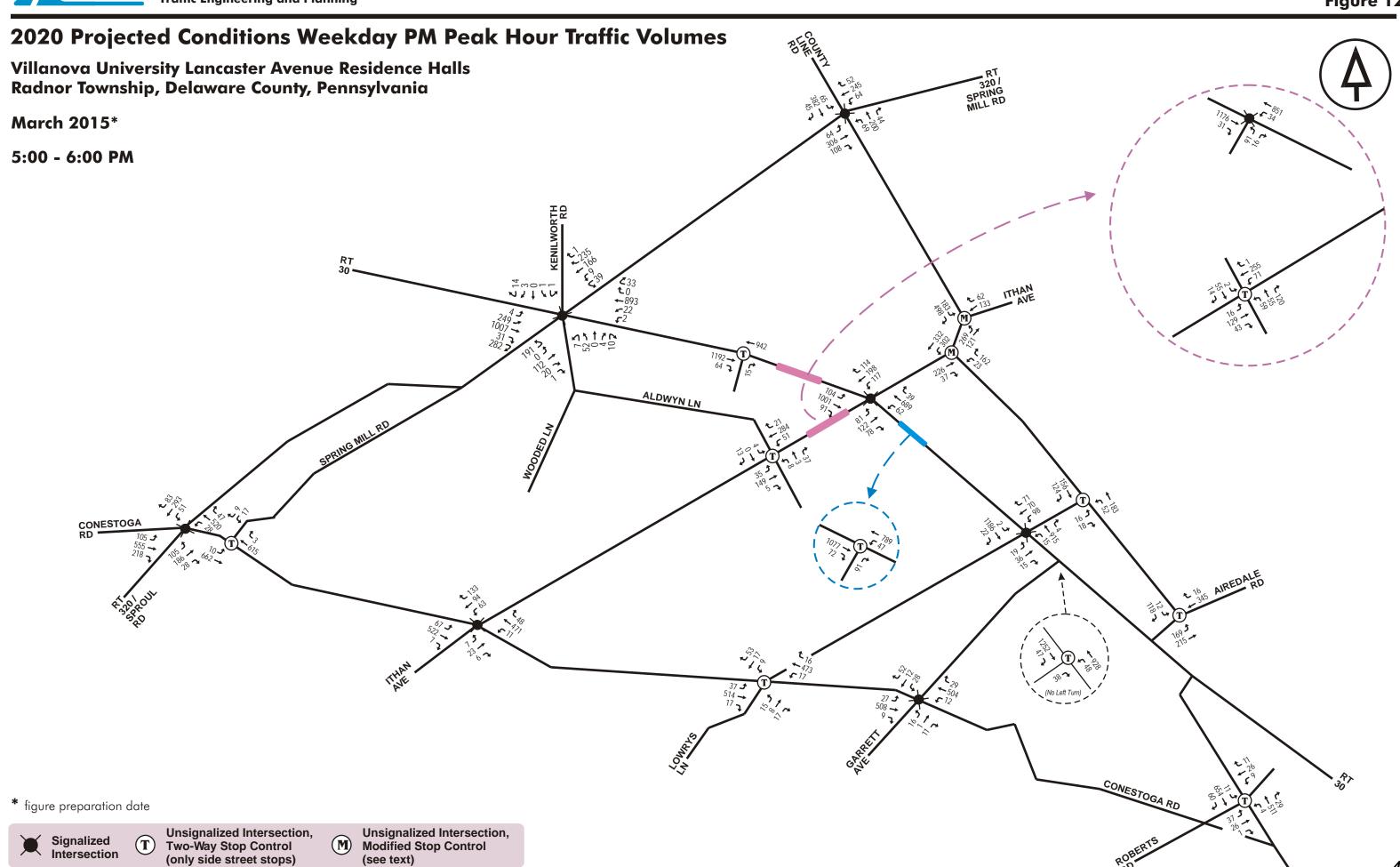


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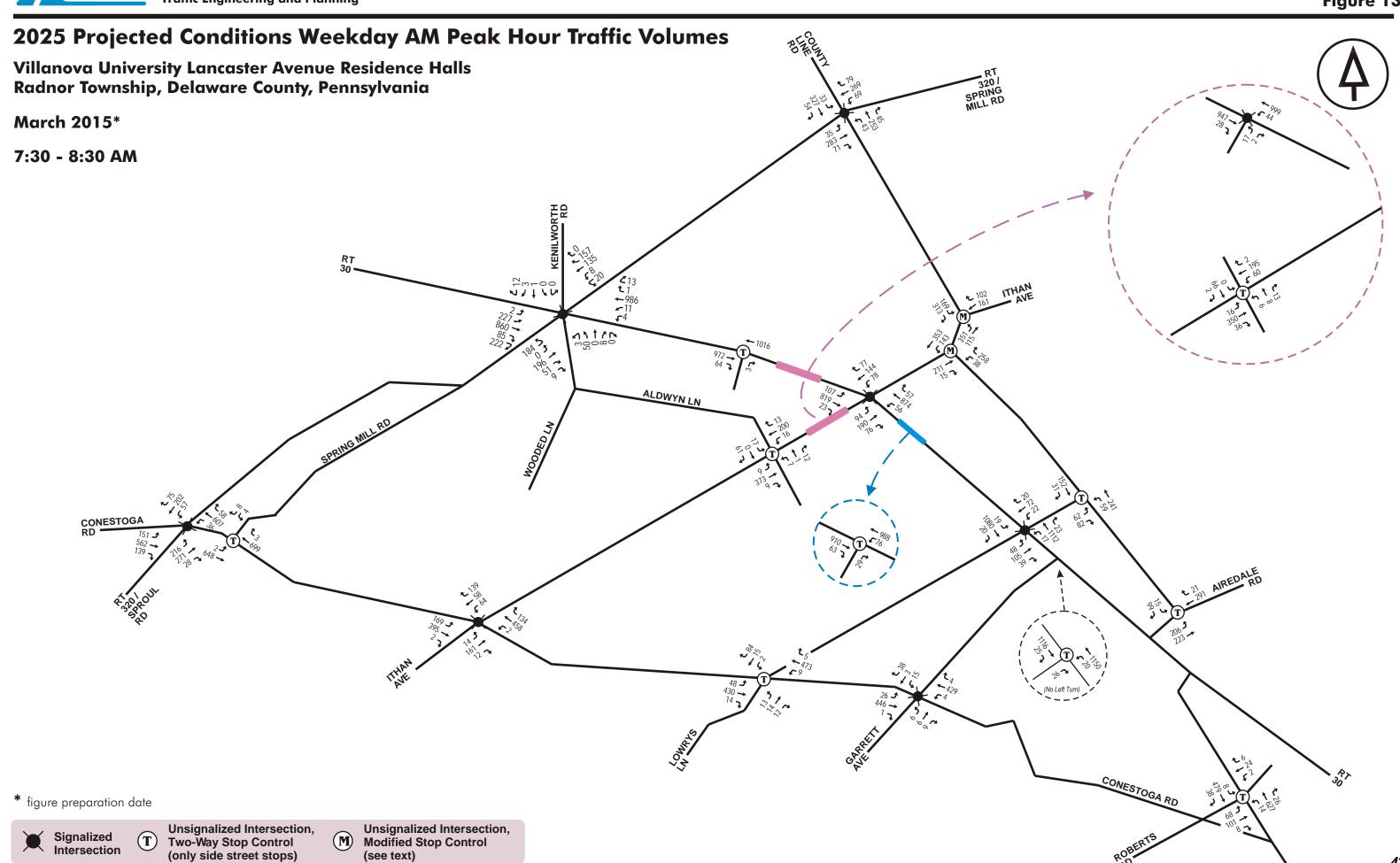


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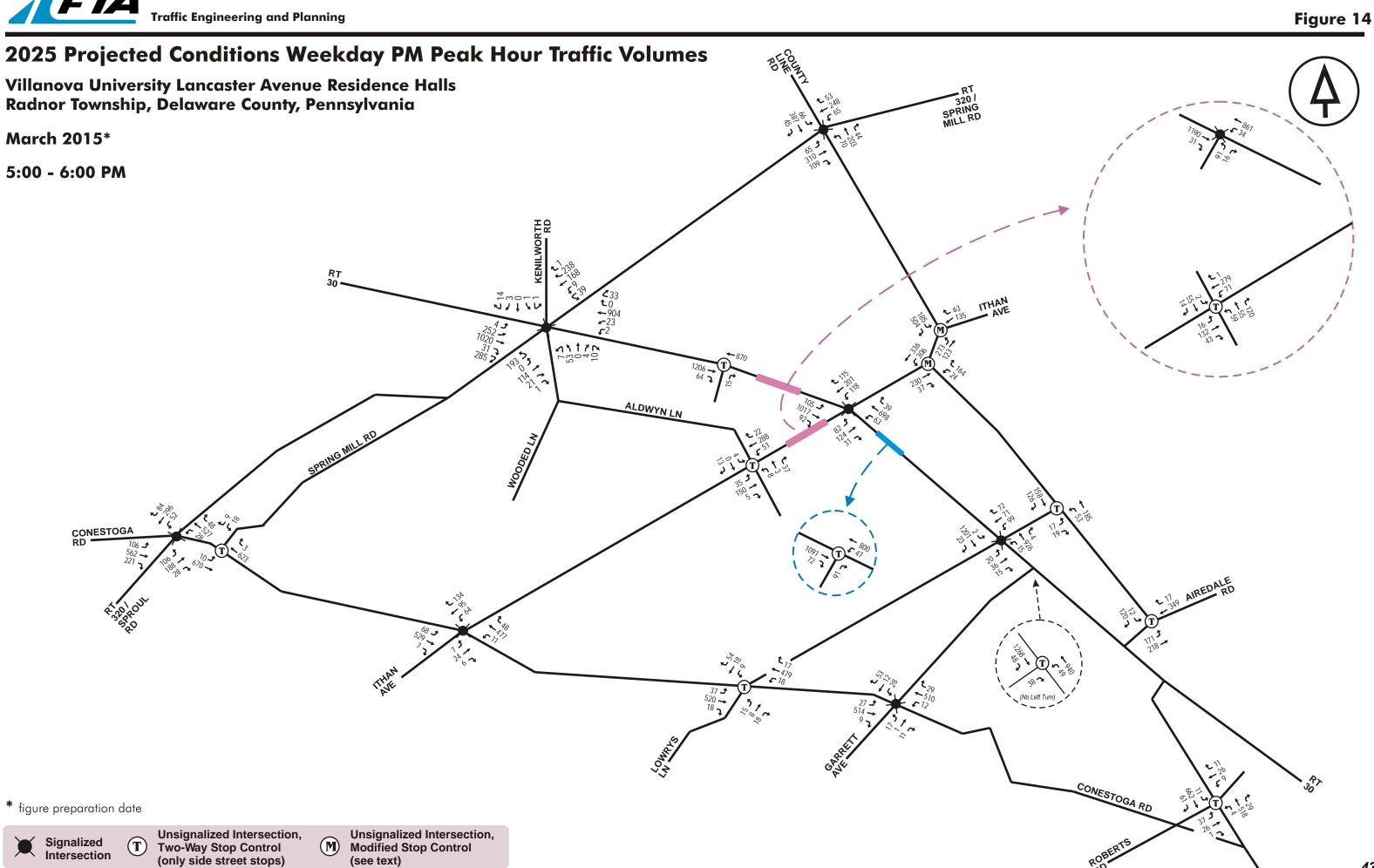


(see text)





(see text)



# **APPENDIX A**

Project Correspondence

# Project Correspondence Notes

Proj	ect history	is	extensive	and s	pans a	considerab	ole	period	of t	time.

The most recent project-related correspondence is shown on the next page, with the remaining pages being in reverse chronological order.



# F. Tavani and Associates, Inc.

### **Traffic Engineering and Planning**

105 Kenilworth Street • Philadelphia • PA • 19147 • (215) 625-3821 Phone • (484) 792-9495 Fax www.FTAVANIASSOCIATES.com

12 March 2015

Steve Norcini, P.E. Radnor Township 301 Iven Avenue Wayne, PA 19087-5297

VIA TIS SUBMITTAL

RE: Villanova University
Lancaster Avenue Redevelopment
Land Development TIS Review #1
Gilmore Review Letter dated 01/28/15
FTA Job # 211-027

Dear Mr. Norcini:

On or about 28 January 2015 Gilmore & Associates, Inc. issued a review memorandum to you regarding the transportation impact study (TIS) prepared by F. Tavani and Associates, Inc. (FTA) for the above-referenced project. The TIS has since been updated to reflect the comments of that memorandum. In addition, this letter has been prepared to further address and respond to each item contained in that memorandum. Note that a copy of the memorandum is attached. The comments begin under heading III on page 2 of the memorandum.

### 1. This comment contains three subcomments:

- i. More details regard phasing including a graphic are provided in the Executive Summary of the TIS.
- ii. Garage access and circulation was discussed with PennDOT and the township in person and electronically throughout February subsequent to the issuance of the January memorandum. The outcome was agreement that incoming EB special event traffic circulation would probably be best served if it utilized the proposed garage access along Route 30. The plans now reflect a new eastbound right-turn decel lane having a taper length of 50 feet and a full width section of 100 feet at this access. No other improvements to the EB approach of Route 30 at Ithan Avenue are required and further widening will result in negative pedestrian impacts, as agreed by PennDOT. The southbound left-turn movement into the garage provides a benefit to non-special-event traffic circulation, and remains part of the site plan. Queue projections show that SB left-turning traffic at the garage access will be contained within the proposed SB left-turn lane storage area. Additional modeling of special event conditions using SimTraffic a traffic micro-simulation program are also underway.

- iii. The requested change has been incorporated into the plans.
- 2. The requested formatting revisions were made in the revised TIS.
- 3. The requested changes have been incorporated into the revised TIS. See also response 11.
- 4. The requested 95<sup>th</sup> percentile queue lengths (full build 2023 projected conditions) for all intersections in the study area are provided in the revised TIS.
- 5. The file has been updated to reflect the correct proposed NB lane configuration (L+LR). *Synchro* version 8.0 build 806, revision 60 is in use and is the latest available update from *Trafficware*. HCM2010 does not support the proposed NB lane configuration. Error output is included in **Appendix I**. Note this intersection performs well relative to the rest of the corridor since it "half cycles". Percentile Delay methodology results reflect existing conditions (delays) accurately. PennDOT is expected to accept the use of this methodology for this location.
- 6. The requested additional retail trip generation was incorporated into the revised TIS.
- 7. The trip distribution has been revised and more details about the methodology of the distribution of site traffic are included in the revised TIS.
- 8. The requested expanded trip distribution worksheets are provided in the revised TIS.
- 9. The requested expanded trip distribution worksheets are provided in the revised TIS.
- 10. The trip distribution has been revised and more details about the distribution of traffic are included in the revised TIS and related appendices. Several appendicies now feature introductory text which better explains content, including revisions which have been made since the last submittal, if any.
- 11. PennDOT will not support installation of a new exclusive right-turn lane on the eastbound approach of Lancaster Avenue at Ithan Avenue. This determination was made by PennDOT (F. Hanney) in an email shared with the township subsequent to the date of Gilmore's memorandum.
- 12. The requested additional detail was incorporated into the revised TIS.
- 13. The requested additional retail was incorporated into the revised TIS.
- 14. The referenced all-way stop has been removed from the site plans as well as the revised TIS.
- 15. The missing sheets are provided in the revised TIS.
- 16. Page numbers and a table of contents are provided in the revised TIS.
- 17. The requested formatting revisions were made in the revised TIS.
- 18. The University will provide a special event report under separate cover. Additional modeling of special event conditions using SimTraffic a traffic micro-simulation program are also underway.

Steve Norcini, P.E. 12 March 2015 Page 3 of 3

Please call or email me if I can answer any other questions. Thank you.

Very truly yours,
F. TAVANI AND ASSOCIATES, INC.
FRANK TAWANI, P.E., PTOE
Principal

attachments (PennDOT Meeting Minutes and Gilmore memorandum)



Traffic Engineering and Planning

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# VILLANOVA UNIVERSITY'S PROPOSED LANCASTER AVE HOUSING PROJECT JOINT MEETING WITH APPLICANT, TOWNSHIP, & PENNDOT

### **MEETING MINUTES**

**Meeting** 

28 January 2015, Start ~11:00 AM, End ~1:00 PM Date:

**Location:** 4<sup>th</sup> Floor Conference Room

> PennDOT Engineering District 6-0 King of Prussia, Pennsylvania

John Cluver **Attendees:** Voith MacTavish Architects

> Al Federico McCormick Taylor

PennDOT 6-0 Traffic Services Fran Hanney

Steve Hildebrand Villanova University

**Delaware County Planning Commission** Lou Hufnagle

Amy Kaminski Gilmore & Associates, Inc.

Chris Kovolski Villanova University

PennDOT 6-0 Traffic Services Susan LaPenta

Paul Lutz PennDOT 6-0 Signals Steve Norcini Radnor Township Alex Tweedie Nave Newell

Frank Tavani F. Tavani and Associates, Inc.

**Copied but:** Marilou Smith Villanova University

not present at meeting

#### **Purpose and Background:**

To review and discuss the recent conditional use approval of Villanova's proposed Lancaster Ave Housing project and associated other road improvements including the following specifics:

- HOP applications and phasing
- PennDOT's August 2014 preliminary review letter
- The next revised TIS
- Specific geometric issues, including the potential for a new EB right turn lane at Ithan Avenue

Meeting Minutes – Page 2 of 4

Re: Villanova's proposed Lancaster Ave Housing project

Meeting Date: 28 January 2015

#### **Discussion:**

Meeting began with an introduction to the project including some brief explanation of building locations, parking to be removed, parking to be added (and where), parking spaces which are expected to remain inactive during peak periods, and offered road improvements.

Alex presented a phasing plan for building and road improvement staging and discussed the plan to break up over four phases.

#### Phase 1

- Expansion of SAC Garage
- Construction of West Lancaster Parking Lot (WLA)
- Elimination of individual driveways west of Church Walk within the project area of WLA. (note that WLA will be serviced by the existing Church Walk signal until Phase 2B)

#### Phase 2A

- Closure of Pike Parking lot and construction of Pike Parking Garage.
- Ithan Avenue widening.
- All Route 30 turn lane improvements and lane widening at Ithan Avenue.

#### Phase 2B

- Construction of Pedestrian Bridge and relocation of Church Walk driveway.
- Installation of new Route 30 EB right-turn lane and new WB left-turn lane into Church Walk.
- Construction of a new right-in/right-out driveway to serve the WLA.

#### Phase 3

• Construction of Student Housing within the Main Parking Lot.

#### Phase 4

Construction of the Performing Arts Center (donor funding dependent phase)

The Commonwealth has awarded \$7.5 million in grants toward the project (\$4.5 TIIF money, \$3.5 multimodal grant) which have been targeted primarily for the pedestrian bridge. A PennDOT project manager will be assigned to the project. Current contact is Tim Stevenson (610-205-6820).

Fran emphasized the benefit of having one contractor perform the work associated with the pedestrian bridge (to be bid through PennDOT process) as well as the other road improvements closer to Ithan Avenue (to be bid through Villanova). The University acknowledged this might be possible as it should provide economies of scale as well as greatly simplify the coordination of the efforts, and likely save time as well. Fran noted that a HOP will still be required from the Highway Division for the Church Walk driveway, but it will be applied for as part of the Bridge application.

Steve Norcini explained that the conditional use approval required a \$175k contribution from the University to fund an adaptive signal system. Even though the money was specifically derived as a contribution to 3 locations/intersections, the Township will explore using the money to include every signalized intersection along Route 30 starting possibly near I-476 and continuing out to Airedale Road. The timing of this project is not determined, as the Township is looking to receive a grant for their portion of the work. Fran indicated that if this work should not occur simultaneously with the road improvements, then an interim signal plan will be required. Some discussion took place

Meeting Minutes – Page 3 of 4

Re: Villanova's proposed Lancaster Ave Housing project

Meeting Date: 28 January 2015

regarding existing fiber optic connection capabilities. Paul Lutz believes area has fiber and is majority aerial. Fran questioned whether the TIS was based on adaptive signals or not. PennDOT's review of the Impact Study will comment whether or not adaptive signals are warranted to address project impacts. If adaptive signals are needed to address impacts but installation is delayed due to funding, PennDOT would need interim timing plan and condition statement to insure installation.

Frank recognized that there hasn't been a response to PennDOT's August 2014 review letter. The explanation is because the University was awaiting conditional use approval and wanted to get land development started / feedback from the Township regarding said submittal (made in early December) before resubmitting to PennDOT.

Some discussion ensued about possible long-term improvements to the intersection of Route 30 and Route 320, but since the project is mainly a redistribution of existing traffic (to reflect new parking 'centers' [at the proposed Pike Garage, the proposed 'West Lancaster Avenue' {WLA} parking lot, and two additional parking decks on the existing SAC garage on campus]), efforts to date show only minimal impacts at off site locations (such as Route 30 and Route 320). Though it is unlikely this will change, it will be explored further in the next study. Fran also note that an Alternative Traffic Project (ATP) may be required if unmitigated impacts are found as a result of the study. If so, Fran would like this ATP to focus on Rtes. 30/320 intersection. Fran noted that the adaptive signals could assist in the ATP. He also noted that his preference is that the Township work to eliminate Aldwyn Lane from the 30/320 signal. Steve Norcini noted that this has been discussed with the residents and the Residents don't have consensus on design approach.

Discussion returned to road improvement / general project construction phasing, and in particular the possibility of relocating the existing Church Walk signal slightly further west was mentioned. This would simplify construction of the pedestrian bridge and would allow cars parked at the WLA lot (which is the first phase of construction) to still be able to utilize the signal at Church Walk (so left turning movements can be better accommodated). This possibility needs to be explored further, including whether or not the potential relocation is temporary or permanent. The relocation of Church Walk would occur as part of the Bridge project. Al also noted that, in its current position, he is concerned about the proximity of the Bridge abutment to Lancaster Avenue. He recently sent his bridge review comments to Tim Stevenson.

Al commented that the complexity of the phasing of the improvements will need to be documented in the Highway Occupancy Permits. Al offered to provide an example of this. Al noted that to meet Villanova phasing goals, the HOP for the right-in right-out drive to the WLA lot would be the first application, and would be a stand-alone application. A summary of phasing would be part of that application, and PennDOT's approval would include condition statements requiring the future completion of the later phases as well as the preservation of left turns at Church Walk for the WLA vehicles. Those later phases can then be submitted to PennDOT as supplements to the original permit.

Susan requested a "one-sheet" summary of the proposed roadway improvements, including how they are proposed to be constructed/the time line involved. Susan said this summary must be made part of the TIS and will also be included in the condition statement.

Pedestrian crossings at Church Walk were also discussed and PennDOT would find one crosswalk on the east side of the intersection acceptable. Fran and Al questioned whether the pedestrian crossing Meeting Minutes – Page 4 of 4

Re: Villanova's proposed Lancaster Ave Housing project

Meeting Date: 28 January 2015

time was shorter than the required left turn phase. Design should confirm the pedestrian crosswalk in this location does not affect efficiency of the intersection.

Fran noted that the access gate at the Farrell Hall driveway should be located further from R/W to permit queue at the gate. Since this driveway will be exit only, the team will review if this is necessary.

The possibility of a new EB right-turn lane to be added at the intersection of Route 30 and Ithan Avenue was the last discussion item. Frank gave an overview of how the existing Main Lot and Pike Lot parking locations – and specifically how they are currently used during present-day special event conditions. The site plan includes many changes to various parking locations, and as such a better solution exists, namely the more direct garage access which is afforded by the new unsignalized, right-turn entering access found on Route 30 just east of Ithan Avenue. Additionally, if the garage is full, traffic can then be directed out to Ithan Avenue, either to turn right and head back to Route 30 to recirculate to other parking opportunities on main campus, or proceed straight through to Church Walk to recirculate to parking opportunities at the WLA lot. Concerns about the added pedestrian clearance time a new right turn lane (at Ithan) would require were also expressed by PennDOT and the University.

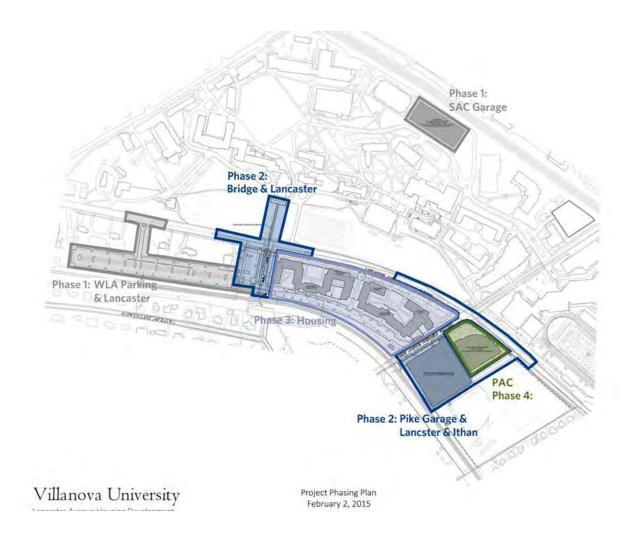
There was consensus that the circulation pattern utilizing the direct garage access off of Lancaster Avenue is the more efficient and logical means of accommodating special event traffic, but a new concern arose in whether or not a right turn taper or lane may be required. Alex will prepare charettes/sketches which illustrate what can be provided, along with stacking information, assuming such treatments are even required. A preliminary investigation of the 'routine' traffic during typical weekday peak hours suggest one IS NOT required, though the greater volumes during special events would clearly benefit from such a lane. No other site access changes were discussed. Specifically there was no discussion regarding the elimination of the SB left-turn movement at the proposed garage entrance, except for in the context of during special events (at which time the direct access to the garage along Route 30 will be the mandated and police-chaperoned traffic pattern). PennDOT also expressed interest in an ITS system. During other non-special event conditions, site traffic can access the Pike Garage either via the Route 30 access or the Ithan Avenue access at the discretion of the motorist, with the only turning movement restriction being left-turns out on Route 30 (from the garage access). The restriction of this turning movement has always been part of the site plan.

. . . . . . . . . . . . . . . .

These meeting minutes are believed to reflect an accurate representation of key issues discussed. Should you have any comments or would like to request changes, please notify F. Tavani and Associates, Inc. within the next five calendar days (of receipt of these minutes), after such time these minutes will become an official record of events with follow up actions taken as described herein.

Very truly yours,
F. TAVANI AND ASSOCIATES, INC.
FRANK TAVANI, P.E., PTOE
Principal

attachment: Project Phasing Plan



#### **MEMORANDUM**

**Date:** January 28, 2015

**To**: Steve Norcini, P.E.

Radnor Township Public Works Director

From: Amy Kaminski, P.E., PTOE

Department Manager of Transportation

cc: Kevin Kochanski, ASLA, R.L.A., Director of Community Development

Roger Phillips, P.E., Senior Project Manager, Gannett Fleming, Inc.

Steve Gabriel, PP, RETTEW

Damon Drummond, P.E., PTOE, Gilmore & Associates, Inc.

**Reference:** Villanova University – Lancaster Avenue Redevelopment

Preliminary Land Development Transportation Impact Study Review #1

Radnor Township, Delaware County, PA

G&A 12-04054

Gilmore & Associates, Inc. (G&A) has completed the preliminary land development transportation review of the Traffic Impact Assessment dated September 16, 2014 and last revised December 4, 2014. The revisions included added correspondence since the initial date of the report and supplemental information included in Appendix M. G&A reviewed the submitted materials and offers the following comments for Radnor Township consideration:

#### I. BACKGROUND

The applicant, Villanova University, intends to develop/redevelop several parcels located along Lancaster Avenue, southeast and southwest of the Ithan Avenue intersection, in Radnor Township, Delaware County. The project includes construction of student housing (1,135 bed apartment-style residence halls), retail shops (University Bookstore, bistro and small convenience store, size to be determined) along with 147 surface parking spaces to be located on the southwest corner of Lancaster Avenue and Ithan Avenue. In addition, the project includes construction of a Performing Arts Center (with 500 – 650 total seats in two theaters) and a multilevel parking structure (1,293 spaces) to be located on the southeast corner of Lancaster Avenue and Ithan Avenue. Villanova University intends to eliminate many of the existing driveway accesses located on the south side of Lancaster Avenue, west of Ithan Avenue and construct a shared surface parking facility to the rear of the existing university buildings on Lancaster Avenue with limited access to Lancaster Avenue at the signalized intersection of Church Walk and a new right in driveway, west of Church Walk.

BUILDING ON A FOUNDATION OF EXCELLENCE

65 E. Butler Avenue | Suite 100 | New Britain, PA 18901 Phone: 215-345-4330 | Fax: 215-345-8606

#### II. DOCUMENTS REVIEWED

The following documents were submitted to Gilmore & Associates for review:

- 1. Transportation Impact Study for Villanova University Lancaster Avenue Student Resident Halls, prepared by F. Tavani and Associates, Inc., dated September 16, 2014, revised December 4, 2014.
- 2. Response letter dated December 4, 2014 prepared by F. Tavani and Associates, Inc.

#### III. TRANSPORTATION IMPACT STUDY COMMENTS

- 1. As discussed at a coordination meeting on January 28, 2015 with PennDOT, Radnor Township, and Villanova University staff, revise the transportation impact study to investigate the following alternatives/information:
  - i. Include phased improvements in the report and any graphics to clarify what improvements are associated with each phase.
  - ii. Eliminate the southbound Ithan Avenue left turns into the Pike Lot Garage and include a deceleration lane on the eastbound departure of Lancaster Avenue at Ithan Avenue. This may reduce the need for a right turn lane on eastbound Lancaster Avenue at Ithan Avenue, provide more queuing space for the northbound left turn lane on Ithan Avenue at Lancaster Avenue, provide better circulation during special events and reduce the impact to pedestrians crossing Ithan Avenue near both parking accesses.
  - iii. Relocate the Church Walk traffic signal on Lancaster Avenue west of the current location. This will separate vehicular and pedestrian movements, encourage more pedestrians to utilize the pedestrian bridge, provide more parking near the pedestrian bridge, allow for vehicle and pedestrian movements during construction efforts and provide a less complicated construction staging for the pedestrian bridge.
- 2. The applicant will be required to provide a comprehensive Transportation Impact Study once all comments are resolved. The final documents accepted for the land development process should not include updates and modifications in the form of an Appendix. We understand while the study is under review it makes sense to allow individual submissions but once the TIS is considered acceptable a final document must be provided to the Township as a permanent, stand-alone complete document.
- 3. The applicant is required to provide a turn-lane length analysis for all auxiliary lanes including the eastbound right turn lane at the intersection of Ithan Avenue and Lancaster Avenue in accordance with the methodology included in PennDOT Publication 46 *Traffic Engineering Manual*. The applicant should utilize the

PennDOT turn lane analysis worksheet from the PennDOT Traffic Signal Portal website and include the analysis in the next submission.

Although the response letter accompanying the TIS submission indicated the preliminary PennDOT letter and the CU Decision and Order did not include this as a requirement, we remind the applicant that the PennDOT letter was a preliminary review letter (pre-HOP application) based on the limited information provided and the applicant is working through the land development process. Furthermore, it is our understanding that the conditional use decision does not limit township staff from requesting additional information or providing recommendations during the land development and highway occupancy permitting process.

- 4. Provide a table indicating the 95th percentile queues for all intersections using HCM2010 methodology. A queue analysis was only provided for five intersections. Minimally, the applicant should provide the information for the following intersections:
  - i. Conestoga Road and Sproul Road
  - ii. Conestoga Road and Ithan Avenue
  - iii. Conestoga Road and Lowrys Lane (northbound approach)
  - iv. County Line Road & Ithan Avenue North
  - v. County Line Road & Roberts Road (both north and southbound)

Although the submission letter indicated PennDOT requested a limited intersection scope, the township will be evaluating the scope of all intersections in the study area as discussed previously and the applicant is requested to provide the information for review.

- 5. Use the Synchro HCM2010 methodology for the analysis of the Church Walk and Lancaster Avenue intersection. Verify the Synchro software version is up to date as the latest update includes a shared lane algorithm to support an analysis of this type of intersection; this should resolve any error message associated with analyzing the intersection with HCM2010. In addition, verify the Church Lane approach is modeled in Synchro accurately and reflects the latest site plans (dated December 5, 2014).
- 6. The new trips for the retail portion of the development should be based on the Scenario 1 information provide in your response letter December 4, 2014, which includes 31 trips entering and 29 exiting trips during the AM peak hour and 51 entering and 48 trips during the PM peak hour. The analysis must be based on the most conservative traffic impact of the three alternatives since the exact use is unknown. Revise the report accordingly.
- 7. Verify the trip distribution for the retail portion of the development to and from the east. The current projections show all the retail site traffic to and from the east using the PAC Lot. The eastbound Lancaster Avenue traffic to the proposed retail portion of the development is more likely to turn left at Ithan Avenue from WB Lancaster Avenue and continue southbound on Ithan Avenue and then turn right in the surface parking lot, near the residential dormitories and retail area. In addition, the exiting

- movement would likely turn left on northbound Ithan Road and turn right on Lancaster Avenue to continue east.
- 8. Redistribution Worksheet A1 and A7, the site trip traffic must be distributed through the entire network and not just at the seven intersections shown on the worksheet. Provide a Figure that shows the site generated trip throughout the entire study area.
- 9. The revised Redistribution Worksheet 6 and 12 indicate redistribution traffic occurs outside the seven intersections shown on the worksheets. For example, Redistribution Worksheet 12 indicates 43 trips were redistributed to the area prior to north of the HRB access shown on Ithan Avenue Provide worksheets that show the anticipated redistributed traffic within the entire study.
- 10. Comparing the <u>base condition</u> traffic volumes to the <u>future projected</u> traffic volumes, it appears that some trips may have been removed and were not redistributed throughout the study area for the projected conditions. For example, at the intersection of Ithan Avenue and County Line Road, Figure 5: 2018 Base Conditions, shows the southbound though movement decreases from 154 vehicles to 134 vehicles in Figure 11 2018 Projected Conditions. On the same two figures, the southbound movement on Ithan Avenue at Lancaster Avenue decreases from 217 to 118 vehicles for the 2018 Base Conditions and 2018 Projected Conditions, respectively. Additional information must be provided to explain the reduction. In addition, the applicant should verify the provided data for the future 2018 and 2023 analyses for both AM and PM conditions for similar discrepancies at the following intersections:
  - i. Ithan Avenue & Route 30
  - ii. Both County Line Road & Ithan Avenue intersections
  - iii. County Line Road & Spring Mill Road
- 11. As previously requested in our September 30, 2014 review letter under comment L, provide a right turn warrant analysis for the eastbound approach on Lancaster Avenue at Ithan Avenue in accordance with PennDOT Publication 46 Chapter 11 regardless of the level of service operation and pedestrian accommodations.
- 12. Revise Table 1 to include the delay in seconds where there are critical movements with LOS degradation particularly for intersections 1, 3, 4, and 9.
- 13. We understand PennDOT has requested a more limited scope to be submitted for review but to address the township concerns, critical movements must also be evaluated. Address the LOS drops for the critical movements and provide discussion of improvements which would be needed for mitigation of the critical movements. For example, there is an increase of over 100 seconds in delay for the intersection of Lancaster Avenue/Spring Mill Road/Kenilworth Road/Aldwyn Lane for the critical movement on the southbound through/right-turn movement during the PM 2018 and 2023 analyses from base conditions to projected conditions.

- 14. The applicant has previously proposed an all-way stop at the intersection Ithan Road and the Pike Parking Garage access. The applicant has provided an additional two-way stop analysis in Appendix M of the revised report. It is unclear which type of stop control is to be installed. The recommendations in the report must be updated to be clear on which type of stop control is to be installed. Based on the analysis a two way stop appears to operate at acceptable LOS. The traffic volumes do not appear to warrant an all-way stop in accordance with the MUTCD. Traffic calming measures or other pedestrian improvements should be considered in lieu of an all-way stop.
- 15. Provide the missing Synchro analysis for the No-Build analysis for the AM peak hour conditions for 2018 and 2023 in Appendix I.
- 16. Future submissions should include page numbers at the bottom of each page for consistency with the Table of Contents and to allow more efficient review and comment.
- 17. Incorporate all comments and supplemental items provided in Appendix M and submit a comprehensive TIS. Supplemental Appendices are not acceptable for the final TIS submission.
- 18. The applicant is required to submit a separate report for special events. Final approval of the TIS cannot be recommended until all comments regarding the special event report and the TIS are satisfied.



# F. Tavani and Associates, Inc.

### **Traffic Engineering and Planning**

105 Kenilworth Street • Philadelphia • PA • 19147 • (215) 625-3821 Phone • (484) 792-9495 Fax www.FTAVANIASSOCIATES.com

4 December 2014

Amy Kaminski, P.E., PTOE Gilmore & Associates, Inc. 65 E. Butler Avenue, SU 100 New Britian, PA 18901

VIA EMAIL ONLY

RE: Villanova University
Gilmore Letter dated 30 September 2014
Radnor Township, Delaware County
FTA Job # 211-027

#### Dear Ms. Kaminski:

Earlier this year F. Tavani and Associates, Inc. (FTA) received a copy of your letter addressed to Bill Bolla dated 30 September 2014 (attached) regarding Villanova University's proposed undergraduate residential halls near Ithan Avenue.

Your review letter was prepared during the conditional use hearing process, which has since ended with the application being approved, subject to conditions. Prior to the approval, a response to your review letter was issued in October 2014. Some of the responses in that letter were: "to be investigated and revised / resubmitted if needed" (or the like). It is the intention of this letter to address those outstanding issues.

For purposes of record, all other responses which were included in October 2014 are repeated below in standard print. New information is shown in red, following the original response. Note that in some cases previously-issued responses benefit from added explanation (now that a decision has been rendered on 24 November 2014). In those cases, once again, the original response is provided, followed by new information in red print.

What follows next is a repeat of FTA's response letter to Mr. Bolla (plus the additions just mentioned).

At the outset it should be mentioned that the CICD ordinance provides that a traffic study must be conducted in accordance with PennDOT's Strike Off Letter 470-09-4 (hereinafter, the SOL) and thus PennDOT's opinion about what is required to comply with the SOL is significant. PennDOT provided guidance in its letter dated 1 August 2014 (hereinafter, the PennDOT letter). This letter was included in Appendix A of A-18 and is referenced on occasion in the responses that follow.

Amy Kaminski, P.E., PTOE 4 December 2014 Page 2 of 6

A.

1. A turn lane length analysis is provided in Appendix K. This is supplemented by a queue length analysis provided on page 7. Neither a turn length nor queue length analysis is provided for a separate EB right turn lane at Lancaster Avenue and Ithan Avenue as A-18 concludes that the benefit is limited and the lane is not necessary. Additionally, the PennDOT letter requested an investigation of the lane, which has been provided. PennDOT also stated in the same letter that the lane is "...not a requirement from the Department." The PennDOT letter also provided guidance regarding turn lane warrant analysis scope and that requirement was met in A-18.

The conditional use decision of 24 November 2014 did not include a requirement for the cited eastbound right-turn lane.

- 2. The queue analysis was provided in compliance with the PennDOT letter. The PennDOT letter limited the scope of the study to certain intersections. The queue analysis provided complies with the SOL and the PennDOT letter.
- F. To be investigated and revised / resubmitted if needed.

The requested methodology resuts in an error message in Synchro, the output of which has been printed. Rather than alter the affected previously-issued appendix items (i.e., Appendix I, Capacity Analysis), a new appendix (Appendix M, December 2014 Supplemental Items) has been created and included with the revised TIS, which is attached. The details of this error message can be found in that appendix of the attached revised TIS which is dated 4 December 2014.

G. Trip generation for the retail subordinate uses should have been explained in greater detail in Appendix G of A-18.

First, it should be mentioned that the exact users of the retail subordinate space is not confirmed. More consideration will be given to this subject during land development. However, the uses will be among those provided in or fitting the definitions of the Retail Subordinate Uses section of the CICD ordinance.

The Gilmore letter correctly cites that the plans show 20,440 SF for the retail uses. However, some of the space is currently being considered as a computer support facility which would be limited to Villanova students and faculty (and thus have no external trip generation).

Recognizing this was not adequately explained in Appendix G of A-18, an alternative trip generation analysis has been prepared. It assumes a combination of uses as permitted under the ordinance. Three such combinations were prepared using ITE trip generation rates as requested. More than one combination was prepared because the exact users are not yet known and also because evidence of the impact of different permitted uses may benefit the township in its decision making process.

SCENARIO 1: Convenience Mart (ITE LUC 852), Bistro (932), and Bookstore (868)

KSF	ITE LUC	AM PEAK HOUR		PM PEAK HOUR	
KSI	TIE LOC	IN	OUT	IN	OUT
5.29	Conv Mart	82	82	90	93
5.40	Bistro	36	29	35	24
9.75	Bookstore	6	6	80	74
	TOTAL	124	117	205	191
	25% NEW	31	29	51	48
	FROM A-18	11	11	34	30
	DIFFERENCE	+20	+18	+17	+18

## SCENARIO 2: Clothing / Apparel Store (ITE LUC 876), Bistro (932), and Bookstore (868)

KSF	ITE LUC	AM PEAK HOUR		PM PEAK HOUR	
KSF	TIELUC	IN	OUT	IN	OUT
5.29	Apparel	4	1	10	10
5.40	Bistro	36	29	35	24
9.75	Bookstore	6	6	80	74
	TOTAL	46	36	125	108
	25% NEW	12	9	31	27
	FROM A-18	11	11	34	30
	DIFFERENCE	+1	-2	-3	-3

## SCENARIO 3: Copy, Print, Ship Store (ITE LUC 920), Bistro (932), and Bookstore (868)

KSF	ITE LUC	AM PEA	K HOUR	PM PEAK HOUR	
	TIELUC	IN	OUT	IN	OUT
5.29	Copy/Print	11	5	17	22
5.40	Bistro	36	29	35	24
9.75	Bookstore	6	6	80	74
	TOTAL	53	40	132	120
	25% NEW	13	10	33	30
	FROM A-18	11	11	34	30
	DIFFERENCE	+2	-1	-1	0

#### **AVERAGE NEW TRIPS**

		AM PEA	K HOUR	PM PEA	K HOUR
		IN	OUT	IN	OUT
SCENA	ARIO 1	31	29	51	48
SCENA	ARIO 2	12	9	31	27
SCENA	ARIO 3	13	10	33	30
	AVERAGE	19	16	38	35
	FROM A-18	11	11	34	30
	DIFFERENCE	+8	+5	+4	+5

Whether using individual scenarios or the average of all 3 hypothetical scenarios, it is plain to see that the difference in trip generation as compared with what was used in A-18 is trivial.

Remember that the numbers shown in the tables above are total trips, and when trip distribution models are applied, the effect on individual intersections / turning movements will be further diminished – in most cases amounting to fractions of one trip.

Based on this new information provided – as well as the notion that the exact users and square footages apportioned to each user are currently indeterminate – FTA maintains that the trip generation used in A-18 is an appropriate estimate for traffic engineering planning purposes. Further, none of the land uses codes mentioned above were based on data collected in university settings and much of the data is 20 years old (or older). The data collected at a local university (St. Joe's) in 2014 is a more appropriate barometer of potential of what may happen at Villanova, even considering small potential differences in opening and closing times (the details of which cannot be determined until much later in land development).

H. The minor differences in variables mentioned will have no meaningful affect on traffic projections and do not warrant any changes to A-18. Further A-18 is based on 100% peak hour moving parking spaces which alone is a highly conservative assumption having no basis in reality. Any concerns about the minor plan differences mentioned in this comment should be tempered by the extraordinarily conservative emphasis on peak hour traffic which A-18 already incorporates by design.

The applicant confirms the number of beds is 1,135.

I. See two prior responses. As determined/mentioned, the matters have been investigated and no further revisions are necessary.

The conditional use decision of 24 November 2014 did not include a requirement for the cited eastbound right-turn lane.

J. To be investigated and revised / resubmitted if needed.

The noted inconsistencies were found and addressed. See also response to "F".

K. To be investigated and revised / resubmitted if needed.

The noted inconsistencies were found and addressed. See also response to "F".

L. No additional turn lane warrant investigation is necessary or required to be code compliant – the burden of the SOL and the PennDOT letter have been met. In fact the PennDOT letter clearly states the right turn lane is "...not a requirement from the Department."

Even though it is not required, level of service investigations <u>were</u> performed and those investigations confirm that an eastbound right turn lane at the intersection of Lancaster Avenue and Ithan Avenue has limited value. Analysis <u>was</u> provided to support this conclusion. Levels of service were summarized in the LOS comparison tables. *Synchro* outputs were included in Appendix I, for example the last few pages of that appendix feature a footer which reads "B 23 pm w/EB RT at Ithan 9/16/2014 Baseline". Special event (volume) predictions/analysis were not included as previously directed by Gilmore (see Appendix A).

Additionally, alternative travel patterns for inbound special event traffic (to include the WLL driveway and/or the PAC driveway, not to mention other parking locations such as HSB, SAC, et al) do not utilize the mentioned right turn lane. This has been identified and discussed in A-18 as well as the Chance Management report. FTA disagrees with regard to the cited defacto operation. No further explanation or analysis is needed regarding the applicant's position or the benefit – or lack thereof – of the requested lane. The applicant confirms that the suggested lane is not offered as an improvement.

The conditional use decision of 24 November 2014 did not include a requirement for the cited eastbound right-turn lane.

- M. The requested information is not required to be code compliant and is not a requirement of the SOL or the PennDOT letter. Further previous direction by Gilmore (included in Appendix A) clearly stated that further special event analysis was not necessary.
- N. The cited SOL requirement is incorrect. The level of service investigations required under the SOL apply to overall intersection values, and this requirement is what dictated the format of the LOS tables found in A-18. Page 29 of the SOL states "The Department **may** request the applicant to mitigate critical movements or approaches and perform additional analysis." (emphasis added). The PennDOT letter included no such requests. In fact, the only direction included in the PennDOT letter was a request to provide delay in seconds for LOS F movements, which was provided. If the A-18 reader is determined to uncover one or more of the nearly 1,000 of individual turning movement delay estimates, this information is readily available in Appendix I as well as the individual *Synchro* files which were shared with Gilmore last week. A-18 is compliant with the ordinance and with the SOL.
- O. Intersection traffic control "warrants" are guidelines and almost always include statements that traffic engineering judgment should be applied in individual cases. The difference in delay between TWSC and AWSC is minimal. AWSC control affords added protections to pedestrians crossing Ithan Avenue between the garage and the new residence halls. This design element is important. AWSC is the recommended traffic control device.

The conditional use decision of 24 November 2014 <u>did</u> include a requirement for the cited intersection to be changed from AWSC (as shown in the TIS) to TWSC operation. See response to "F".

P. To be investigated further.

The requested site plan change has been made.

Amy Kaminski, P.E., PTOE 4 December 2014 Page 6 of 6

Q. The request has no substantiation. Gilmore should provide added detail about what is required under the ordinance or the SOL to maintain the crossings mentioned. Note also that this is ultimately a PennDOT decision and does not enter into the conditional use hearings or decision making process of said proceeding.

Signal plan revisions are pending and will be prepared and submitted later in the land development process but the applicant has agreed to maintain the crossing mentioned, subject to PennDOT approval.

R. To be investigated further.

The applicant agrees to these requests.

Please call or email me if I can answer any other questions. Thank you.

Very truly yours,

F. TAVANI AND ASSOCIATES, INC.

FRANK TAWANI, P.E., PTOE

### attachments as follows:

- Gilmore 30 September 2014 review letter
- revised TIS, including new Appendix A items (letters, including this letter) and a new Appendix M

cc: Gilmore & Associates, Inc. (Amy Kaminski, P.E., PTOE) Radnor Township (c/o Steve Norcini, P.E.) Villanova University (c/o Marilou Smith)

ALL VIA ELECTRONIC MAIL ONLY



Traffic Engineering and Planning

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30 September 2014

Bill Bolla, Esq. McNamara, Bolla, & Panzer 116 East Court Street Doylestown, PA 18901

> **RE:** Villanova University – Gilmore Letter Radnor Township, Delaware County FTA Job # 211-027

Dear Mr. Bolla:

Earlier this week F. Tavani and Associates, Inc. (FTA) received a copy of a review letter addressed to you from Gilmore & Associates, Inc. dated 30 September 2014 (attached) regarding Villanova University's proposed undergraduate residential halls near Ithan Avenue. Responses to items under the heading "Comments" beginning at the bottom of page 2 are provided below.

At the outset it should be mentioned that the CICD ordinance provides that a traffic study must be conducted in accordance with PennDOT's Strike Off Letter 470-09-4 (hereinafter, the SOL) and thus PennDOT's opinion about what is required to comply with the SOL is significant. PennDOT provided guidance in its letter dated 1 August 2014 (hereinafter, the PennDOT letter). This letter was included in Appendix A of A-18 and is referenced on occasion in the responses that follow.

A.

- A turn lane length analysis is provided in Appendix K. This is supplemented by a 1. queue length analysis provided on page 7. Neither a turn length nor queue length analysis is provided for a separate EB right turn lane at Lancaster Avenue and Ithan Avenue as A-18 concludes that the benefit is limited and the lane is not necessary. Additionally, the PennDOT letter requested an investigation of the lane, which has been provided. PennDOT also stated in the same letter that the lane is "...not a requirement from the Department." The PennDOT letter also provided guidance regarding turn lane warrant analysis scope and that requirement was met in A-18.
- 2. The queue analysis was provided in compliance with the PennDOT letter. The PennDOT letter limited the scope of the study to certain intersections. The queue analysis provided complies with the SOL and the PennDOT letter.
- F. To be investigated and revised / resubmitted if needed.
- G. Trip generation for the retail subordinate uses should have been explained in greater detail in Appendix G of A-18.

First, it should be mentioned that the exact users of the retail subordinate space is not confirmed. More consideration will be given to this subject during land development. However, the uses will be among those provided in or fitting the definitions of the Retail Subordinate Uses section of the CICD ordinance.

The Gilmore letter correctly cites that the plans show 20,440 SF for the retail uses. However, some of the space is currently being considered as a computer support facility which would be limited to Villanova students and faculty (and thus have no external trip generation).

Recognizing this was not adequately explained in Appendix G of A-18, an alternative trip generation analysis has been prepared. It assumes a combination of uses as permitted under the ordinance. Three such combinations were prepared using ITE trip generation rates as requested. More than one combination was prepared because the exact users are not yet known and also because evidence of the impact of different permitted uses may benefit the township in its decision making process.

SCENARIO 1: Convenience Mart (ITE LUC 852), Bistro (932), and Bookstore (868)

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	TOTAL	124	117	205	191
	25% NEW	31	29	51	48
	FROM A-18	11	11	34	30
	DIFFERENCE	+20	+18	+17	+18

SCENARIO 2: Clothing / Apparel Store (ITE LUC 876), Bistro (932), and Bookstore (868)

KSF	ITE LUC	AM PEA	K HOUR	PM PEAK HOUR	
KSF	TELUC	IN	OUT	IN	OUT
5.29	Apparel	4	1	10	10
5.40	Bistro	36	29	35	24
9.75	Bookstore	6	6	80	74
	TOTAL	46	36	125	108
	25% NEW	12	9	31	27
	FROM A-18	11	11	34	30
	DIFFERENCE	+1	-2	-3	-3

SCENARIO 3: Copy, Print, Ship Store (ITE LUC 920), Bistro (932), and Bookstore (868)

KSF	ITE LUC	AM PEA	AK HOUR	PM PEAK HOUR	
KSF	TIE LOC	IN	OUT	IN	OUT  22  24  74  120  30
5.29	Copy/Print	11	5	17	22
5.40	Bistro	36	29	35	24
9.75	Bookstore	6	6	80	74
	TOTAL	53	40	132	120
	25% NEW	13	10	33	30
	FROM A-18	11	11	34	30
	DIFFERENCE	+2	-1	-1	0

#### AVERAGE NEW TRIPS

		AM PEAK HOUR		PM PEA	K HOUR
		IN	OUT	IN	OUT
SCENA	ARIO 1	31	29	51	48
SCENARIO 2		12	9	31	27
SCENA	ARIO 3	13	10	33	30
	AVERAGE	19	16	38	35
	FROM A-18	11	11	34	30
	DIFFERENCE	+8	+5	+4	+5

Whether using individual scenarios or the average of all 3 hypothetical scenarios, it is plain to see that the difference in trip generation as compared with what was used in A-18 is trivial.

Remember that the numbers shown in the tables above are total trips, and when trip distribution models are applied, the effect on individual intersections / turning movements will be further diminished – in most cases amounting to fractions of one trip.

Based on this new information provided – as well as the notion that the exact users and square footages apportioned to each user are currently indeterminate – FTA maintains that the trip generation used in A-18 is an appropriate estimate for traffic engineering planning purposes. Further, none of the land uses codes mentioned above were based on data collected in university settings and much of the data is 20 years old (or older). The data collected at a local university (St. Joe's) in 2014 is a more appropriate barometer of potential of what may happen at Villanova, even considering small potential differences in opening and closing times (the details of which cannot be determined until much later in land development).

- H. The minor differences in variables mentioned will have no meaningful affect on traffic projections and do not warrant any changes to A-18. Further A-18 is based on 100% peak hour moving parking spaces which alone is a highly conservative assumption having no basis in reality. Any concerns about the minor plan differences mentioned in this comment should be tempered by the extraordinarily conservative emphasis on peak hour traffic which A-18 already incorporates by design.
- I. See two prior responses. As determined/mentioned, the matters have been investigated and no further revisions are necessary.
- J. To be investigated and revised / resubmitted if needed.
- K. To be investigated and revised / resubmitted if needed.
- L. No additional turn lane warrant investigation is necessary or required to be code compliant the burden of the SOL and the PennDOT letter have been met. In fact the PennDOT letter clearly states the right turn lane is "...not a requirement from the Department."

Even though it is not required, level of service investigations <u>were</u> performed and those investigations confirm that an eastbound right turn lane at the intersection of Lancaster Avenue and Ithan Avenue has limited value. Analysis <u>was</u> provided to support this conclusion. Levels of service were summarized in the LOS comparison tables. *Synchro* outputs were included in Appendix I, for example the last few pages of that appendix feature a footer which reads "B 23 pm w/EB RT at Ithan 9/16/2014 Baseline". Special event (volume) predictions/analysis were not included as previously directed by Gilmore (see Appendix A).

Additionally, alternative travel patterns for inbound special event traffic (to include the WLL driveway and/or the PAC driveway, not to mention other parking locations such as HSB, SAC, et al) do not utilize the mentioned right turn lane. This has been identified and discussed in A-18 as well as the Chance Management report. FTA disagrees with regard to the cited defacto operation. No further explanation or analysis is needed regarding the applicant's position or the benefit – or lack thereof – of the requested lane. The applicant confirms that the suggested lane is not offered as an improvement.

- M. The requested information is not required to be code compliant and is not a requirement of the SOL or the PennDOT letter. Further previous direction by Gilmore (included in Appendix A) clearly stated that further special event analysis was not necessary.
- N. The cited SOL requirement is incorrect. The level of service investigations required under the SOL apply to overall intersection values, and this requirement is what dictated the format of the LOS tables found in A-18. Page 29 of the SOL states "The Department **may** request the applicant to mitigate critical movements or approaches and perform additional analysis." (emphasis added). The PennDOT letter included no such requests. In fact, the only direction included in the PennDOT letter was a request to provide delay in seconds for LOS F movements, which was provided. If the A-18 reader is determined to uncover one or more of the nearly 1,000 of individual turning movement delay estimates, this information is readily available in Appendix I as well as the individual *Synchro* files which were shared with Gilmore last week. A-18 is compliant with the ordinance and with the SOL.
- O. Intersection traffic control "warrants" are guidelines and almost always include statements that traffic engineering judgment should be applied in individual cases. The difference in delay between TWSC and AWSC is minimal. AWSC control affords added protections to

Bill Bolla, Esq. 30 September 2014 Page 5 of 5

pedestrians crossing Ithan Avenue between the garage and the new residence halls. This design element is important. AWSC is the recommended traffic control device.

- P. To be investigated further.
- Q. The request has no substantiation. Gilmore should provide added detail about what is required under the ordinance or the SOL to maintain the crossings mentioned. Note also that this is ultimately a PennDOT decision and does not enter into the conditional use hearings or decision making process of said proceeding.
- R. To be investigated further.

Please call or email me if I can answer any other questions. Thank you.

Very truly yours,

F. TAVANI AND ASSOCIATES, INC.

FRANK TAWANI, P.E., PTOE

#### attachment

cc: Gilmore & Associates, Inc. (Amy Kaminski, P.E., PTOE) Radnor Township (c/o Steve Norcini, P.E.) Villanova University (c/o Marilou Smith)

ALL VIA ELECTRONIC MAIL ONLY



September 30, 2014

File No. 12-04054

Mr. William Bolla, Esq. McNamara, Bolla & Panzer 116 East Court Street Doylestown, PA 18901

Reference: Villanova University – Lancaster Avenue Redevelopment

CICD Conditional Use Transportation Review Radnor Township, Delaware County, PA

Dear Mr. Bolla:

Gilmore & Associates, Inc. has completed the conditional use Transportation review of the submitted materials and offers the following comments for Radnor Township consideration:

#### I. BACKGROUND

The applicant, Villanova University, intends to develop/redevelop several parcels located along Lancaster Avenue, southeast and southwest of Ithan Avenue intersection, in Radnor Township, Delaware County. The project includes construction of student housing (1,135 bed apartment-style residence halls), retail shops (University Bookstore, bistro and small convenience store). In addition, the project includes construction of a Performing Arts Center (with 500 – 650 total seats in two theaters) and multilevel parking structure (1,293 spaces) to be located on the southeast corner of Lancaster Avenue and Ithan Avenue. Villanova University intends to eliminate many of the existing driveway accesses located on the south side of Lancaster Avenue, west of Ithan Avenue and construct a shared surface parking facility to the rear of the existing university buildings with limited access to Lancaster Avenue at the signalized intersection of Chapel Walk.

### II. REVIEWED DOCUMENTS

Transportation Impact Assessment for Villanova University Lancaster Avenue Student Resident Halls, prepared by F. Tavani and Associates, Inc. dated September 16, 2014.

#### III. IMPROVEMENTS

According to the submitted Transportation Impact Study, Villanova University proposes the following improvements/accesses:

A. Lancaster Avenue at Church Walk-Signalized Intersection

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- 1. Left and right turn lane exit from Chapel Walk to Lancaster Avenue.
- 2. Right in/right out on the eastbound approach of Lancaster Avenue, west of Church Walk
- 3. A westbound dedicated left-turn lane on Lancaster Avenue entering Church Walk
- 4. An eastbound dedicated right-turn lane on Lancaster Avenue entering Church Walk
- 5. A new pedestrian bridge spanning Lancaster Avenue at Church Walk.
- 6. Eliminate existing pedestrian crosswalks crossing Route 30 at Church Walk.
- 7. Optimize signal timings at the intersection during the studied peak hours.
- B. Pike Lot Parking Garage Accesses (Southeast corner of Lancaster Avenue and Ithan Avenue)
  - 1. New left-turn movement directly from westbound Lancaster Avenue to Pike Garage, east of Ithan Avenue along with a right in/right out; however, northbound left turn movements out of the Pike Garage will be prohibited.
  - 2. Full access on Ithan Avenue at Pike Lot Parking Garage & Lancaster Avenue Housing (LAH) intersection
  - 3. Right out, north of the full access to Ithan Avenue, just south of Lancaster Avenue.
- C. Lancaster Avenue and Ithan Avenue-Signalized Intersection:
  - 1. Lancaster Avenue eastbound to include a dedicated left turn lane, one through lane and one shared through/right turn lane.
  - 2. Lancaster Avenue westbound to include an extended dedicated left turn lane, one through lane and one shared through/right turn lane.
  - 3. Ithan Avenue northbound to include an extended dedicated left turn lane; one shared through/right turn lane.
  - 4. Ithan Avenue southbound to include a dedicated left turn lane; one shared through/right turn lane.
- D. Lancaster Avenue and Route 320/Kenilworth Street/Aldwyn Lane: Optimize signal timings at the intersection during the studied peak hours in order to improve operations and reduce queuing.
- E. Lancaster Avenue and Driveway access:
  - 1. Eight (8) unsignalized and unrestricted driveways will be consolidated to one (1) unsignalized right-in/right-out (RIRO) driveway Between Route 320 and the Church Walk signalized intersection,
  - 2. A right-turn deceleration lane will be constructed along Lancaster Avenue at the right-in/right-out driveway, west of Church Walk.

# IV. COMMENTS

- A. As required in PennDOT Publication 46 Traffic Engineering Manual
  - 1. Provide a turn-lane length analysis for the new proposed turn lanes and for the eastbound right turn at the intersection of Ithan Avenue and Lancaster Avenue.

- 2. Provide a table indicating the 95<sup>th</sup> percentile queues for all intersections using HCM2010 methodology. A queue analysis was only provided for five intersections.
- F. Use HCM2010 methodology in Synchro for the intersection of Church Walk and Lancaster Avenue.
- G. In general, when a new development is proposed, the vehicular trips associated with the new land development are calculated based on the type of land use and the size of the proposed land use. The applicant based the Trip Generation for University Student Bookstore, Bistro and the small convenience store on a similar site at St. Joseph University (SJU). The SJU includes approximately 15,000 square feet of retail space including a coffee shop, bookstore and restaurant/bistro.

Although in general, we agree with utilizing the trip generation of a similar local site there are some assumptions in the Villanova trip generation we disagree with as follows:

- In accordance with Conditional Use (CU) Exhibit A.6.A, the Villanova retail space is approximately 20,440 square feet and the SJU retail is only 15,000 square feet. No factor was applied to account for the approximate 33% increase in square footage.
- 2. The SJU restaurant/bistro opens at 11:00 AM while the bookstore opens at 9AM. The SJU restaurant/bistro and bookstore were not opened during the studied AM peak hour (7:30 8:30 AM); however, Villanova University Student Bookstore currently opens at 8:00 AM.
- 3. The report should clarify if Villanova University intends to operate the Bistro and Bookstore during the AM Peak Hour and modify the trip generation data accordingly. Based on the above differences and to account for the Trip Generation of the Villanova retail component, it is recommended the study utilize the ITE Trip Generation 9th Edition for the three retail uses of convenience store, bookstore and restaurant/bistro. According to the SJU survey study, a 75% capture rate could be applied to the calculated ITE Trip Generation.
- H. The Transportation Impact Study identifies 1,135 new beds for undergraduate students and 1,293 parking spaces for the proposed Pike garage. However, the CU application dated May 4, 2014 identifies 1,159 new beds and 1,265 new garage spaces. All conditional use documents must be consistent.
- I. CU Exhibit A.6.A and A.18 identifies site plans that are not consistent as follows:
  - 1. The pedestrian bridge entry point locations are inconsistent
  - 2. Exhibit A.6.A indicates over 20,000 square feet of retail space while Exihibit.A.18 indicates 15,000 square feet of retail space.

- 3. Verify and revise as necessary so both are consistent.
- J. Verify the 2023 PM Peak Hour traffic volumes for the eastbound right turn lane at the intersection of Lancaster Avenue and Ithan Avenue and revise as needed. It appears the PM Peak Hour 2023 traffic volumes are less than the existing conditions and the 2018 conditions; verify and revise as necessary.
- K. There are some inconsistencies between the 2014 figure volumes and the analysis. These inconsistencies should be corrected.
- L. The applicant indicates an eastbound right-turn lane at the intersection of Lancaster Avenue and Ithan Avenue would have limited value during ordinary traffic conditions and would be insignificant during special events. No analysis was provided for this conclusion. The report must include a right turn lane warrant analysis based on PennDOT Publication 46 Traffic Engineering Handbook. During special events, a right turn lane will provide relief for the congested eastbound through movement and if a right turn is not provided, it is anticipated the two eastbound lanes will operate as one though lane and a de facto right turn lane thus reducing the capacity of Lancaster Avenue. To improve the operation of the intersection and to better accommodate special event traffic, an eastbound right-turn should be provided.
- M. Add traffic volumes figures depicting the 2023 projected traffic for special events such as men's basketball game and homecoming.
- N. PennDOT Strike-Off-Letter (SOL) 470-09-4 identifies mitigation for deficient critical movements or approaches (page 29). Revise Table 1 to include the delay in seconds where there are critical movements with LOS degradation.
- O. The applicant has proposed an all way stop at the intersection Ithan Road and the Pike parking garage access. Based on the analysis a two way stop seems to operate at acceptable LOS. The traffic volumes do not appear to warrant an all-way stop in accordance with the MUTCD. Traffic calming measures or other pedestrian improvements should be considered in lieu of an all-way stop.
- P. We recommend eliminating the second right turn out only from the Pike Garage to northbound Ithan Avenue. Superfluous
- Q. The street level pedestrian crossing on Lancaster Avenue at Church Walk must be maintained between the public sidewalk south of Lancaster Avenue and the public sidewalk north of Lancaster Avenue.
- R. The applicant should consider the following improvements associated with the pedestrian overpass:
  - 1. Provide an elevator for the physically challenged for access from the LAH surface parking lot to the pedestrian overpass.
  - 2. Install fencing between the north-side Lancaster Avenue sidewalk and the Villanova University property frontage along Lancaster Avenue to

discourage pedestrians from taking access to Villanova University from the northern public sidewalk.

3. Discuss alternative SEPTA bus stop locations with SEPTA officials

Please let me know if you require additional information or further clarification related to this subject.

Sincerely,

Amy B. Kaminski, P.E., PTOE

anys. Kamiuski

Department Manager of Transportation

Gilmore & Associates, Inc.





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August 19, 2014

Mr. William J. Bolla, Esquire McNamara, Bolla, and Panzer 116 East Court Street Doylestown, PA 18901-4321

Villanova CICD Conditional Use Development Impact Statement

**Review No. 1** 

RETTEW Project No. 101442003

#### Dear Bill:

At your request, we have completed our review of the above referenced document as prepared by Voith & Mactavish Architects LLP. Our review was of the following information received on July 15, 2014:

1. Thirteen (13) plan sheets dated May 2, 2014;

RE:

- 2. Development Impact Statement dated May 2, 2014;
- 3. Traffic Impact Statement dated May 2, 2014; and,
- 4. Miscellaneous Township ordinances and related documents.

# **Project Overview:**

<u>Applicant:</u> Villanova University

<u>Requested Action/Use:</u> CICD Conditional Use – Development Impact Statement Review

Zoning District: PI – Planned Institutional; CO – Commercial Office

<u>Location and Size:</u> CICD Conditional Use Property is located between Lancaster

Avenue and the SEPTA R-100 tracks, and between Pike Field and Moriarty Hall on the Villanova campus, a gross site area of

approximately 13.81 acres.

<u>Existing Use:</u> Surface parking lots

<u>Proposed Use:</u> Student dormitories, Performing Arts Center, Parking Structure,

and student-centered retail.

We have performed a general review of the Development Impact Statement supported by conditional use plans and related documents, and have included comments on the Impact Statement at this point. We may have additional comments as the Conditional Use application moves through the review process and will when more detailed land development plans are submitted.



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Our comments below are in the same order as the contents for a Development Impact Statement are listed in the CICD Use in the Planned Institutional zoning district.

# **COMPREHENSIVE PLAN CONSISTENCY REVIEW – ENVIRONMENTAL & NATURAL RESOURCES**

- 1. Objectives 1 3: No comments.
- 2. Objective 4: In addition to the University's response, the proposed 13-acre development provides for 2 acres of preserved land in the Aldwyn Triangle, which has been designated, at least partially, as a "core reserve wooded area." The Comprehensive Plan strongly recommends that the Township protects and preserves these existing natural areas to the maximum extent (2-40). Preservation by the University of the remainder of the Aldwyn Triangle would help to protect the environmental integrity of the sensitive natural features in the dedicated 2-acre portion and be an indication of the University's intent for the Triangle property to remain a quiet part of the neighborhood.
- 3. Objectives 5 7: No comments.

# COMPREHENSIVE PLAN CONSISTENCY REVIEW - HOUSING, DEMOGRAPHICS, AND SOCIOECONOMICS

- 4. Objectives 1 4: No comments.
- 5. Objective 5: In addition to the University's response, the new on-campus housing provided for over 1,100 off-campus resident students may consequently increase the availability of housing in Radnor Township, especially of rental units. Current demand for housing in Radnor is high, and the Township Comprehensive Plan indicates that another downside of this "more demand than supply" market condition above and beyond rapid increases in price is that households wanting to move into Radnor in the future... will not be able to move in and will be forced to seek alternative locations. This factor may be more significant for certain types of households, certain age groups, or ethnic and racial groups which are more income-constrained, all of which can have implications for future Radnor community building (3-14).
- 6. Objectives 6 10: No comments.

# <u>COMPREHENSIVE PLAN CONSISTENCY REVIEW – BUSINESS AND ECONOMIC DEVELOPMENT</u>

- 7. Objectives 1 6: No comments.
- 8. Objective 7: The University indicates that it pays applicable taxes on unrelated business generating activities. It does not, however, pay business privilege taxes on those business activities it conducts which it considers part of its core mission. The University also does not pay property taxes.



# COMPREHENSIVE PLAN CONSISTENCY REVIEW – TRANSPORTATION AND CIRCULATION PLAN

- 9. One of the goals of Section 5 Transportation and Circulation Plan of the Comprehensive Plan is to develop traffic calming strategies for implementation, as appropriate, to help preserve neighborhoods. The Development Impact Statement on page 11, however, indicates that no traffic calming is proposed as a method to "reduce the likelihood of cut-through traffic." Instead, proposed traffic improvements to Lancaster Avenue are cited as improving the performance of that key arterial roadway and in doing so will reduce cut-through traffic. Until the University submits its Special Events Management Plan for the post-development condition, and it reworks its Traffic Impact Study to comply with all PennDOT requirements for such studies (see comment under Transportation Impact below), the ability of Lancaster Avenue improvements to reduce cut-through traffic cannot be confirmed. The University has indicated a willingness to install a raised crosswalk and Rapid Reaction Flashing Beacon at Aldwyn and at the two-way access/egress to the Parking Garage on Ithan for pedestrian safety, both of which will help calm traffic speeds. Similar consideration will be needed for traffic calming on Aldwyn Lane, particularly for special event traffic.
- 10. Section 5 Transportation and Circulation Plan of the Comprehensive Plan outlines an Access Management Program that "should apply to all roads in the Township, as practical. Reducing the amount of unnecessary curb cuts and access points can also help to reduce delays in traffic flow, accident levels, and pedestrian conflicts" (5-29). The University's plan includes the elimination of eight (8) existing 'unrestricted' driveways along Lancaster Avenue between State Route 320 and Church Walk at the West Lancaster Parking area properties.
- 11. Section 5 Transportation and Circulation Plan of the Comprehensive Plan also states that the Township should encourage access management methods along U.S. Route 30 and provide access easements through adjoining parcels (5-32). The proposed development contains offered/suggested traffic improvements that include side accesses, deceleration lanes and a reverse frontage road.

# **COMPREHENSIVE PLAN CONSISTENCY REVIEW – OPEN SPACE AND RECREATION**

- 12. Objective 1: No comments.
- 13. Objective 2: The proposed development includes the open space dedication of 87,120 square feet (2 acres) in the Aldwyn Triangle in order to meet the CICD ordinance requirement for exceeding 30% building coverage, consistent with the Comprehensive Plan's strong recommendation that such an existing natural area be preserved to the maximum extent (2-40). Preservation by the University of the remainder of the Aldwyn Triangle would help to protect the environmental integrity of the sensitive natural features in the dedicated 2-acre portion and be an indication of the University's intent for the Triangle property to remain a quiet part of the neighborhood.
- 14. Objectives 3 9: No comments.



# <u>COMPREHENSIVE PLAN CONSISTENCY REVIEW – HISTORICAL AND ARCHAEOLOGICAL RESOURCES</u>

15. The goal in this plan is not applicable to this development.

# **COMPREHENSIVE PLAN CONSISTENCY REVIEW – INSTITUTIONAL USE**

(Institutional Use is not explicitly listed in CICD Ordinance as a required subject for review but is certainly applicable and comes under the heading of "including, but not limited to" in the text of the CICD Ordinance Development Impact Statement requirement.)

- 16. The Development Impact Statement does not include any analysis of consistency with Section 8 Institutional Use of the Comprehensive Plan. As noted above, the project needs to be consistent with the goals and objectives stated in Section 8. Our comments on Section 8 consistency are provided below.
- 17. The Comprehensive Plan lays out some general principles to be kept in mind when dealing with Institutional land use. For example, the expansion of institutions is to be limited to the areas within the present boundaries of the campus zoned for Institutional use. The University's CICD plan does not expand the current limits of the campus, although the proposed development activity does extend beyond the PI Planned Institutional zoning district in the form of the 'West Lancaster Parking' area proposed for University property in the CO Commercial Office zoning district.
- 18. Further, the Comprehensive Plan asks that existing institutions be harmonized with adjacent land uses by promoting physical buffering. Villanova's plans include the installation of deciduous trees, evergreens, shrubs, and ground cover along most of the CICD district boundaries. To properly buffer adjoining properties (along both the R-100 line and those on Barley Cone Lane), existing buffer vegetation needs to be retained to the fullest applicable extent along with the addition of new vegetation and landscaping. Strategic placement of berms along University property boundaries are needed to help with visual and noise impacts. Section and elevation views of proposed buffering need to be provided to demonstrate the sufficiency of the proposed buffering plan that the University presently suggests will include safety fence and could include modest, sound-dampening masonry walls as appropriate.
- 19. Section 8 Institutional Use of the Comprehensive Plan, which was last updated in 2003, states that Villanova University has prioritized a number of plans and projects moving forward. The Comprehensive Plan acknowledges the University's intention of implementing several major building projects, most of which will be in the form of student housing, while maintaining the status quo enrollment figures. Reducing the need for off-campus housing, improving the quality of student life, and minimizing community issues occurring due to a large number of students living off campus are presented as key reasons for the need to build additional residential facilities.
- 20. Section 8 Institutional Use of the Comprehensive Plan specifically recognizes that an important issue to the community relates to Villanova's long range plans for its land holdings south of Lancaster Avenue that contain the Main and Pike surface parking lots. The Plan notes that the University has considered the development of a major convocation center there, including a



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bookstore plus structured parking with related facilities, very similar to that proposed under the CICD Conditional Use. Features of such a development were to include possible application of traffic calming, gateway enhancements, and other appearance improvements (8-6).

# **COMPREHENSIVE PLAN CONSISTENCY REVIEW – COMMUNITY SERVICES AND FACILITIES**

21. No comments.

#### COMPREHENSIVE PLAN CONSISTENCY REVIEW – EXISTING LAND USE & LAND USE PLAN

- 22. Objectives 1 4: No comments.
- 23. Objective 5: The proposed development includes the open space dedication of 87,120 square feet (2 acres) in the Aldwyn Triangle in order to meet the CICD ordinance requirement for exceeding 30% building coverage. Consistent with the Comprehensive Plan's strong recommendation that such existing natural features be preserved to the maximum extent (2-40), preservation by the University of the remainder of the Aldwyn Triangle would help to protect the environmental integrity of the sensitive natural features in the dedicated 2-acre portion and be an indication of the University's intent for the Triangle property to remain a quiet part of the neighborhood.
- 24. Objective 6: In addition to the University's response, to properly buffer adjoining properties (along both the R-100 line and those on Barley Cone Lane), existing buffer vegetation needs to be retained to the fullest applicable extent along with the addition of new vegetation and landscaping. Strategic placement of berms along University property boundaries are needed to help with visual and noise impacts. Section and elevation views of proposed buffering need to be provided to demonstrate the sufficiency of the proposed buffering plan that the University presently suggests will include safety fence and could include modest, sound-dampening masonry walls as appropriate.

#### **REVIEW OF IMPACT ON SENSITIVE NATURAL FEATURES**

- 25. In addition to the University's response, the proposed 13-acre development provides for 2 acres of preserved land in the adjacent Aldwyn Triangle, which has been designated, at least partially, as a "core reserve wooded area" (2-41). Preservation by the University of the remainder of the Aldwyn Triangle would help to protect the environmental integrity of the sensitive natural features in the dedicated 2-acre portion and be an indication of the University's intent for the Triangle property to remain a quiet part of the neighborhood.
- 26. On page 2, the Development Impact Statement states it is anticipated that redevelopment of the parking lots will increase potential habitat for local wildlife. However, the statement fails to describe the ramifications of increasing wildlife habitat, such as wildlife interactions with humans, motorized vehicles, etc.
- 27. Page 4 of the report states the proposed development will locate more students within easy walking distance of university related activities, thereby reducing the need to drive to campus and improve air quality in the area. The report further addresses the carbon footprint of moving 1,160



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students from off-campus housing to new LEED certified residence halls on campus. This would equate to a reduction of 2,100 car trips per day and would equate to a reduction of 1,162,000 pounds of CO-2 emission every year; however, the reports further states the vacated rental units would be filled with commuter students thereby eliminating all the indicated carbon footprint gains.

# REVIEW OF IMPACT ON THE TOWNSHIP AND REGIONAL TRANSPORTATION SYSTEM AND THE ABILITY OF ADJACENT STREETS AND INTERSECTIONS TO EFFICIENTLY AND SAFELY HANDLE THE TRAFFIC GENERATED BY THE PROPOSED DEVELOPMENT

The University's Development Impact Statement indicates that compliance with this section is by virtue of the Traffic Impact Study (TIS) submitted for the development proposal. Therefore, our review of transportation impact focuses on a review of the TIS.

- As indicated in the Gilmore Review as well as the recent PennDOT review, the TIS must be prepared in accordance with Section 280-135G(1)(c) which indicates it must follow PennDOT's guidelines as contained in PennDOT SOL 470-09-4. Therefore the TIS should be revised to include queue analyses, turn lane needs analyses, and the HCM 2010 methodology. In addition, all SYNCHRO analyses should be revised to incorporate the PennDOT approved default factors and to also include the actual pedestrian calls per hour at the signalized intersections. The level of service tables should be expanded to include the seconds of delay for any unsatisfactory levels of service. A 95th percentile queue table should also be provided. Any recommended turn lane length should be the maximum length as determined from the turn lane needs analysis and/or the queue analysis. These significant revisions to the TIS need to be prepared and reviewed by the Township before any conditional use decision-making occurs in order that the Township can know that the general set of transportation improvements laid out in the plan will efficiently and safely handle the traffic generated by the proposed development.
- 29. Trip generation for the commercial uses fronting on Lancaster Avenue should be developed from the ITE Trip Generation manual unless specific justification can be provided that would indicate no new trips would be generated from these uses.
- 30. The analysis in the TIS assumes 4-way STOP control at the intersection of the garage and parking lot along Ithan Avenue. Always stopping traffic flow on South Ithan is not desirable. The analysis of this intersection should assume two-way STOP control of the side streets approaches only. Consideration by the University of a raised crosswalk and Rapid Reaction Flashing Beacon (RRFB) with the 'intersection' designed to accommodate a 4-way stop if determined appropriate in the future is a welcome approach.
- 31. There is discussion in the TIS that a detailed Special Events Plan for the future development condition is to be prepared by a different consultant. A copy of this plan should be provided for review and comment prior to any decision-making on the conditional use.
- 32. Capacity and Queue analyses should be provided for the "special event" conditions, particularly along Ithan Avenue and at its intersection with Lancaster Avenue. The TIS 'projects' 176



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Eastbound right turns and 220 Westbound left turns onto Ithan Avenue for the peak hour of a special event.

- 33. The addition of a dedicated Eastbound Lancaster Avenue right-turn lane at Ithan Avenue needs to be investigated for both day-to-day operation as well as special events. Trying to send event traffic further to the east past Ithan to the proposed Lancaster Avenue entrance to the parking garage will still have event traffic out on the mainline of Lancaster Avenue, waiting to make entrance into the garage through a narrow, single lane driveway, while blocking through traffic.
- 34. There has been discussion by the University of sending special event visitors to the new parking garage via a new entrance into the West Lancaster Parking area, through the West Lancaster Parking area, across Church Walk, and through the parking lot behind the new dorms to Ithan Avenue. No analysis or plan has been submitted to illustrate how this would function.
- 35. Pedestrian crossings at the intersection of Lancaster Avenue and Ithan Avenue should be reviewed and revised such that they are more perpendicular to the sidewalks. This will provide a shorter distance and less WALK time at the intersection.
- 36. The TIS indicates the driveway to the east of the Performing Arts Center (PAC) would prohibit left turns out of the driveway, however the submitted plans indicate full egress movement. The plans should be revised to indicate a left turn-out restriction. In addition, information should be provided relating to truck access in and around the PAC.
- 37. Aldwyn Lane Access: Restricting the traffic flow to a permanent one-way flow would alleviate "cut-through" traffic. This or some other traffic management approach on Aldwyn would require agreement from the residents along this street.

# **REVIEW OF IMPACT ON RADNOR SCHOOL DISTRICT**

- 38. On Page 20, the report states the addition of student housing will not materially affect the rental housing market in the Township because vacated off-campus student rental housing will be filled by another student living farther away. This statement is contrary to how the report addresses Housing Objectives on Page 5, which states many houses previously rented to Villanova students could be brought back onto the open rental market or potentially sold for re-conversion back to single family residences.
- 39. There are 125 licensed off-campus student rental units in Radnor Township all within several miles of three colleges and two universities. The report concludes that the quality of these dwelling units is such that they are unlikely to appeal to families, especially families with school age children, and that should any of these units become available they will likely be occupied by another student and not by a family with children. Based on this conclusion, it is estimated that only three new school age students will be generated as a result of this development.

There is a trend in the housing market away from home ownership. The report should explore this trend and the impact of these rental units not being filled by other students. The age and quality of these units may generate rental prices on the open market that make them affordable



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for young families and single-parent households, which will impact student enrollment in the school district.

# **REVIEW OF IMPACT ON COMMERCIAL FACILITIES WITHIN THE TOWNSHIP AND OTHER MUNICIPALITIES**

- 40. The Development Impact Statement indicates on page 26 that the project includes between 20,000 and 25,000 square feet of retail and restaurant space. However, the development plans submitted with the Impact Statement show a total of 17,000 square feet of bookstore, bistro, and convenience store space. The amount of square feet of the retail/personal service spaces needs to be clarified.
- 41. Overall, it appears that the proposed development will have a marginal effect on commercial businesses within the Township and other municipalities. More students on campus might increase patronage for Garrett Hill and Wayne businesses. However, the presence of the bistro and convenience store on campus might make it less likely for students to go off campus for those needs. Students already have favorite retail and restaurant establishments and established patronage patterns as a result. It is not likely that there will be significant changes in those patterns.

#### **REVIEW OF IMPACT ON PUBLIC UTILITIES**

- 42. The University's Conceptual Stormwater Management Narrative highlights the 2-year volume difference in runoff as the key objective for the project. However, the University must provide infiltration for one (1) inch of runoff from all proposed impervious surfaces of the project, regardless of the 2-year volume difference. This is a requirement of the Darby/Cobbs Creeks Act 167 Plan and the Township Stormwater Management Ordinance. The infiltration of one (1) inch of runoff was generated as a standard by PADEP and is also a requirement of the City of Philadelphia. Some jurisdictions in other areas require infiltration of 1.5 inches.
- 43. Section 245.18.B of the Township Stormwater Management Ordinance states that applicants are required to find practicable alternatives to surface discharge of stormwater runoff. Such alternatives would include reuse, ponds, and underground storage. As a minimum to address downstream residents' identified issues the University needs to provide no surface discharge for up to a 10-year storm, but the most environmentally conscious thing they could do would be providing no surface discharge for up to a 100-year storm. This would assist in offsetting flood-causing runoff from the remainder of the Villanova facilities in the drainage area and would be consistent with Villanova's nationwide reputation for stormwater management research and for having been labeled by the Princeton Review as one of the 322 most environmentally responsible universities in the nation.
- 44. It does not appear that the infiltration/detention facilities under the western end of the West Lancaster Parking area will be feasible due to the substantial slope of the land and existing trees present. The University has indicated that infiltration/detention facilities are no longer being proposed for the land west of Farrell Hall, the Public Safety Building.



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# **REVIEW OF IMPACT ON POLICE AND FIRE PROTECTION**

(Reviewed under Fiscal Impact Analysis Overview)

# **REVIEW OF IMPACT ON OPEN SPACE AND RECREATION FACILITIES**

45. The Development Impact Statement does not provide an analysis of the number of students currently using the Township's recreation facilities, nor what facilities they use, and it concludes that all students will utilize on-campus open space and recreation facilities.

To accurately determine the impact this project has on the Township's open space and recreation facilities, the Impact Statement needs to identify Township open space and recreation facilities that are reasonably accessible, estimate the number of students currently utilizing the Township's open space and recreation facilities, and determine the impact moving more students on campus will have on student usage of Township open space and recreation facilities.

In addition, Section 255-43.1.B(2) of the Township Code requires non-residential developments to dedicate open space/recreational lands or pay a fee in lieu of.

#### REVIEW OF IMPACT ON CHARACTER OF SURROUNDING NEIGHBORHOOD

- 46. The West Lancaster Avenue Parking area, while located outside of the CICD and the Planning Institutional zoning district, is a key element of the proposed development. It is the first project component to be constructed since replacement parking must be provided before spaces in the Pike Lot are lost during parking garage construction and spaces are lost in the Mail Lot during dormitory construction. The West Lancaster Avenue Parking area is separated from nearby residences only by the R-100 Trolley line. Evidence of sufficient noise and light buffering along the proposed parking area in the form of section and elevation drawings need to be provided showing the anticipated results of buffer plantings, gap filling, and retention of existing trees and shrubs. Similarly, buffering elevations for the property behind the parking garage and Performing Arts Center need to be provided.
- 47. The Development Impact Statement states on page 28 that "the new buildings will create a new audio and visual buffer between Lancaster Avenue and the residential neighborhoods at the South side of the development." However, the presence of approximately 1160 students in the new dorms, plus other proposed traffic generators (parking garage, Performing Arts Center, retail businesses, surface parking), will create new audio and light sources for the neighborhood. In addition, the construction of the new buildings will close off the view of the Chapel and fronting lawn and introduce a new visual the parking garage and dorms. Thus, buffering section and elevations drawings including combinations of new trees and shrubs, berming, safety fence, modest masonry walls as appropriate to different locations need to be provided.

# FISCAL IMPACT ANALYSIS OVERVIEW

48. On page 29, the report indicates that "many of the students who will be living in the proposed development will be moving in from outside of the Township" and "these new residents will now



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be more likely to patronize Township establishments more often," leading to more sales and increased gross receipts tax revenues (Business Privilege Tax) for the Township. However, in item #6 on page 6, the report states that "the retail incorporated into the development will also provide ready access to many of the needs of daily student life," suggesting that students will have less need to go off campus as a result of the development. Further, some of the students moving into the new dorms will be those currently occupying West Campus dorms and are already on campus. Students, whether currently living on or off campus have favorite places inside and outside of the Township and their patronage patterns are not likely to change much. It is unclear which direction gross receipts tax revenues (Business Privilege Tax) will head.

- 49. The report notes that the University is not subject to property taxes nor is it expected that the retail uses that are part of the project and the University's core mission will pay any business taxes. The report goes on to say that roughly \$5.6 million dollars in one-time permit fees and gross receipts taxes will be paid by the University and its contractors as a result of the construction of the proposed development. These one-time fees are not a windfall for the Township. They are fees to cover the costs of Township services provided during the development process including construction code plans review and inspections. Further, most all development in the Township must pay building permit fees and their contractors pay gross receipts taxes. The key distinction is that the University pays no property taxes. Private sector development at a value similar to the \$269 million cited for the proposed development would generate approximately \$1,009,000 annually in property taxes to the Township (at the 2014 property tax rate), plus roughly \$750,000 in Business Privilege taxes could be generated on gross receipts each year.
- 50. On page 30, the report indicates that "the project will not cause any additional burden on Township administration" or the Community Development budget. The administration, coordination, and execution of review of the project and enabling zoning ordinance amendment has actually caused quite a burden on Township administration and Community Development.
- 51. The report on page 32 states that the potential increase in police calls (estimated to be 55) attributable to the project is small compared to the total number of calls handled by the Police Department. The report needs to state the total number of calls, calculate what percent of total calls is represented by the 55 additional calls, and apply that percentage to the Police Department's budget of roughly \$8 million to calculate the approximate cost of those 55 additional calls and to determine the need for additional resources by the Police.
- 52. On Page 33 under Public Works, the report states that it is possible that the Township will see a decline in roadway maintenance expenditures due to fewer students driving. This contradicts the statement earlier in the Development Impact Statement that it is anticipated that the vacated offcampus student housing is expected to be filled with students, requiring them to drive, or rented on the open market. Those occupants will have similar driving patterns as those who currently live in those units such that there would be an overall increase in driving activity and wear and tear on area streets.
- 53. The report also notes on page 33 that "the University will maintain the sidewalks along Lancaster Avenue, further decreasing possible Township expenses." Section 250-9 of the Township Code requires property owners to maintain the sidewalk along their property such that this



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maintenance of the sidewalks by the University is a current duty and does not represent a shift in responsibility and a decrease in possible Township expenses.

On page 34, the report notes that the proposed development's township-compliant stormwater management system will help reduce stormwater runoff from the site, potentially lowering costs borne by Township Public Works. It should also be noted that there has been a burden on the Township for many years of stormwater runoff discharge from the surface parking lots where there has been little or no stormwater management in place.

Should you have any questions or require any additional information, please do not hesitate to contact us at any time.

Sincerely,

Stephen R. Gabriel, PP

Explan R. Gabi

**Township Planning Consultant** 

copy: Robert Zienkowski, Township Manager

Steve Norcini, Public Works Director Roger Phillips, Township Engineer

Amy Kaminski, Township Traffic Engineer

Nicholas Caniglia, Esq.

File

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August 1, 2014

DELAWARE COUNTY, RADNOR TOWNSHIP
S.R. 0030 (LANCASTER AVENUE)
HIGHWAY OCCUPANCY PERMIT APPLICATION NO. pre913
VILLANOVA UNIVERSITY
TRAFFIC LOG NO.: D13-008XR
PRELIMINARY REVIEW

Frank Tavani, P.E., PTOE F. Tavani and Associates, Inc. 105 Kenilworth Street Philadelphia, PA 19147

Dear Mr. Tavani:

The Department has reviewed the preliminary submission of the <u>Traffic Impact Assessment</u> dated August 27, 2013 for compliance with applicable Department Regulations. This review has identified deficiencies that must be addressed in order for your application submission to be processed as efficiently as possible.

The Department understands that the provided analysis is preliminary in nature. As such, the Department reserves the right to make future additional comments based on the formal submission of a complete Transportation Impact Study.

Our comments on your preliminary submission are as follows:

# PRELIMINARY COMMENTS

- 1. Future submissions should include a letter that describes how each comment, from this or previous reviews, has been addressed and where each can be found in the associated studies or plans. Based on the manner in which this project has taken place the inclusion of formal review letters and/or comments provided via email may be appropriate.
- 2. Transportation Impact Study
  - a. The PennDOT project number, D13-008XR, for this preliminary review must be referenced when the formal HOP application is submitted.
  - b. In consideration of the previously submitted information and coordination to date, future submissions to the Department may be limited to:
    - i) Site accesses to State Routes

- ii) S.R. 0030, from S.R. 0320 to Garrett Avenue
- iii) S.R. 0320 and County Line Road
- c. Based on the magnitude of the anticipated modifications associated with the proposed development, including roadway modifications and traffic re-distribution, the submitted document is considered a Transportation Impact <u>Study</u> and should conform to the Department guidelines as such. As previously noted, this includes:
  - i) Land Use Context
  - ii) Roadway Classification (reference the Smart Transportation Guidelines)
  - iii) Pedestrian and Bicycle Facilities
  - iv) Photographs of study intersections and accesses
  - v) Sight distances at access
  - vi) Turn lane warrant analysis for site accesses and intersections serving the site (e.g. Ithan Avenue)
- d. The study should consider an alternative that includes providing an eastbound right turn lane on S.R. 0030 approaching Ithan Avenue. The right turn lane is a recommended improvement and not a requirement from the Department.
- e. As previously noted, tables and figures should be organized so that there is a clear flow from trip generation to trip distribution and the resulting Levels-of-Service.
- f. The crash history noted six accidents involving pedestrians. Additional information should be provided to determine if there is a correctable pattern or other elements that should be considered as part of this project.
- g. As previously noted, additional information is also needed for the Performing Arts Center accesses, addressing proximity to the signal, flow and restrictions, etc. Specific issues include the manner in which previous submissions appeared to direct traffic away from Ithan Avenue and the operation of the full-movement access to S.R. 0030, including evaluation of the access pre and post event.
- h. Please note that the various materials submitted in relation to this project include minor discrepancies in the campus-wide parking supply figures. These are generally minimal and are not expected to change the results of the analyses; however they should be addressed as part of future submissions.
- i. As previously noted, Level-of-Service data tables should include the delay in seconds for each lane group operating at LOS F.
- j. Verify that the figures clearly illustrate proposed volumes at all accesses to state roads, including but not limited to the proposed right in and right out access to the modified commuter lot along S.R. 0030.

- k. The Synchro analyses should address the following:
  - i) Ensure that Future Build volumes are consistent with the submitted figures.
  - ii) Per the current Highway Capacity Manual the overall intersection peak hour factor should be used.
  - iii) Ensure that all turn lanes are coded appropriately.
  - iv) As previously noted, ensure that the pedestrian phase clearance intervals are coded appropriately. In particular, for S.R. 0030 and Ithan Avenue:
    - (1) Ensure that pedestrian times meet or exceed the minimums for existing (26 seconds per the current Traffic Signal Permit) and future conditions.
    - (2) Enter an appropriate number of pedestrian calls. If the number of calls is assumed to be reduced under future conditions due to proposed improvements, include documentation of the methodology used to develop the assumed number of calls.
  - v) Ensure the appropriate coordination and recall settings are utilized.
- 1. The submitted Conditional Use Plan shows two lanes exiting Chapel Drive to S.R. 0030; verify that this is addressed in the analyses.

# 3. Conditional Use Plans

- a. Note that all improvements will be required to comply with current ADA standards.
- b. To the maximum extent feasible existing accesses to S.R. 0030 within the project limits should be removed where new access is provided as part of the proposed development (e.g. the two story buildings adjacent to the West Lancaster Parking).
- c. Future submissions should include calculations supporting the proposed transition taper lengths.
- d. The westbound stop bar for S.R. 0030 approaching Church Walk appears too far west; adjusting this will impact the proposed eastbound transition taper.
- e. The eastbound stop bar for the S.R. 0030 left turn lane approaching Ithan Avenue may need to be adjusted to account for the shifting of the northbound left turn lane.
- f. Consideration of re-aligning the crosswalks at S.R. 0030 and Ithan Avenue may be warranted as a means to reduce pedestrian crossing distances.
- g. Ensure that appropriate visibility is maintained for the pedestrian crossing of the Performance Arts Center access; the magnitude of the setback may warrant reconsideration.

HOP APPLICATION NO. pre913 TRAFFIC LOG: D13-008XR PAGE 4

The Department has performed this preliminary review based only on the limited information provided. We reserve the right to make future, additional, detailed comments based on the formal submission and application for a Highway Occupancy Permit. If you have any questions pertaining to the technical aspects of this review, please contact Albert Federico, P.E., PTOE of McCormick Taylor, Inc. at 215.592.4200 or apfederico@mtmail.biz.

Respectfully,

Francis J. Hanney

District Traffic Services Manager

Engineering District 6-0

cc: M. Miele

L.R. Belmonte

Traffic Services File Radnor Township

Delaware County Planning Commission



July 23, 2014

File No. 12-04054T

Mr. William Bolla, Esq. McNamara, Bolla & Panzer 116 East Court Street Doylestown, PA 18901

Reference:

Villanova University - Lancaster Avenue Redevelopment

CICD Conditional Use Transportation Review #1-Revised

Radnor Township, Delaware County, PA

Dear Mr. Bolla:

Gilmore & Associates, Inc. has completed the conditional use Transportation review of the submitted materials and offers the following comments for Radnor Township consideration:

# I. BACKGROUND

The applicant, Villanova University, intends to develop/redevelop several parcels located along Lancaster Avenue, southeast and southwest of Ithan Avenue intersection, in Radnor Township, Delaware County. The project includes construction of student housing (1,159 bed apartment-style residence halls), retail shops (University Bookstore, bistro and small convenience store) along with 147 surface parking spaces to be located on the southwest corner of Lancaster Avenue and Ithan Avenue. In addition, the project includes construction of a Performing Arts Center (with 500 – 650 total seats in two theaters) and multilevel parking structure (1,265 spaces) to be located on the southeast corner of Lancaster Avenue and Ithan Avenue. Villanova University intends to eliminate many of the existing driveway accesses located on the south side of Lancaster Avenue, west of Ithan Avenue and construct a shared surface parking facility to the rear of the existing university buildings with limited access to Lancaster Avenue at the signalized intersection of Chapel Walk.

# II. DOCUMENTS SUBMITTED

The following documents were submitted to Gilmore & Associates for review:

A. Conditional use plan set (11 sheets) for Villanova University prepared by Voith & Mactavish Architects, LLP and Robert A.M. Stern Architects, LLP, dated May 2, 2014.

BUILDING ON A FOUNDATION OF EXCELLENCE

65 E. Butler Avenue | Suite 100 | New Britain, PA 18901 Phone: 215-345-4330 | Fax: 215-345-8606

www.gilmore-assoc.com

- B. Landscape plans (3 sheets) for Villanova University prepared by Voith & Mactavish Architects, LLP and Robert A.M. Stern Architects, LLP, dated May 2, 2014.
- C. Transportation Impact Assessment for Villanova University Lancaster Avenue Student Resident Halls, prepared by F. Tavani and Associates, Inc. dated May 4, 2014.
- D. Development Impact Statement for the Villanova University CICD Development dated May 2, 2014.

# III. IMPROVEMENTS

According to the submitted Transportation Impact Assessment, Villanova University proposes the following improvements/accesses:

# A. Lancaster Avenue at Church Walk-Signalized Intersection

- 1. Left and right turn lane exit from Chapel Walk to Lancaster Avenue.
- 2. Improvements on Lancaster Avenue at Church Walk include:
  - Right in/right out on the eastbound approach of Lancaster Avenue, east of Church Walk
  - b. A westbound dedicated left-turn lane entering Church Walk
  - c. An Eastbound dedicated right-turn lane entering Church Walk
- 3. Full access on Ithan Avenue at Pike Lot Parking Garage
- 4. New pedestrian bridge spanning Lancaster Avenue at Church Walk.
- 5. Elimination of eight (8) existing full access driveways along Lancaster Avenue
- Consolidation of existing parking lots with access to existing signalized intersection at Lancaster Avenue and Church Walk.

# B. Pike Lot Parking Garage Accesses (Southeast corner of Lancaster Avenue and Ithan Avenue)

- 1. Left/right in and right out access on Lancaster Avenue, east of Ithan Avenue.
- 2. Full access to Ithan Avenue with northbound and southbound left-turn lanes on Ithan Avenue.
- 3. Right out, north of the full access to Ithan Avenue

# C. Lancaster Avenue and Ithan Avenue-Signalized Intersection:

- 1. Lancaster Avenue eastbound dedicated left lane, one through lane and one shared through/right turn lane.
- 2. Lancaster Avenue westbound: extended dedicated left turn lane, one through lane and one shared through/right turn lane.
- 3. Ithan Avenue northbound: extended dedicated left turn lane; one shared through/right turn lane.
- 4. Ithan Avenue southbound: dedicated left turn lane; one shared through/right turn lane.

Mr. Bolla Villanova University – Lancaster Avenue Redevelopment CICD Conditional Use Review

5. New entering left-turn movement directly from westbound Lancaster Avenue to Pike Garage including eastbound Lancaster Avenue right in/right out (prohibit left turn movement out of Pike Garage onto Lancaster Avenue.

# IV. COMMENTS

# A. Conditional Use Plans

- §280-135F(1); Truck turning templates should be provided to ensure access is adequate for the "Mechanical/Loading Pit" located just west of Lancaster Avenue & Ithan Avenue. In addition, a mechanical gate is needed for this location during non-use to discourage illegal parking.
- 2. The conditional use plans and the TIA should provide consistent lane configurations. The TIA indicates one shared northbound lane for the Church Walk Access approach driveway while the plans indicate a left-turn lane and a shared left/right turn lane. At the intersection of Ithan Avenue and Lancaster Avenue, the TIA indicates a dedicated right turn lane is proposed for the eastbound approach Lancaster Avenue at Ithan Avenue (Synchro Report in TIA, page 296); however, the plans indicate a shared right/though lane.
- As discussed during coordination meetings with Villanova and Township staff, revise the plans to include a dedicated eastbound right turn lane on Lancaster Avenue to provide Radnor Township Police Department the ability to close the travel lane during special events without impeding non-event traffic.
- 4. Previous coordination meetings included the construction of a pedestrian activated rectangular rapid flashing beacon (RRFB) crosswalk at the unsignalized crossing on Ithan Avenue near South Campus dormitories and Aldwyn Park
- 5. The unsignalized access to Lancaster Avenue, east of Ithan Avenue, is shown on the conditional use plans as a full access (all turning movements allowed) while the Transportation Impact Assessment (TIA) describes this access as a right-in, right-out with a westbound left-in from Lancaster Avenue. The access should prohibit left turns out of the Pike Garage with channelization to restrict the left movement out of the access as indicated in the TIA.
- 6. The pedestrian bridge indicates that pedestrians will access the street level on the south side of Lancaster Avenue (adjacent to the proposed dormitories within the driveway median. This is not acceptable and the design should be revised as follows:
  - The steps should place Villanova foot traffic outside the driveway limits to discourage pedestrians from crossing the Church Walk driveway.
  - b. Dormitory students should have direct access from the dormitories to the Pedestrian Bridge without the need to move to the street level. We recommend constructing a raised direct access between the dormitories

and the pedestrian bridge with a possible key card entry for dormitory students to encourage the use of the Pedestrian Bridge over the at-grade pedestrian crossing. Students at street level are less inclined to walk up the steps to gain access to the Pedestrian Bridge if a street level crossing is readily available.

- c. Construct a fence along the north side of Lancaster Avenue to prohibit Villanova foot traffic from utilizing the traffic signal at street level to gain access to the parking lot or campus. The fence should be installed along the north site frontage the fullest extent possible to deter Villanova pedestrian traffic from utilizing the traffic signal at Church Walk to cross Lancaster Avenue.
- d. Provide an elevator, ramp or other acceptable method to allow handicap users access to the pedestrian bridge where direct access to the pedestrian bridge is not provided.
- 7. Traffic Calming: The strategy discussed in the Development Impact Study (DIS) includes moving traffic along Lancaster Avenue in an effort to reduce the cut-through traffic experienced in neighborhoods; however, the improvements along Lancaster Avenue are not likely to move traffic along any more quickly than is currently experienced. We recommend discussing traffic calming with nearby affected neighborhoods, particularly Aldwyn Lane residents and considering installing a traffic adaptive system beginning at Lancaster Avenue and Sproul Road/Spring Mill Road & Aldwyn Lane & Kenilworth Road and continuing to County Line Road for a total of six (6) intersections. Furthermore, the traffic calming and traffic adaptive system should be constructed during phase 1.
- 8. Provide a special event plan with permanent dynamic message signage prior to conditional use approval.
- Provide a mechanical gate for the Ithan Avenue accesses to both the surface lot and the Pike Garage; the gates will offer Radnor Township Police Department the ability to close or open the accesses during special events.
- Develop permanent reverse signage and internal vehicular flow for the Pike Garage to allow reverse flow for all accesses during special events.
- 11. Develop a parking lot identification system with signage and assigned parking for campus users.

# B. Development Impact Statement/Transportation Impact Assessment

 §280-135G(1)(c) indicates the Transportation Impact Assessment (TIA) must follow PennDOT SOL 470-09-4 Transportation Impact Study Guidelines, dated February 12, 2009, as amended, regarding Policies and Procedures For Transportation Impact Studies, the TIS should be revised to include the following:

- a. Executive Summary
- b. List of intersections for study area.
- c. Provides dates for when counts were conducted.
- Intersection Level of Service (LOS) Table with LOS and delay for each approach and critical movement.
- e. Provide a description of the existing roadways and intersections within the study area.
- 2. As required in PennDOT Publication 46 Traffic Engineering Handbook
  - a. Provide a turn-lane length analysis.
  - b. Provide a table indicating the 95th percentile queues for all intersections.
  - c. Provide the available and proposed storage length for all movements. The applicant should design the proposed turn-lanes lengths to be the greater of the storage length based on the turn lane analysis and the 95% queue analysis.
  - d. The capacity analysis should use PennDOT defaults as required in Exhibits 10-9 through 10-11.
- Revise the TIS to follow HCM2010 methodology in Synchro. We note other approved methodologies may be used at intersections where HCM 2010 methodology cannot be applied; however, most studied intersections can and should follow HCM2010 methodology in Synchro.
- 3. All signal timings should be optimized for No-Build conditions in accordance with PennDOT SOL 470-09-4.
- 4. Traffic volumes and Level of Service analysis should be provided for the figures for the proposed right-in/right-out driveway.
- 5. The actual AM and PM peak hour period may vary from intersection to intersection; however, the analysis should provide the traffic volumes for the peak hour of each individual intersection despite different peak hours in the study area. It appears a consistent uniform peak hour was selected for all studied intersections and the provided analysis does not adequately analyze the worst case scenario.
- 6. As discussed at previous coordination meetings, the applicant must include a discussion regarding Special Event Transportation Plan. This plan should consider signal timing revisions (including a possible split phase at Ithan and Lancaster), alternative vehicular lane use strategies, social media alerts, and the use of changeable electronic message boards. The strategies should also consider the post event release of vehicles from the Pike Garage and Church Walk surface lot.
- 7. In general, when a new development is proposed, the vehicular trips associated with the new land development are calculated based on the type of land use and the size of the proposed land use. The applicant indicates there will be no net increase in traffic for the proposed University Student Bookstore, Bistro and the

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Mr. Bolla Villanova University – Lancaster Avenue Redevelopment CICD Conditional Use Review

small convenience store. While we agree that it is very likely the University Student Bookstore will generate fewer trips than predicted by the industry standard, *ITE Trip Generation*, it is unclear how many new trips will be generated. As a comparison and for information purposes, the analysis should include a discussion regarding the total potential trip generation based on the square footage of the proposed Bookstore, Bistro, and convenience store in an effort to determine what the maximum number of vehicle trips generated for the development would be if the development if all trips associated with the improvements were considered "new" trips.

Please let me know if you require additional information or further clarification related to this subject.

Sincerely,

arrys. Kamiuski

Amy B. Kaminski, P.E., PTOE
Department Manager of Transportation
Gilmore & Associates, Inc.



190 N INDEPENDENCE MALL WEST 8TH FLOOR

PHILADELPHIA, PA 19106-1520

Phone: 215-592-1800 Fax: 215-592-9125 www.dvrpc.org

April 26, 2013

Mr. Francis Hanney PennDOT, District 6.0 7000 Geerdes Bvld King of Prussia, PA 19406

RE: US 30 Radnor Township Corridor Study.

Dear Mr. Hanney:

DVRPC was asked to provide an annual background traffic growth factor to support the evaluation of alternatives to improve congestion along US 30 in the vicinity of Villanova University during peak periods. We suggest that you use an average annual factor of 0.25 percent per year between the 2012 base year and the 2035 horizon year.

This factor is based on an examination of current and forecast traffic volumes, as well as historical trends in traffic volumes and DVRPC's Board-adopted population and employment forecasts in the study area. DVRPC's new traffic demand model (TIM2.0), which was just recently validated against base year conditions, was used to support this analysis. If you have any questions or need additional information, please contact me at (215) 238-2911 or <a href="mailto:mgates@dvrpc.org">mgates@dvrpc.org</a>.

Sincerely

Matthew T. Gates

Manager, Office of Modeling and Analysis

Cc:

Ashwin Patel, PennDOT District 6.0

David Anderson, DVRPC Jerry Coyne, DVRPC Keith Hartington, DVRPC



April 24, 2013

File No. 11-04054T

Mr. Steve Norcini, P.E. Public Works Director Radnor Township 301 Iven Avenue Wayne, PA 19087

Reference: Villanova University – Lancaster Avenue Redevelopment Traffic Study

Review of Deliverable #2:

Parking Supply & Demand, Trip Generation, Trip Distribution, Trip Redistribution

Radnor Township, Delaware County, PA

Dear Mr. Norcini:

Gilmore & Associates, Inc. has completed the review of the referenced materials (*Villanova Traffic Study Deliverable #2*), dated: February 21, 2013, prepared for Villanova University; prepared by F. Tavani and Associates, Inc. and offers the following comments for your consideration:

# BACKGROUND

The applicant, Villanova University, intends to develop/redevelop several parcels located along Lancaster Avenue, southeast and southwest of Ithan Avenue intersection, in Radnor Township, Delaware County. The project includes construction of student housing (1,159 bed apartmentstyle residence halls), retail shops (University Bookstore, bistro and small convenience store) to be located on the southwest corner of Lancaster Avenue and Ithan Avenue. In addition, the project includes construction of a Performing Arts Center (with 500 - 650 total seats in two theaters) and multilevel parking structure to be located on the southeast corner of Lancaster Avenue and Ithan Avenue. Villanova University intends to eliminate many of the existing driveway accesses located on the south side of Lancaster Avenue, west of Ithan Avenue and construct a shared surface parking facility to the rear of the existing university buildings with limited access to Lancaster Avenue at the signalized intersection of Chapel Walk. Villanova University is required to provide a traffic impact study to both Pennsylvania Department of Transportation (PennDOT) and Radnor Township for the existing, proposed, and future conditions of the roadway infrastructure. In order to expedite the review process, the applicant has agreed to provide Radnor Township and PennDOT with the traffic impact study in a segmented approach to eliminate future extensive reviews and revisions. This submission represents the second deliverable provided to both PennDOT and Radnor Township and examines the following information:

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- 1. Parking Supply and Demand
- 2. Trip Generation
- 3. Trip Distribution (new traffic)
- 4. Trip Re-Distribution (existing traffic)

All of the below comments do not require a response or resubmission of *Deliverable #2*; however, comments should be addressed in subsequent submissions and in the final Traffic Impact Study analysis:

# **COMMENTS:**

# **DELIVERABLE #1**

1. Deliverable #1: While reviewing Deliverable #2, the Synchro® files from Deliverable #1 were submitted for review and revealed the AM and PM networks include many bends in the roadway coding. Bends are typically used for lane adds or drops in a roadway network. Synchro cautions users to use curved links instead of bends where possible. We recommend eliminating the short link bends entirely for bends number 39 and 63, and revise other bends to curved links.

# PARKING DISCUSSION:

- 1. Given the length of *Deliverable* #2, many of the following discussion points are intended to provide a summary and discussion of *Deliverable* #2 to clarify the content.
- 2. Parking Demand at On-Campus Residence Halls: Deliverable #2 information concludes that Villanova on-campus residential hall students tend to remain parked during the school day; however, provided data does not analyze parking turnover information that might provide insight as to the movement of vehicles. The table provided on page 20 of Deliverable #2, indicates West and South Campus parking facilities have minimal difference in the number of available parking spaces during the 10:00 AM and 12:00 PM data collection periods but does not include the parking turnover rate.

**Comment:** We recommend a parking turnover analysis during the school day for West Campus to support the applicant's conclusion that parking turnover is minimal at the West Campus residential halls. The scope of work should be cleared with township staff prior to conducting the turnover analysis.

3. Class Day Demand v. Special Event Demand: Deliverable #2 included information regarding a campus wide parking inventory obtained on typical class days and during several Special Events (basketball games). The information provided indicates that the typical class day parking demand is more intense than the basketball events; therefore, the focus of the parking analysis should be for a typical class day.

**Comment:** Based on the provided information, we agree with this conclusion and support eliminating the "Special Event" parking analysis. However, we remind the applicant that a Special Event Traffic Plan is required in the final submission, as discussed during recent scoping meetings and as a comment provided on *Deliverable* #1.

4. **Performing Arts Center:** *Deliverable #2* includes a discussion regarding parking supply and demand for the proposed Performing Arts Center. Presently, a performance stage/theater facility currently operates on campus at Vasey Hall. The existing theatre includes 167 seats and offers twelve performances per year. The new facility will include 350 – 450 seats in the main auditorium with an additional 150 - 200 seats in the "black box" theater. Discussions in *Deliverable #2* centered on the scheduling of performances to avoid conflicts with other campus Special Events like basketball games.

**Comment:** The applicant concludes the events associated with the Performing Arts Center would occur in the evening, during non-peak traffic conditions when parking supply was readily available. We agree with this information and conclusion.

5. Institute of Transportation Engineers (ITE) Parking Generation, 4<sup>th</sup> Edition: Based on the industry standard for determining parking demand by land use type in a Suburban environment, along with the existing school population independent variable (students, faculty and staff), the Weekday Peak Period parking demand for Villanova University is calculated at 4,126 parking spaces. Data collected by Villanova indicates the peak parking demand is 4,382 parking spaces, which indicates 256 additional parking spaces are required (demand) for Villanova's campus as compared to other University Campuses of similar size and environment. The actual number of on-campus parking spaces supplied is 5,130, which exceeds the existing demand based on the school population at Villanova. Note: ITE provides parking rates based on both Urban and Suburban environments; however, the more conservative analysis used in the deliverable focused on the more intensely parked Suburban environments.

**Comment:** We agree with this methodology.

# 6. West Campus Housing Discussion:

a. The existing West Campus apartment-type residence halls have 1,244 beds and provide housing for undergraduate upperclassmen, which is similar to what is being proposed at the Lancaster Avenue Housing (LAH). A statement is included in *Deliverable # 2* indicating that it is unlikely vehicles will be moving during the peak periods on class days. The table provided on page 20 *Villanova Parking Lot Inventory* indicates minimal change in parking occupancy during the data collection periods (10AM and 12PM); however, it is unclear if the 10AM occupied/unoccupied spaces were consistent with the 12PM data or if a turnover occurred between 10AM and 12PM. Villanova has consistently maintained the construction of the LAH will reduce vehicular traffic, as off-campus students will now reside on-campus and vehicles will not be utilized during the typical class day.

**Comment:** We recommend a parking turnover analysis during the school day for West Campus to support the applicant's conclusion that parking turnover is minimal at the West Campus residential halls. The scope of work should be cleared with township staff prior to conducting the turnover analysis.

b. Details of the West Campus residential occupation indicate that only 1,097 of the total 1,244 beds are occupied by undergraduate juniors. Villanova has indicated that housing demand exceeds housing supply; however, the provided information indicates 147 beds are presently unused.

**Comment:** More detail should be provided to clarify the unoccupied beds.

c. Deliverable #2 includes an analysis that equates the forecasted parking demand for the Proposed LAH based on the parking demand at the existing West Campus residence hall.

**Comment:** The analysis follows a valid methodology for projecting the number of student parking demand for the proposed LAH; we agree with this validation methodology and subsequent analysis

i. Based on the provided information that assumes the retail portion of the LAH is restricted to only Villanova University "traffic", the projected parking demand would be 550 parking spaces to be utilized by staff, visitor's and vehicular student commuters. As a comparison, the existing Pike Surface Lot provides 577 parking spaces for staff and students.

**Comment:** We concur that the identified 550 Pike Garage parking spaces would satisfy the existing parking demand currently provided by the Pike Surface Lot.

ii. Figure 7 indicates the net increase/decrease of parking spaces by quadrant for the proposed Lancaster Expansion. The net results indicate an increase of 653 parking spaces at the proposed Pike Garage, to be located on the southeast corner of Lancaster Avenue and Ithan Avenue. Deliverable # 2 identifies 930 spaces will be utilized by vehicles that are not likely to be driven during the AM and PM peak hours and 300 of the remaining spaces will be utilized by Villanova staff, visitors and others.

**Comment:** The pedestrian traffic from the 300 parking spaces may require the signalized intersection at Lancaster Avenue and Ithan Avenue continue to operate with a protected pedestrian phase (pedestrian scramble phase) and will continue to create delays to Lancaster Avenue through motorists.

# TRIP GENERATION

1. In general, when a new development is proposed, the vehicular trips associated with the new land development are calculated based on the type of land use and the size of the proposed land use. The applicant indicates there will be no net increase in traffic for the proposed University Student Bookstore, Bistro and the small convenience store. While we agree that it is very likely the University Student Bookstore will generate fewer trips than predicted by the industry standard, ITE Trip Generation, it is unclear how many new trips will be generated.

**Comment:** As a comparison and for information purposes, the final report should include the total potential trip generation based on the square footage of the proposed Bookstore, Bistro, and convenience store in an effort to determine what the maximum number of vehicle trips generated for the development would be if the development were constructed elsewhere in the Township.

2. Deliverable #2 indicates the Trip Generation portion of the study will take a conservative approach, analyzing the roadways and intersections to include the existing Villanova commuters that will no longer commute to campus because the students will utilize the new on-campus housing. In other words, the report acknowledges that off-campus housing vacated by Villanova students moving to on-campus housing will likely be rented by new tenants who may or may not be Villanova commuters. As such, the existing trips associated with the off-campus rental units will be included in the "background" traffic volumes and no attempt will be made to eliminate the Villanova commuters from the traffic counts obtained by the applicant.

**Comment:** The conservative approach taken by the applicant dismisses taking a "credit" for traffic volumes associated with students that no longer commute to Villanova and provides a future analysis that is in all probability more intense than the existing conditions. We acknowledge and agree with this conservative approach.

# TRIP DISTRIBUTION

- 3. Deliverable #2 assumes the following operations and intersection traffic control:
  - a. <u>Western Lancaster Avenue Housing (LAH) Lot Driveway</u>: Right-in, right-out, left-in turning movements permitted (left turning movement out of the driveway will be prohibited) and stop control for motorists exiting the driveway to access Lancaster Avenue.

**COMMENT:** Previous discussions with the applicant indicated this driveway would include a right-in, right-out operation and no left turns would be permitted at the driveway intersection. If the applicant intends to include lefts into the site, a dedicated left turn lane would be necessary to reduce delay for motorists traveling westbound on Lancaster Avenue.

b. <u>Ithan Avenue & Pike Garage North Driveway</u>: This driveway would operate as an exit only; left and right turns with stop control for the driveway.

**COMMENT:** We recommend altering this exit driveway to a channelized right turn and eliminating the left turn movement at the north driveway for the following reasons:

- i. Left turning vehicles continuing south on Ithan Avenue would increase the delay to vehicles on the southbound approach of Ithan Avenue at the proposed all-way stop control at the Pike Garage South Driveway.
- ii. Vehicles queued on northbound Ithan Avenue at Lancaster Avenue may extend beyond the Pike Garage North Driveway which increases the potential for crash incidents with southbound Ithan Avenue vehicular traffic.
- iii. Eliminating left turns from the north driveway may eliminate the need for police control at the north driveway during Special Events.
- c. <u>Ithan Avenue & Lancaster Avenue Lot/Pike Garage South Driveway</u>: Full access (all turning movements provided for all approaches) and an all-way stop control.

**COMMENT:** The final TIS should include detailed information regarding queue and delay for this all-way stop control; in addition, a signal warrant analysis should be included in future studies. We recognize the intersection location is a less than desirable distance from the signal at Ithan Avenue and Lancaster Avenue; however, a warrant analysis would determine if a signal might be considered at this intersection.

d. <u>Lancaster Avenue and Pike Garage Eastern Driveway</u>: This driveway would include left and right turns into Pike Garage, and right turns out of the driveway to continue eastbound on Lancaster Avenue.

**COMMENT:** Township staff has expressed concern for pedestrians using the existing de facto mid-block pedestrian crossing on Lancaster Avenue near the Villanova Stadium. Although the proposed Pike Garage Eastern driveway access provides an efficient operation for vehicular traffic, the Township may want to consider eliminating the driveway from the proposed plan or require design measures that permanently deter pedestrians crossing Lancaster Avenue east of Ithan Avenue.

- 4. Pike Parking Garage Location Although perhaps premature as this is a land development comment, we recommend the Township consider having the applicant investigate altering the location of the Pike Garage to a more campus neutral site near the proposed pedestrian bridge. Moving the parking structure to a central campus location, adjacent to the pedestrian bridge would:
  - a. encourage much of the pedestrian traffic to utilize the pedestrian bridge, which would reduce the number of pedestrians crossing at Lancaster Avenue and Ithan Avenue. This could provide an opportunity to eliminate the pedestrian scramble; however, adequate signage would be necessary to alert pedestrians to the new pedestrian phasing.

- b. reduce the number of driveway curb cuts on Ithan Avenue and Lancaster Avenue as most vehicle traffic would take direct access to Lancaster Avenue via the traffic signal near Church Walk
- c. provide a more concentrated Police detail/effort during Villanova Special Events on Lancaster Avenue near Church Walk and could potentially reduce or eliminate the need for police detail along Ithan Avenue at Lancaster Avenue near the stadium
- d. concentrate vehicle turning movements at the signalized intersection on Lancaster Avenue/Church Walk without conflicting with street level pedestrian traffic.

As indicated previously, none of the above comments elicits a response or a resubmission of *Deliverable #2*; however, we recommend the applicant resolve identified omissions/corrections in subsequent submissions and in the final Report. We hope you find the above discussion useful; please do not hesitate to contact this office if the Township has any questions.

Sincerely,

Amy B. Kaminski, P.E., PTOE Senior Transportation Engineer

Gilmore & Associates, Inc.

arry B. Kamiuski

Cc (via email):

Kevin W. Kochanski, R.L.A, C.Z.O, Director of Community Development

Roger A. Phillips, Senior Project Manager, Gannett Fleming, Inc.



February 1, 2013

File No. 11-04054T

Mr. Steve Norcini, P.E. Public Works Director Radnor Township 301 Iven Avenue Wayne, PA 19087

Reference: Villanova University – Lancaster Avenue Redevelopment Traffic Study

Review of Deliverable #1:

Data Collection, Existing Traffic Volumes, and Initial LOS Analysis

Radnor Township, Delaware County, PA

Dear Mr. Norcini:

Gilmore & Associates, Inc. has completed the review of the referenced materials (*Villanova Traffic Study Deliverable #1*), dated: January 15, 2013, prepared for Villanova University; prepared by F. Tavani and Associates, Inc. and offers the following comments for your consideration:

# **BACKGROUND**

The applicant, Villanova University, intends to develop/redevelop several parcels located along Lancaster Avenue, southeast and southwest of Ithan Avenue, in Radnor Township, Delaware County. The project will include the construction of student housing, retail shops, a performing arts center along with a multilevel parking structure. In addition, Villanova University intends to eliminate many of the existing driveway accesses to Villanova buildings, located south of Lancaster Avenue, and construct a shared surface parking facility to the rear of the existing university buildings with a combined shared access at "Church Walk". As such, the University is required to provide a traffic impact study for the existing, proposed, and future conditions of the roadway infrastructure. In order to expedite the review process, the applicant has agreed to provide Radnor Township and Pennsylvania Department of Transportation (PennDOT) the traffic impact study in a segmented approach to eliminate future tedious revisions.

All the below comments do not require a response or a resubmission of *Deliverable #1*; however, omissions should be addressed in subsequent submissions and in the final Report:

# **SUMMARY**

# TRAFFIC COUNT LOCATIONS:

Vehicle turning movement counts were obtained at the below requested intersections:

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- 1. Lancaster Avenue and Spring Mill Road / Kenilworth Road / Aldwyn Lane
- 2. Lancaster Avenue and Church Walk
- 3. Lancaster Avenue and Ithan Avenue
- 4. Lancaster Avenue and Lowrys Lane
- 5. Lancaster Avenue and Garrett Avenue
- 6. Conestoga Road and Sproul Road
- 7. Conestoga Road and Spring Mill Road
- 8. Conestoga Road and Ithan Avenue
- 9. Conestoga Road and Lowrys Lane
- 10. Conestoga Road and Garrett Avenue
- 11. County Line Road and Spring Mill Road
- 12. County Line Road and Ithan Avenue North
- 13. County Line Road and Ithan Avenue South
- 14. County Line Road and Lowrys Lane
- 15. County Line Road and Airedale Road
- 16. County Line Road and Roberts Road
- 17. Ithan Avenue and Aldwyn Lane

In addition to the above intersections, turning movement counts were conducted at the five unsignalized driveways serving Villanova's main parking lots along Ithan Avenue and Lancaster Avenue, for a total of twenty-two (22) count locations.

# **COUNT PERIODS:**

- 1. Morning Peak Hour (AM) 7:00 AM 9:00 AM
- 2. Afternoon/Evening Peak Hour (PM) 4:00 PM 6:00 PM
- 3. Requested Special Event No. 1: Homecoming Traffic (October 27, 2012) Noon-3:00 PM
- Requested Special Event No. 2: Basketball Traffic (December 11, 2012) 6:00 PM-8:00 PM

# **COMMENTS:**

- 1. **Special Event Analyses**: Included in the *Deliverable #1* submission was a discussion regarding the comparison of the AM and PM peak hour data with the "Special Event" peak hour data. The discussion concluded there is no real value in developing a level of service analysis for the "Special Events" because the total intersection volumes during "Special Events" were less than both the AM and PM Peak hours studied. While we do agree with this conclusion and support eliminating the unnecessary level of service analysis for the two "Special Events", we remind the applicant that a Special Event Traffic Plan is required in the final submission, as discussed during recent scoping meetings.
- 2. Adjustments: Traffic Demand versus Traffic Served: It appears that no volumetric adjustments were made to any of the studied intersections concerning the observation of unmet demand. Evidently, the only approach exhibiting excessive queues from unserved vehicles occurred on the southbound approach of E. County Line Road at Airdale Road. Information provided in *Deliverable #1* indicates that an excess of five (5) vehicles were observed during both the AM and PM peak 15 minutes analyzed.

Although the explanation provided regarding the unserved demand volumes indicated the queues were directly related to the metering effect from the adjacent signalized intersection, no adjustment to the analysis data was included. An adjustment should be made to the traffic volumes, or further discussion regarding the excessive queue on the southbound approach of E. County Line Road at Airdale Road should be included in the final report. The discussion should include a more detailed explanation of causal factors rather than an general discussion.

- 3. We remind the applicant of the following information as indicated in Strike-off Letter (SOL) 470-09-04, *Policies and Procedures Transportation Impact Guidelines*, Dated: February 12, 2009
  - a. Page 8: PennDOT requires a five (5) year projection beyond the anticipated full build-out of the proposed site.
  - b. Page 13: Crash records shall be provided along with a crash pattern discussion.
  - c. Page 15: A detailed level-of-service and delay table by approach and movement for the various studied scenarios shall be provided.

# **GENERAL:**

- 4. For verification, the Synchro Reports should include the detector layouts in the report. It appears the detector option was not selected when generating the report. Please include in future submissions.
- Unsignalized intersection capacity analysis must be provided through Report selection for HCM Unsignalized Intersection Capacity Analysis. The provided Report did not identify LOS or Delay for the unsignalized intersections.
- 6. PennDOT File No. 0779 *Lancaster Avenue & Villanova Parking Lot* was not included in this submission; please include the Signal Permit Plan in subsequent submissions.

# INTERSECTION:

- 7. Pages 3 and 62 of 208: AM & PM Synchro data for Intersection 3: County Line Road & Spring Mill Road:
  - Verify posted speed limit on both approaches of Spring Mill Road; it appears the speed limit is 25 MPH.
  - b. Per the Signal Permit Plan, revise the OFFSET to "0" for both AM and PM timings
  - c. AM timing should reflect a total of 20 seconds for phase 2+6 (Spring Mill Road) and 40 seconds for phase 4+8 (County Line Road) for a total Cycle Length of 60 seconds.
  - d. PM timing should reflect a total of 22 seconds for phase 2+6 (Spring Mill Road) and 38 seconds for phase 4+8 (County Line Road) for a total Cycle Length of 60 seconds.

- 8. Page 31 and 67 of 208: AM and PM Synchro data for Intersection 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave and PennDOT System Plan I-0156: revise the control type to FREE operation.
- Pages 37 and 73 of 208: AM & PM Synchro data for Intersection 16: Conestoga Road & Sproul Road and PennDOT File No. 0886.
  - a. Verify this intersection is the MASTER intersection and Offset = 0; the permit plan does not identify the offset or typical coordination notes regarding the system limits.
  - b. Verify the Minimum Initial for Phases 4+8 and 2+6; it appears the values may have been transposed.
- 10. Pages 42 and 78 of 208: AM and PM Synchro data for Synchro Intersection 27: Lancaster Avenue & Ithan Avenue and PennDOT File 0780:
  - a. Minimum Initial for Phase 2+6 should be verified; the signal permit plan indicates a value of 34.0 seconds for the minimum initial.
- 11. Page 47 and 83 of 208: AM & PM Synchro data for Intersection 33 Williams Rd/Garrett Ave & Conestoga Rd; verify the posted speed limit and lane widths on all approaches to this intersection. It appears Williams Road/Garrett Avenue is posted at 15 MPH and Conestoga Road is posted at 25 MPH; and the lane width default value of 12 feet was utilized.
- 12. Pages 52 of 208: AM Synchro data for Intersection 51: Lowrys Lane & Lancaster Avenue and System Plan I-0156: Revise the offset to 25 as indicated on the System Plan
- 13. Page 82 of 208: PM Synchro data for Intersection 29: *Strathmore Dr/Lowrys Ln & Conestoga Rd*; verify the turning movement counts for the northbound approach; both the count data and figures indicate 15, 8, 17 for the left, through and right movements.

As indicated previously, none of the above comments require a response or a resubmission of *Deliverable #1*; however, we recommend the applicant resolve identified omissions/corrections in subsequent submissions and in the final Report. We hope you find the above discussion useful and, please do not hesitate to contact this office if the Township has any questions.

Sincerely,

Amy B. Kaminski, P.E., PTOE Senior Transportation Engineer

Gilmore & Associates, Inc.

Cc (via email):

Unyob Kamushi

Kevin W. Kochanski, R.L.A, C.Z.O, Director of Community Development John Sartor, P.E. Vice President, Gilmore & Associates, Inc. David Leh, P.E., Senior Project Manager, Gilmore & Associates, Inc. Roger A. Phillips, Senior Project Manager, Gannett Fleming, Inc.



# F. Tavani and Associates, Inc.

# **Traffic Engineering and Planning**

105 Kenilworth Street • Philadelphia • PA • 19147 • (215) 625-3821 Phone • (484) 792-9495 Fax www.FTAVANIASSOCIATES.com

Villanova University Lancaster Avenue Housing Initiative Traffic meeting with Radnor Township 14 November 2012 revised 27 November 2012

**Meeting Minutes** 

#### Attendees

Name Affiliation

Lt. Chris FlanaganRadnor TownshipBob MorroVillanova UniversitySteve HildebrandVillanova UniversitySteve NorciniRadnor TownshipAmy KaminskiRadnor Township / GilmoreMarilou SmithVillanova University

Chris Kovoloski Villanova University Frank Tavani FTA, Inc.

Officer Ray Matus Radnor Township

#### Discussion Points

#### SPECIAL EVENT COUNTS

Since our last meeting, "special event" counts took place as previously discussed and agreed. They were conducted during homecoming weekend and during the counts there was no precipitation and attendance was normal. Some discussion ensued about the possibility of doing additional counts during a home basketball game, namely one scheduled for December 5th but this issue was left unresolved (see next page, last paragraph). Also discussed was how the point of the special event exercise was mainly to determine if traffic could be better managed through improved logistics and wayfinding. Villanova is already investigating ways to do this, including assigned parking to season ticket holders (which will rotate on an annual basis to treat all holders fairly), charging a fee for the parking in the proposed structure for non-season ticket holders, and other strategies, all of which will be documented later in the traffic report. Traffic count data has not yet been plotted but will be presented to the township – along with the 'ordinary' traffic data – later in December.

#### OTHER CAMPUS CHANGES

Bob M. talked about changes to parking permits and locations are being considered not only for special events but also for faculty and staff during the regular school year, including the possibility of changing the roadways leading to the SAC Parking Garage from one-way to two-way.

#### CHURCH WALK SIGNAL

Steve N. asked about the signal at Church Walk and how signal heads visibility would be affected by the proposed pedestrian bridge. Frank explained that the bridge will be essentially centered over the existing driveway, which is currently aligned with the Church Walk, so there will be no visibility issues as the signal heads will simply be mounted on mast arms on either side of the structure.

Some lengthy discussion took place regarding a WB left-turn lane and why it may not be needed at Church Walk, but that this will be investigated during the TIS production. There was discussion that in the EB direction an exclusive right turn lane at Church Walk is not needed due to proposed right-in/right-out driveway which will be located east of Church Walk, about midway between Church Walk and Route 320. Improved

Villanova Meeting Minutes 14 November 2012 Page 2 of 2

access management will be provided through the elimination of 6 driveways and the reallocation of parking which will have access to the Church Walk signal (for left turns in and out).

Some discussion ensured about pedestrian crossings at grade at this location and how to prevent that. Some peds may attempt to cross, especially others in the community who Villanova can't control (joggers, SEPTA bus riders, etc.) This will be investigated further but initial thoughts include still providing sidewalks along Route 30 at Church Walk, installing post-mounted signs that prohibit ped crossings, elimination of painted crosswalks in Route 30, possibly fencing and other controls, moving SEPTA bus stops, etc.

#### **ALDWYN LANE**

Amy K. asked about any discussion which took place with the neighbors regarding Aldwyn Lane changes. At the meeting there were many neighbors not in favor of a cul-de-sac anywhere along Aldwyn Lane. Wooded Lane residents were also concerned. Frank T. mentioned a possibility may be to make Aldwyn Lane one-way for a short segment, such as between Route 320 and Wooded Lane, and further that such one-way orientation should be away from Route 30, meaning the signal heads for Aldwyn Lane could be eliminated, thereby possibly improving levels of service.

#### ITHAN AVENUE

Officer Matus mentioned an EB exclusive right-turn lane at Ithan might be useful as well adding a second NB left-turn lane. He also mentioned how the SB side sidewalk on Ithan is seldom used and does not extend under the Route 100 overpass. The upcoming TIS will investigate all these possibilities, including possibly extending the existing WB exclusive left-turn lane (at Ithan). Officer Matus expressed concern about directing / controlling ped flow on the east side of Ithan (i.e., from the stadium to the existing surface lot) and how controlling that should be considered in upcoming design work for the PAC and the parking structure.

Steve N. requested Villanova perform some investigations of what would need to be done to make the Ithan Avenue underpass traversable by trash trucks and emergency vehicles. Bob M. agreed to have Nave Newell investigate this and report back later. Villanova is not committing to this improvement but will provide some preliminary engineering investigations to the township.

Frank T. and others talked about traffic control devices along Ithan south of Route 30 and how the intersection of the parking structure driveway and the apartment surface parking lot area (i.e., the driveways along Ithan Avenue nearest to the Route 100 overpass) may be all-way stop-controlled. A gate may also be installed on the driveway serving the apartment surface parking lot area. Said gate would normally be open and would be provided just in the event that cut through traffic from the structure to Route 30 (at Church Walk) needs to be regulated or discouraged during certain events.

Some discussion took place regarding Dougherty Drive, which is the small road just north of Route 30 on the west side of Ithan Avenue. This unsignalized intersection permits all turning movements since some truck deliveries have to be made from Route 30 (they can't fit under the Regional Rail bridge to the north). Part of Villanova's master plan calls for a new gate and turn around area along Dougherty Drive and this will help regulate traffic flow there. This improvement is unrelated to the apartments and is moving forward presently and should be installed early next year.

If any part of these minutes is believed to be inaccurate or if there are significant omissions, please contact FTA by 30 November 2012 after which time the contents of these minutes will be binding. *Note that subsequent to the meeting, Villanova authorized FTA to move forward with additional data collection on a date TBD.* 



## F. Tavani and Associates, Inc.

# **Traffic Engineering and Planning**

105 Kenilworth Street • Philadelphia • PA • 19147 • (215) 625-3821 Phone • (484) 792-9495 Fax www.FTAVANIASSOCIATES.com

Villanova University Lancaster Avenue Housing Initiative
Transportation Impact Investigations joint meeting with Radnor Township & PennDOT
Meeting Minutes
revised 8 November 2012

#### Attendees

Name Affiliation Fran Hanney PennDOT

Steve Hildebrand Villanova University

Amy Kaminski Radnor Township / Gilmore

Susan LaPenta PennDOT

Officer Ray Matus Radnor Township
Bob Morro Villanova University
Steve Norcini Radnor Township
Marilou Smith Villanova University

Frank Tavani FTA, Inc.

#### Discussion Points

#### **BACKGROUND**

Bob Morro started off by bringing PennDOT up to speed on the project and explained how it includes new dormitory buildings with up to approximately 1,150 beds for juniors and seniors and a new parking structure – both located on the sites of the current parking lots flanking Ithan Avenue near Lancaster Avenue. The new dorms are aimed at bringing more of the existing undergraduate population on campus, not growing the school population. Even with the new beds, some undergrads will continue to live off campus, but the new dorms will significantly reduce this number and, in turn, significantly reduce student commuting trips.

Bob explained how proposed new parking will be found in not only the new parking structure but also in a new surface lot (west of the proposed dormitory buildings), and in new levels to be built atop existing parking structures on the main campus. As the project unfolds and through its parking permit program, the University plans to implement revised parking policies which will dictate where faculty, staff, resident students, commuter students, and visitors will park.

Bob next went over the proposed new ped bridge, the rationale behind the location of same (including the SEPTA Rt. 100 station platforms, grades, and the locations of classrooms).

Finally, it should be noted that while a new performing arts center (PAC) is shown on the plans as a placeholder, it will not be part of upcoming plan submittals. The plans will focus on the new resident halls, the new parking structure and other campus parking changes, and a new pedestrian bridge.

#### DATA COLLECTION

Frank T. then began discussion of the meeting agenda and first commented that Villanova will include the 14 intersections mentioned in the June 2012 scope of work email as requested by the twp. Given the large

Villanova Meeting Minutes 15 October 2012, revised 8 November 2012 Page 2 of 4

scope, Frank indicated that data collection may be spread over 2 or 3 days, to accommodate limitations of personnel and count boards. FTA may also elect not to count through volumes at certain locations to minimize personnel requirements and avoid redundancy. Collected data will reflect traffic demand as well as traffic served. Locations which are immediately adjacent to each other and do not feature significant or meaningful driveways in between are likely candidates. Gilmore (Amy K.) indicated acceptance of this approach, as long as it was properly documented and defendable.

#### PED SCRAMBLE PHASE

Some discussion then took place regarding the 26-second all-red ped-scramble phase at Ithan. The township indicated it thinks most residents want the ped phase duration reduced, to improve traffic flow. With the proposed pedestrian bridge, it may be possible to pursue reducing the duration of the ped phase. One possible remedy includes agreement to a post-development monitoring condition wherein ped activity (and traffic counts) will be monitored following the opening of the new pedestrian bridge, with subsequent retiming and tweaking of the signal controller performed at a later date. Villanova will be required to post escrow for the post-development analysis and possible retiming efforts (permit plan modifications and controller retiming).

#### **SPECIAL EVENTS**

Much discussion took place regarding the township-requested special event traffic counts (4 intersections). It was agreed that Homecoming (Saturday, 10/27/12) would be the targeted special event and in the event of moderate to heavy rain an alternate (a home basketball game) may be chosen instead. The counts will be conducted from 12 noon to 3:00 PM. The township has concerns regarding not only traffic but thinks an analysis and/or discussion of the logistics – including buying parking tickets in advance (\$10 vs \$40, to facilitate planning), better wayfinding, etc. – should be included in the traffic study.

#### TRIP GENERATION

Much discussion also took place regarding the trip generation approach for the project. Frank mentioned that the project will not result in an increase in peak hour traffic and in fact will capture/reduce the traffic impact of 1,150 currently-commuting students since those students will now live on campus. other proposed features/uses proposed within the new buildings – such as a bookstore, a bistro, etc. – will be targeted at serving the campus population of student, faculty, staff, and visitors and will not result in any meaningful external trip generation. In addition, any space which is vacated on the main campus (i.e., relocating the bookstore) will be 'backfilled' with offices of current faculty/staff who are currently working in basements or other undesirable locations on campus which, again, will not result in new external trip generation. Frank noted that the proposed trip generation methodology/approach will be to 'grow' traffic in the study area using trip generation rates of the existing parking lots (i.e., a trip rate per 'parking space') and applying that to the net increase in proposed new parking which will result from the project. In addition, Frank mentioned that the commuting student traffic which is currently found in the existing off-site traffic counts today cannot be removed or extracted from the road network, so it will be left. Thus, the combination of leaving those trips in the road network AND adding new traffic based on current parking trip generation activity will result in a very conservative trip generation methodology in the traffic study. This was discussed at length and consensus was reached that the approach was appropriate but should still be adequately documented in the study.

#### DRIVEWAYS, ACCESS, & CIRCULATION

Much discussion took place regarding a number of circulation and access issues, including neighbors' request to cul-de-sac Aldwyn Lane; the possibility of a reverse frontage road parallel to Lancaster Avenue behind existing Villanova-owned properties between the site and Route 320, conversion of Aldwyn Lane to

Villanova Meeting Minutes 15 October 2012, revised 8 November 2012 Page 3 of 4

one-way away from the intersection of Route 320 and Route 30; a long-term study of the intersection to include possible conversion to a roundabout; conversion of existing unsignalized driveways to right-in/right-out; investigation into converting Kenilworth Road to one-way away from the intersection of Route 320 and Route 30; discussion regarding an investigation into providing additional clearance for sanitation trucks, school busses and emergency services at the rail overpass on Ithan Avenue (currently 10 ft clearance); and elimination/consolidation of certain driveways. In the end, some decisions/agreements include: that a roundabout may or may not be feasible but analysis of same will not be part of Villanova's project; that consolidation of driveways will be investigated further, that a reverse frontage road is likely not feasible due to grade challenges and SEPTA equipment, and that certain other improvements such as conversion of Aldwyn to one-way may be feasible. These issues will be investigated further by Villanova and further discussion of this topic (including a decision about which scenario will be included in the upcoming TIS' Future Build section) will be part of the staged submittals as suggested by Amy K. as mentioned below.

#### 'CHURCH WALK' INTERSECTION

The proposed ped bridge and its relationship to the existing signalized T intersection at what is called the "Church Walk" was discussed at length. Discussion points included: the possible shifting of the driveway; permanent or temporary closure(s) of the driveway(s) serving the main lot on Ithan Avenue (and the effect of driving – or reducing – traffic at Church Walk; signal warrants; signal head visibility; providing two outbound left-turn lanes; stacking length; auxiliary lane analysis (WB left and EB right) along Route 30; and ped compliance. Regarding the last issue, the township and PennDOT expressed a desire to see implementation of whatever measures may be useful to compel peds to use the proposed ped bridge (and not cross Lancaster Avenue at grade). No definitive agreement on any of the items was reached other than a general agreement that all of the issues raised (warrants, circulation, etc.) will be carefully considered as the traffic study unfolds. More definitive steps will likely evolve as part of the staged submittal process referenced earlier and explained below.

#### ACCIDENT STUDY

Some discussion took place regarding the requested traffic investigations. Amy indicated the township was not interested in anything more than a standard investigation of crash data of the last 5 years and that such investigation should include reportable and non-reportable accidents. No accident diagrams need be drawn.

#### PARKING STUDY

Township will accept, review, and consider recent parking data collection efforts already conducted by Villanova's Public Safety officers. Frank will incorporate and explain the approach taken by the officers and include the many detailed spreadsheets in the upcoming traffic study.

#### OTHER DEVELOPMENTS

No other developments in the Township are close enough to - or large enough - to mandate consideration /inclusion in the study. The township accepts that Villanova's trip generation is all that needs to be included.

Finally, note that some other agreements were already reached regarding the traffic study in previous emails with the township. Specifically, in an email dated 10 October 2012, the township upheld its request for 14-intersection study area; agreed to a 4-interection special event study area; and agreed that it will accept PennDOT's methodology for level of service degradations as noted in SOL 470-09-4 in its review of the upcoming traffic study. Also, Amy K. previously suggested that Villanova consider submitting the traffic study in parts (i.e., existing conditions first, no build second, trip generation/distribution third, etc.) to

Villanova Meeting Minutes 15 October 2012, revised 8 November 2012 Page 4 of 4

facilitate a smoother review. Steve N. stated that Frank should continue to coordinate traffic efforts with Amy and used words to the effect that "if Amy and Gilmore are satisfied with how you suggest or approach a traffic issue, then the township is satisfied".

If any part of these minutes is believed to be inaccurate or if there are significant omissions, please contact FTA by 12 November 2012 after which time the contents of these minutes will be binding. Thank you.

# VAHOO! SMALL BUSINESS

#### **RE: Villanova Lancaster Avenue Expansion**

Wednesday, October 10, 2012 4:16 PM

From: "Amy Kaminski" <akaminski@gilmore-assoc.com>

To: "Frank Tavani" < frank@ftavaniassociates.com>

#### Good afternoon Frank –

The Township has considered your request regarding a scope reduction and offers the following responses and direction:

As a reminder, Section 255-20.B(5)(d) indicates, "The transportation impact study shall contain, <u>but not be limited to</u>, the following information" (emphasis added). The term "but not be limited to" indicates that additional information may be required in addition to the scope identified in this section of the SALDO.

#### **Discussion 1:** Count Locations

Response: The number of intersections studied will remain including the previously identified 14 intersections. In addition to requiring a detailed parking analysis, the reportable and non-reportable crash records are to be included in the study for the identified intersections along with an analysis of the information.

**Discussion 2:** <u>Trip Generation</u>: The SALDO Trip Generation Rates table (255 Attachment 4) does not include all of the proposed land uses, specifically, the Performing Arts Center, Parking Garage, Student Book Store, Fitness Center, Convenience Store, Bistro, and dormitory rooms. Furthermore, many of the identified sources for 255 Attachment 4 are outdated.

As indicated in SALDO 255.20.B(5)(d)[4] "Where the appropriate data is not available, the developer shall provide the rates and document the appropriate source. If the developer requests to use significantly different rates than those given, he shall submit the rates and the specific justification to the Planning Commission prior to submission of the transportation impact study for its approval or denial." Given the proposed mixed uses for the site, it will be up to the applicant to provide a discussion regarding no increase in traffic. The traffic impact study should also include a discussion regarding the anticipated redistribution of any traffic movements in and around the site and campus. At a minimum, moving the Book Store from the current location, north of Lancaster Avenue, to the proposed location south of Lancaster Avenue may alter pedestrian and vehicular traffic patterns.

In addition, the TIS should include discussions regarding the planned reuse of the vacated north campus space with information regarding the square footage and the anticipated type of use. Villanova offers public use of meeting facilities and the planned reuse of the

proposed vacated spaces will need discussed more fully in the required traffic study.

**Discussion 3:** LOS 'C' Requirement: The Township agrees with utilizing the methodology outlined in PennDOT Strike Off Letter (SOL 470-09-4) regarding mitigation requirements for a 10 second degradation to delay.

**Discussion 4:** Special Events Scope: The Township agrees with reducing the scope of study for the Special Events as follows:

- Ithan Ave & Conestoga Road
- 2. Conestoga Road, Sproul Road, & Spring Mill Road
- 3. Sproul Road/Spring Mill Road & Lancaster Avenue
- 4. Ithan Ave & Lancaster Avenue

Please let me know if you require clarification of the information--

Sincerely,

### Amy

Amy B. Kaminski, P.E., PTOE | Gilmore & Associates

Senior Transportation Engineer

65 E. Butler Avenue, Suite 100 | New Britain, PA 18901

Direct: 267-337-6979 | Company: 215 - 345 - 4330 Ext. 346 | Fax: 215 - 345 - 8606

Email: akaminski@gilmore-assoc.com

From: Frank Tavani [mailto:frank@ftavaniassociates.com]

Sent: Wednesday, September 26, 2012 4:16 PM

To: Amy Kaminski

Cc: SteveNorcini; Kkochanski@radnor.org; Dave Leh; Michael Shinton; Marilou Smith; Steven Hildebrand;

John Sartor

Subject: Re: Villanova Lancaster Avenue Expansion

Amy, I know that you have been asked to look for a date to meet with Villanova to discuss traffic. In anticipation of that meeting, I have revisited your June email (below) as well as the SALDO and have a few comments and questions:

- 1) <u>Count Locations</u>. The SALDO language (255.20.B.5.d.3) states that "all major intersections" in a study area should be counted. Several of the 14 intersections in the June email are not major intersections. I believe the ordinance requires the following to be studied:
  - 1. Congestoga Road, Sproul Road, & Spring Mill Road
  - 2. Ithan Ave & Lancaster Avenue
  - 3. Sproul Road/Spring Mill Road & Lancaster Avenue
  - 4. Spring Mill Road & County Line Road
  - 5. Ithan Ave & County Line
  - 6. Ithan Ave and Aldwyn Lane

<sup>\*</sup> Please consider the environment before printing.

- 2) Trip Generation. The SALDO language (255.20.B.5.d.4) requires use of trip generation tables which are provided at the end of chapter 255. Those trip generation rates support a trip generation estimate of 0 peak hour trips for the project (since no increase in student body or instructional space is proposed). As you know, I believe the project will result in a reduction in peak hour traffic in the study area. Nonetheless, we have in the past and still currently suggest using non-zero trip generation based on the net increase in parking spaces which are part of the project, specifically using rates which are derived from the existing parking spaces today. We also propose "leaving" the existing traffic in the road network which is due to the currently-commuting students. I believe the combination of these two types of trips results in a very conservative estimate of site impact.
- 3) LOS 'C' Requirement. The SALDO language (255.20.B.5.d.6.a) requires a list of recommended improvements to achieve LOS C operation at the study area intersections. The ordinance does not clarify if this is by overall LOS, or by turning movement, or what the township will do to address underlying (existing) conditions which do not meet the ordinance. Realizing several intersections will have existing conditions which do not meet the ordinance, I suggest using PennDOT's methodology for LOS impact assessment.

There are other matters I'd like to discuss with you as well, such as how the ordinance does not appear to require accident analyses or parking studies, but these 3 issues are more urgent and need to be resolved before data collection can begin. Can you provide responses on these topics in the next week or two?

Frank

Frank Tavani, P.E., PTOE Principal

F. Tavani and Associates, Inc. 105 Kenilworth Street Philadelphia, PA 19147

(215) 625-3821 phone (484) 792-9495 fax (267) 250-4858 cell

www.FTAVANIASSOCIATES.com

--- On Thu, 6/14/12, Amy Kaminski <a kaminski@gilmore-assoc.com> wrote:

From: Amy Kaminski <a href="mailto:ki@gilmore-assoc.com">akaminski@gilmore-assoc.com</a>

Subject: Villanova Lancaster Avenue Expansion To: "Frank Tavani" < frank@ftavaniassociates.com>

Cc: "Norcini, Steve" <snorcini@radnor.org>, Kkochanski@radnor.org, " Dave Leh " <DLEH@gilmore-assoc.com>, "Michael Shinton" <mshinton@gilmore-assoc.com>

Date: Thursday, June 14, 2012, 8:26 AM

#### Good morning Frank—

Radnor Township has indicated the Villanova transportation impact study should include the

#### following information:

The Transportation Impact Study shall follow SALDO §255.20.B.5 with the following scope extent of study area, identified intersections and studied time periods:

#### Extent of Study Area:

- 1. North Spring Mill Road from Conestoga to County Line Road
- 2. East County Line Road from N. Spring Mill Road to Roberts Road
- 3. South Roberts Road from County Line Road to S. Ithan Ave
- 4. West S. Ithan Ave from Roberts Road to Mill Road; Mill Road from S. Ithan Ave to Conestoga Road; Conestoga Road from Mill Road to Sproul Road

#### 2. Intersections:

- 1. Lowrey's Lane & Conestoga Road
- 2. Garrett Ave & Conestoga Road
- 3. Congestoga Road, Sproul Road, & Spring Mill Road
- 4. Ithan Ave & Conestoga Road
- 5. Lowrys Lane & Lancaster Avenue
- 6. Ithan Ave & Lancaster Avenue
- 7. Garrett Ave & Lancaster Avenue
- 8. Roberts Road & Lancaster Avenue
- 9. Sproul Road/Spring Mill Road & Lancaster Avenue
- 10. Spring Mill Road & County Line Road
- 11. Ithan Ave & County Line
- 12. Lowrey's Lane & County Line
- 13. Ithan Ave and Aldwyn Lane
- 14. County Line Road and Airdale Road

#### 3. Study Periods:

- 1. Weekday AM Peak Hour
- 2. Weekday PM Peak Hour
- 3. Major Campus event: Basketball, Graduation, Football game or other acceptable event approved by Township.

#### Crash Records:

- 1. Reportable and non-reportable crash records; 5 year history (from both PennDOT and Radnor Township Police Department
- 2. Locations:

i. All approaches at Lancaster Avenue and Ithan

Avenue intersection:

ii. Lancaster Avenue from Spring Mill Road to Black

Friar Road

- 5. Pedestrian Traffic
- 6. Parking Utilization:

- 1. Parking turnover
- 2. Parking duration
- 3. Parking occupancy

Please note Steve's comment below regarding seasonal adjustments and his suggestion that counts should be obtained in September, after school is in full session. As discussed in our meeting on April 24, 2012, the Township is interested in obtaining as much information as possible and we will assist the board in making an informed decision through our professional review services. Although the identified 14 studied intersections may appear excessive, it is important to the township that an extensive transportation analysis is inclusive of all intersections within close proximity to Villanova. Thanks so much---

Amy

Amy B. Kaminski, P.E., PTOE | Gilmore & Associates

Senior Transportation Engineer

65 E. Butler Avenue , Suite 100 | New Britain , PA 18901

Direct: 267-337-6979 | Company: 215 - 345 - 4330 Ext. 346 | Fax: 215 - 345 - 8606

Email: <u>akaminski@gilmore-assoc.com</u>

From: Norcini, Steve [mailto:snorcini@radnor.org]

Sent: Wednesday, April 25, 2012 6:50 AM

To: 'Frank Tavani'

Cc: 'Kevin Kochanski'; Amy Kaminski; Dave Leh; 'Marilou Smith'; 'Steven Hildebrand'; Zienkowski Robert

Subject: RE: Villanova traffic information

#### Good morning Frank,

The Township has received your transmission and will provide direction regarding the study area. As far as the data collection is concerned, you may have to wait until September to obtain meaningful counts. Seasonal adjustment factors would not be appropriate in this case.

Thank you

Stephen F. Norcini P.E. Director of Public Works Radnor Township 610.688.5600 x156 snorcini@radnor.org

From: Frank Tavani [mailto:frank@ftavaniassociates.com]

**Sent:** Tuesday, April 24, 2012 5:49 PM

To: Steve Norcini

Cc: Kevin Kochanski; Amy Kaminski; David Leh; Marilou Smith; Steven Hildebrand

Subject: villanova traffic information

<sup>\*</sup> Please consider the environment before printing.

Steve,

This email is addressed to you as requested but is merely the transmission of some additional traffic information intended for Amy. One PDF file is attached. It is 30 pages. It contains the figures I handed out earlier today followed by raw count data.

As we mentioned toward the close of the meeting, we would like some direction from the township regarding our trip generation methodology as well as our study area. I should re-iterate that -- as Marilou mentioned -- the school year is in its final week this week and next weeks are final examinations, so there is very limited opportunity, if any, for additional data collection.

Finally -- and I'm embarassed to only be mentioning this now -- but one of the things that occured to me AFTER our meeting today impacts what Mr. Kochanski was discussing regarding the 1159 beds which are going to be vacated off campus if and when LAH is built. Specifically we discussed how those bedrooms/houses may be filled with other tenants who may (or may not) drive in our study area and how it would be helpful if the township could say (to residents or anyone else) that we were asked to include the impacts of *that* traffic in our study. I just realized that that in fact is exactly what we did. Specifically, we did NOT reduce the traffic along Route 30, Ithan, Aldwyn, etc. at all to reflect the 1159 students now being "on site", we **simply added more** traffic based on the parking space trip generation methodology which I explained.

We will wait to hear back from you and of course if you have any questions call or email anytime. Thx.

-Frank

Frank Tavani, P.E., PTOE Principal

F. Tavani and Associates, Inc. 105 Kenilworth Street Philadelphia, PA 19147

(215) 625-3821 phone (484) 792-9495 fax (267) 250-4858 cell

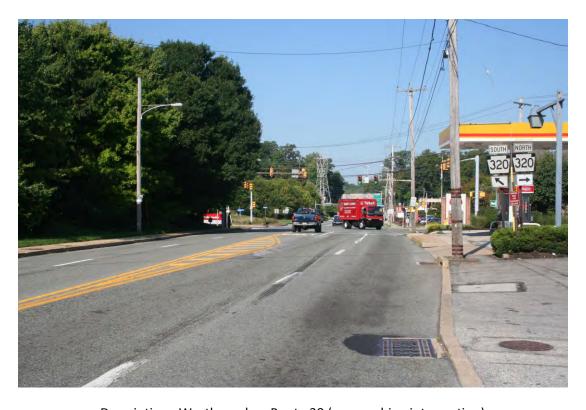
www.FTAVANIASSOCIATES.com

# **APPENDIX B**

Study Area Photographs



Description: Eastbound on Route 30 (approaching intersection)



Description: Westbound on Route 30 (approaching intersection)



Description: Northbound on Spring Mill Road (approaching intersection)



Description: Southbound on Spring Mill Road (approaching intersection)



Description: Northbound on Aldwyn Lane (approaching intersection)



Description: Southbound on Kenilworth Road (approaching intersection)



Description: Eastbound on Route 30 (approaching intersection)



Description: Westbound on Route 30 (approaching intersection)



Description: Northbound on Church Walk (approaching intersection)



Description: Eastbound on Route 30 (approaching intersection)



Description: Westbound on Route 30 (approaching intersection)



Description: Northbound on Ithan Avenue (approaching intersection)



Description: Southbound on Ithan Avenue (approaching intersection)



Description: Northbound on Ithan Avenue (approaching Route 30)



Description: Southbound on Ithan Avenue (looking from Route 30)



Description: Eastbound on Route 30 (approaching intersection)



Description: Westbound on Route 30 (approaching intersection)



Description: Northbound on Lowrys Lane (approaching intersection)



Description: Southbound on Lowrys Lane (approaching intersection)



Description: Eastbound on Route 30 (approaching intersection)



Description: Westbound on Route 30 (approaching intersection)



Description: Northbound on Garrett Avenue (approaching intersection)



Description: Eastbound on Conestoga Road (approaching intersection)



Description: Westbound on Conestoga Road (approaching intersection)



Description: Northbound on Sproul Road (approaching intersection)



Description: Southbound on Sproul Road (approaching intersection)



Description: Eastbound on Conestoga Road (approaching intersection)



Description: Westbound on Conestoga Road (approaching intersection)



Description: Northbound on Spring Mill Road (approaching intersection)



Description: Description: Eastbound on Conestoga Road (approaching intersection)



Description: Westbound on Conestoga Road (approaching intersection)



Description: Northbound on Ithan Avenue (approaching intersection)



Description: Southbound on Ithan Avenue (approaching intersection)



Description: Eastbound on Conestoga Road (approaching intersection)



Description: Westbound on Conestoga Road (approaching intersection)



Description: Northbound on Strathmore Drive (approaching intersection)



Description: Southbound on Lowrys Lane (approaching intersection)



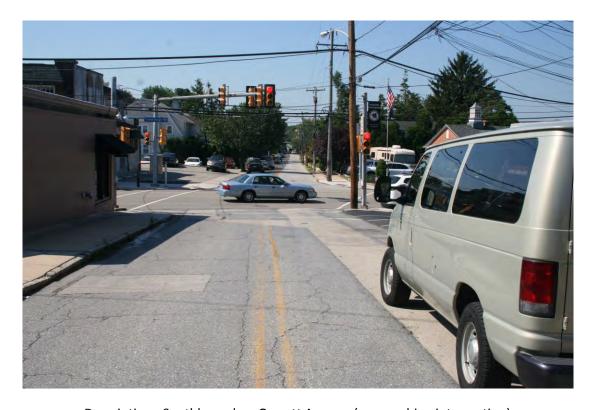
Description: Eastbound on Conestoga Road (approaching intersection)



Description: Westbound on Conestoga Road (approaching intersection)



Description: Northbound on Williams Road (approaching intersection)



Description: Southbound on Garrett Avenue (approaching intersection)



Description: Eastbound on County Line Road (approaching intersection)



Description: Westbound on County Line Road (approaching intersection)



Description: Northbound on Spring Mill Road (approaching intersection)



Description: Southbound on Spring Mill Road (approaching intersection)



Description: Eastbound on County Line Road (approaching intersection)



Description: Northbound on Ithan Avenue North (approaching intersection)



Description: Southbound on Ithan Avenue North (approaching intersection)



Description: Westbound on County Line Road (approaching intersection)



Description: Northbound on Ithan Avenue South (approaching intersection)



Description: Southbound on Ithan Avenue South (approaching intersection)



Description: Eastbound on County Line Road (approaching intersection)



Description: Westbound on County Line Road (approaching intersection)



Description: Northbound on Lowrys Lane (approaching intersection)



Description: Eastbound on County Line Road (approaching intersection)



Description: Northbound on Airedale Road (approaching intersection)



Description: Southbound on Airedale Road (approaching intersection)



Description: Eastbound on County Line Road (approaching intersection)



Description: Westbound on County Line Road (approaching intersection)



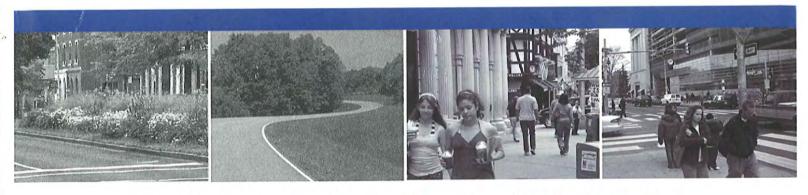
Description: Northbound on Roberts Road (approaching intersection)



Description: Southbound on Roberts Road (approaching intersection)

# **APPENDIX C**

Smart Transportation Guidelines



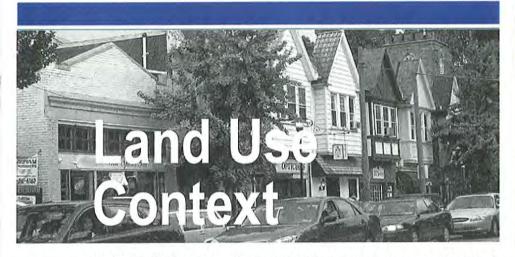
# SMART TRANSPORTATION GUIDEBOOK

Planning and Designing Highways and Streets that Support Sustainable and Livable Communities





**MARCH 2008** 



Land use context and roadway type comprise the organizing framework for the selection of appropriate roadway design values. A context area is a land area comprising a unique combination of different land uses, architectural types, urban form, building density, roadways, and topography and other natural features. The existing and planned land use context should be defined on every project. The roadway design should be compatible with the existing land use context, or a planned land use context that reflects the community vision.

#### 4.1 WHY CONTEXT MATTERS

Understanding the land use context provides guidance on who will need to use the road and how. This understanding influences the geometric design of the roadway and the types of amenities required in the rightof-way.

For this document, the design elements are organized into three general categories:

Desired Operating Speed: This is the speed at which it is intended that vehicles travel. The roadway context should play a large role in determining the desired operating speed. For example, pedestrian travel and the presence of civic uses and retail close to the street all suggest the need to use the lower range of the desired operating speed.

Roadway: The design team should select roadway elements and geometry with a clear understanding of surrounding land uses. For example, in urban areas the design team should always seek to provide parking lanes. Travel lanes are often narrower than in suburban areas, particularly if this enables the installation of bike lanes.

Roadside: The roadside primarily serves the pedestrian and the transit rider and provides a transition between public and private space. The design of the roadside elements should support the land use context. Civic uses such as schools and parks, and high density neighborhoods which generate higher pedestrian activity may require wider sidewalks.

#### A Tale of Two Contexts

Route 30, classified as a principal arterial, has a cross-section of four 10 ft. travel lanes in both Ardmore, PA, and Wayne, PA, as shown below. The speed limit on both roads is 25 mph. In a workshop for this guidebook, DVRPC stakeholders agreed that the Wayne town center is friendlier for pedestrians, identifying Route 30 in Wayne as "an example of an arterial roadway that has evolved to a village feeling." The difference? In Wayne, the presence of on-street parking and the traditional town center context (with zero building setbacks) results in more watchful motorists and creates a defined space for pedestrians. With sporadic on-street parking and with the greater prominence of parking lots, Ardmore is an example of a suburban center.





#### 4.2 DEFINING LAND USE CONTEXT

Seven context areas are described in the following section, from the least to the most developed: Rural, Suburban Neighborhood, Suburban Corridor, Suburban Center, Town/Village Neighborhood, Town Center, and Urban Core.

The context areas are illustrated in Figure 4.2. This drawing does not arrange the areas in order of intensity, but is an illustrative example of how these areas might fall across the land.

"Quantifiable characteristics," summarized in figure 4.3, are provided for each context. They are similar to what community planners refer to as "bulk standards," normally used to prescribe the desired appearance of land uses within a zoning district. Each land use context should be identified based upon this information.

In practice, land uses do not always fit neatly into the defined context areas, or the boundaries between context areas may be fluid. The planner or designer should use their best judgment in selecting the context that most closely matches the existing and proposed land uses.

It is recommended that contexts be broadly defined, avoiding segments less than 600 ft. in length. This is largely an issue of practicality. There is a limit on the number of different roadway cross-sections that can be implemented to respond to land use context within a small area.

#### 1. Rural



This context area consists of a few houses and structures dotting a farm or forest landscape. The areas are predominantly natural wetlands, woodlands, meadow or cultivated

land. Small markets, gas stations, diners, farm supplies, convenience grocers, etc. are often seen at the intersections of arterial or collector roads. Areas with a few commercial or civic uses and a number of homes close to the roadway can be placed into the sub-context type of "rural hamlet." Once the population of the settled area exceeds 250, it should be classified into the town/village context.

Examples include areas of Burlington and Gloucester Counties to the east, and Tioga and Jefferson Counties to the west.

#### 2. Suburban Neighborhood



Predominantly lowdensity residential communities, many built since WWII. House lots typically arranged along a curvilinear internal system of

streets with limited connections to regional road network or surrounding streets. Lot sizes are usually two acres to one-quarter acre, but in older suburbs, it is common to find one-eighth acre lots. Garden apartments are also included in this type. Neighborhoods can include community facilities such as schools, churches, recreational facilities, and some stores and offices. When suburban houses line an arterial roadway but have their primary access to frontage roads or rear access roads, it is possible to classify this area as a "suburban corridor."

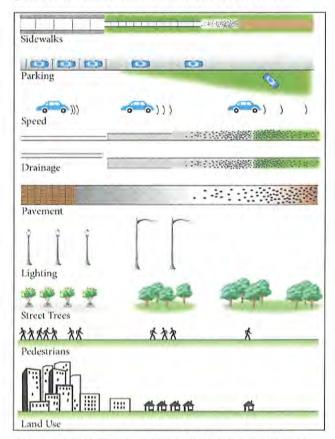


Figure 4.1 From Urban to Rural. As intensity and mix of uses along a roadway increase, there is a greater need to accommodate and prioritize other modes of travel, including bicyclists, pedestrians, and transit riders.



Figure 4.2 The Seven Land Use Contexts



This area is characterized by big box stores, commercial strip centers, restaurants, auto dealerships, office parks, and gas stations. These uses are sometimes interspersed with natural areas and occasional clusters of homes. Buildings are usually set back from the roadway behind surface parking. Office buildings are usually set back a bit more than adjacent retail frontage to establish garden separation

These areas are found along many arterial roadways, such as Route 38 in Cherry Hill and Route 611 north of Philadelphia.



#### 4. Suburban Center

Often a mixed-use, cohesive collection of land uses that may include residential, office, retail, and restaurant uses where commercial uses serve surrounding neighborhoods. These areas are typically designed to be accessible by car, and may include large parking areas and garages.

They are less accommodating to pedestrians than town centers, and opportunities to cross the primary roadway can be limited. On-street parking may or may not be provided.



Examples include Lancaster Avenue in Ardmore, PA, and Montgomery Avenue in Bryn Mawr, PA.

#### 5. Town/Village Neighborhood

Predominantly residential neighborhoods, sometimes mixed with retail, restaurants and offices. In urban places, residential buildings tend to be close to the street. Rowhouses fronting the sidewalk, and houses back 30 feet behind a front lawn are both common types. Small retail establisments sometimes occupy principal corners. Block sizes are regular and often small in comparison to suburban neighborhood blocks. Even where streets are narrow, on-street parking is common and typically well used. The large majority of neighborhoods have

sidewalks.



Existing examples include Fairview in Camden and Society Hill in Philadelphia.

Figure 4.3	RURAL	SUBURBAN			URBAN				
Defining Contexts	- comi	ma W	The same		10				
	Rural	Suburban Neighborhood	Suburban Corridor	Suburban Center	Town/Village Neighborhood	Town Center	Urban Core		
Density Units	1 DU/20 ac	1 DU/ac - 8DU/ac	2 - 30 DU/ac	3 - 20 DU/ac	4 - 30 DU/ac	8 - 50 DU/ac	16 - 75 DU/ac		
Building Coverage	NA	< 20%	20% - 35%	35% - 45%	35% - 50%	50% - 70%	70% - 100%		
Lot Size/Area	20 acres	5,000 - 80,000 sf	20,000 - 200,000 sf	25,000 - 100,000 sf	2,000 - 12,000 sf	2,000 - 20,000 sf	25,000 - 100,000 sf		
Lot Frontage	NA	50 to 200 feet	100 to 500 feet	100 to 300 feet	18 to 50 feet	25 to 200 feet	100 to 300 feet		
Block Dimensions	NA	400 wide x varies	200 wide x varies	300 wide by varies	200 by 400 ft	200 by 400 ft	200 by 400 ft		
Max. Height	1 to 3 stories	1.5 to 3 stories	retail -1 story; office 3-5 stories	2 to 5 stories	2 to 5 stories	1 to 3 stories	3 to 60 stories		
Min./Max. Setback	Varies	20 to 80 feet	20 to 80 ft	20 to 80 ft	10 to 20 ft	0 to 20 ft	0 to 20 ft		

#### 6. Town/Village Center

A mixed use, high density area with buildings adjacent to the sidewalk, typically two to four stories tall with commercial operations on the ground floor and offices or residences above. Parallel parking usually occupies both sides of the street with parking lots behind the buildings. Important public buildings, such as the town hall or library, are provided special prominence.

Places like Haddon Avenue in Collingswood and State and Main Streets in Doylestown are classic "Main street" town centers.



#### 7. Urban Core

Downtown areas consisting of blocks of higher density, mixed use buildings. Buildings vary in height from 3 to 60+ stories with most buildings dating from an era when elevators were new technology - so five to twelve stories were the standard.

Examples are Trenton's Downtown and Center City Philadelphia.



#### 4.3 PLANNING FUTURE CONTEXT AREAS

The planned land use context along the corridor is assessed by consulting the following plans and documents:

- · Municipal comprehensive plan (referred to as master plan in New Jersey)
- Multi-municipal or regional comprehensive plan (applicable in Pennsylvania)
- Zoning ordinance
- Redevelopment plan (if applicable)
- State Plan designation (applicable in New Jersey)

As part of the collaboration between state and community, the study team consults with local stakeholders on the vision for their community. If no vision exists, a workshop or charrette can be held to help crystallize the community vision.



The transportation context consists of the role that the roadway plays, or is anticipated to play within the local community and the larger region. It also refers to the supporting street network, and the interaction of the roadway with that network.

#### 5.1 ROADWAY TYPE

A new roadway typology is proposed for the Guidebook in order to design roadways that better reflect their role in the community and the larger transportation network.

Currently, every roadway owned by NJDOT or PennDOT, or by county governments in New Jersey, is assigned a functional classification consistent with the AASHTO Green Book:

- Principal Arterial
- Minor Arterial
- · Collector (subdivided into major collector and minor collector within rural areas)
- Local

A problem with the existing functional classification system is that an entire highway is sometimes placed into a certain class based on select characteristics - such as the overall highway length, or traffic volumes - although its level of access and mobility are not consistent with other roadways in that class. For example, many state highways are classified as principal arterials even if they are far more vital to community access than to regional mobility. This creates a dilemma for highway designers: the application of design standards for that class may encourage higher operating speeds than are appropriate for segments serving community access.

To address this issue, a roadway typology is proposed which better captures the role of the roadway within the community. It focuses more narrowly on the characteristics of access, mobility and speed. If a segment of an arterial roadway has a relatively low speed, is important to community access, and has a lower average trip length, it should not be designed like a high order arterial. Further, under this approach, roadways

# 5.0

Routes 1 and 27 in Central New Jersey (below) are both classified as principal arterials in traditional functional classification, but they have very different roles within the roadway network. This chapter proposes a new roadway typology to better capture the role of roadways in a community.





are segmented to a greater degree than traditional functional classification. If one segment of a roadway has low average trip lengths and has consistently lower speeds, its design should be different than another section which carries long trips.

The roadway typology is presented in Table 5.1 and illustrated in Figure 5.1. It should be emphasized that this should be used only as a planning and design "overlay" for individual projects, and does not replace the traditional functional classification system used in both states. The roadway classes shown in Table 5.1 correspond to the classifications of arterial, collector and local as described in the 2001 AASHTO Green Book. Their design values should likewise correspond to the design guidelines provided in the Green Book.

Different state highways have different community roles, and the Guidebook recommends that this should be reflected in the design. Some state highways, such as NJ Route 1, will be considered as a Regional Arterial because of their importance to regional mobility. On the other hand, Route 27, which is classified as a principal arterial by NJDOT, actually operates more like a community arterial or a community collector. Parallel to Route 1 and the New Jersey Turnpike, this highway has a low average trip length. Maintaining regional mobility becomes a smaller concern on Route 27 and similar state roadways.

Whatever the road classification, traffic mobility and safety are important goals on state highways, and must be considered on all roadway projects. These goals will continue to receive significant attention on roads with acute safety or congestion problems. Mobility and safety goals are balanced with local development goals on projects.

PennDOT owns many roads in Pennsylvania, from arterials down through local roads. NJDOT controls a much smaller share of the road network, and virtually all of its roadways are arterials. Because of the relatively high volumes found on many NJDOT roadways, the maintenance of mobility on regional arterials remains a strong emphasis.

#### 5.1.1 Main Street

Although not one of the Smart Transportation roadway categories, the concept of Main Street has an important place in Smart Transportation. Anchoring the center of a town, village or city, the Main Street is characterized by:

- · Wide sidewalks and regular pedestrian activity;
- Mostly commercial and civic uses, with residential uses primarily found on the upper level of buildings;
- High building density;
- Buildings oriented to the street, with little or no building setbacks;
- Street furniture and public art;
- Heavy use of on-street parking;
- Speeds of 30 mph or less;
- Preferably no more than two travel lanes, although three to four lanes are seen on occasion.

Table 5.1 Road	way	Categ	ories
----------------	-----	-------	-------

Roadway Class	Roadway Type	Desired Operating Speed (mph)	Average Trip Length (mi)	Volume	Intersection Spacing (ft)	Comments
Arterial	Regional	30-55	15-35	10,000-40,000	660-1,320	Roadways in this category would be considered "Principal Arterial" in traditional functional classification.
Arterial	Community	25-55	7-25	5,000-25,000	300-1,320	Often classified as "Minor Arterial" in traditional classification but may include road segments classified as "Principal Arterial."
Collector	Community	25-55	5-10	5,000-15,000	300-660	Often similar in appearance to a community arterial. Typically classified as "Major Collector."
Collector	Neighborhood	25-35	<7	<6,000	300-660	Similar in appearance to local roadways Typically classified as "Minor Collector,"
Local	Local	20-30	<5	<3,000	200-660	





Route 27, Kingston

The Main Street would typically belong to the Community Arterial road type, or to the Collector road type. This is the case on Route 27 in New Jersey; this roadway hosts two Main Street segments between New Brunswick and Trenton, in the towns of Princeton and Kingston. As defined here, a municipality can have more than one Main Street.

Main Streets are desirable in Smart Transportation because they support more sustainable communities, and because of their potential to increase walking, biking and transit use, as well as vehicular trip chaining.

For information on planning Main Streets, see Section 6.2.1.

#### 5.2 ROADWAY NETWORK

Network design establishes critical parameters for roadway design-type of roadway, its general purpose (i.e., what type of traffic it is to handle) and number of lanes necessary to achieve the purpose. By increasing the options of motorists to travel from one point to another, a well-connected regional network permits greater flexibility in designing individual roadways. Improving roadway connectivity can serve regional mobility equally well as widening major roadways, and a well-connected network always serves the needs of pedestrians and bicyclists better than simply widening arterial roadways.

Because network connectivity is so important in Smart Transportation Solutions, it appears as a recurring theme in this guidebook. Network types, basic principles, and evaluating and creating a network are discussed in this section and in Chapter 3, "A Local Commitment."



Route 27, Princeton

#### 5.2.1 Network types

The traditional urban grid has short blocks, straight streets, and a crosshatched pattern (Figure 5.2). The typical contemporary suburban street network has large blocks, curving streets, and a branching pattern (Figure 5.3). The two networks differ in three respects: (1) block size, (2) degree of curvature, and (3) degree of interconnectivity.

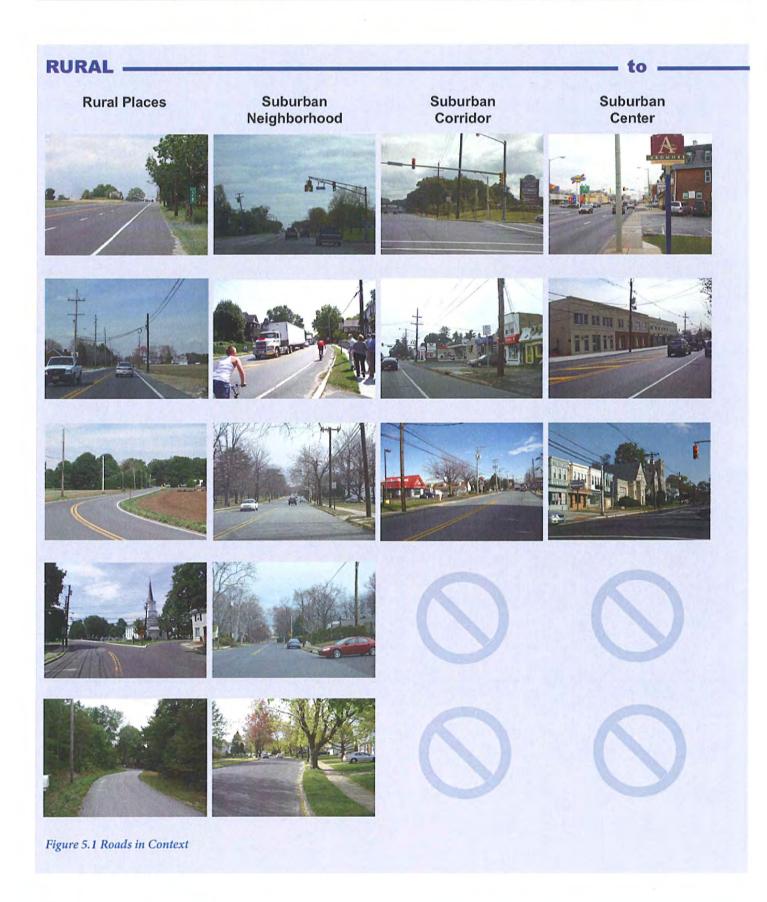
Both network designs have advantages and disadvantages. Traditional grids disperse traffic rather than concentrating it at a handful of intersections. They offer more direct routes and hence generate fewer vehicle miles of travel (VMT) than do contemporary networks. By offering many different routes to a destination, they better meet the needs of local motorists. They encourage walking and biking with their direct routing and their options for travel. Grids are also more transit-friendly; transit ridership is greatest between tracts that have relatively direct transit connections.3

Contemporary networks do have some advantages, such as the ability to lessen traffic on local residential streets. With their curves and dead ends, contemporary networks can go around or stop short of valuable natural areas.

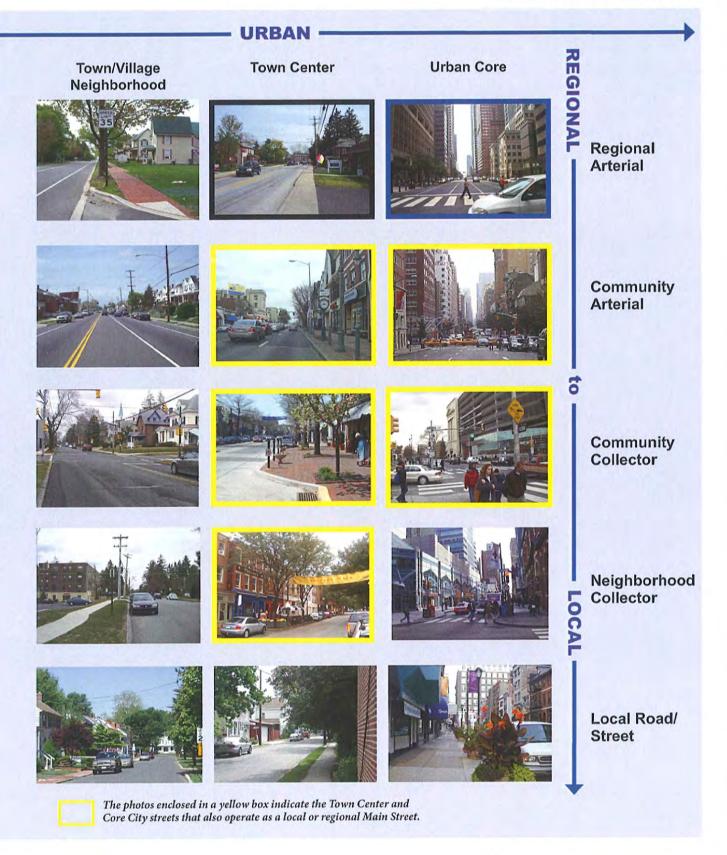
Traditional grids best fulfill Smart Transportation goals, and are recommended for application in most areas.

#### 5.2.2 Evaluation of the network

All roadway networks should be evaluated using the measures on internal connectivity, external connectivity, and route directness.







### Internal Connectivity. Use either of the following two measures:

- Beta Index This is equal to the number of street links divided by the number of nodes or link ends. A higher ratio indicates higher street connectivity. When applied to the developments shown in Figures 5.2 and 5.3, Apalachicola is rated 1.69, and Haile Plantation is rated 1.19. Traditional developments generally rate above 1.4.4
- Intersections per square mile Strict grid systems have about 25 intersections per square mile, while conventional branching systems have about one-third to one-half that many.<sup>5</sup>

#### External Connectivity

 All neighborhoods in the community should be connected to the larger street system at least every ¼ mile.

#### Route Directness

This measures the distance a pedestrian would walk between two points compared to the straight line (or radial) distance between the same two points. The closer the ratio is to 1.0, the more direct the route; route directness values of 1.2-1.5 describe reasonably connected walkable networks.<sup>6</sup>

#### 5.3 CREATING EFFICIENT NETWORKS

In Smart Transportation, network evaluation becomes a critical task anytime existing or projected traffic congestion is identified as a potential issue on projects. The role of the network differs somewhat for projects in built-out areas versus newly developing areas.

#### 5.3.1 Existing and Built-out Areas

In a built-out area, can the network be improved such that local traffic can use local streets to a greater degree? It should be determined how much traffic can be removed from regional roadways if the local and collector system is made to work more effectively. The network should be evaluated using measures of internal connectivity, external connectivity, and pedestrian route directness, described in Section 5.2.2.

If improving the network will not address the problem or is not an option, the two primary choices are to widen the roadway or to build a parallel roadway.

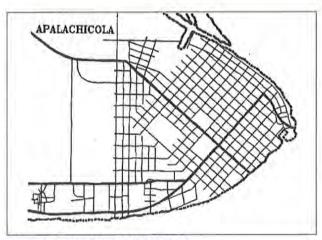


Figure 5.2. Traditional Urban Grid

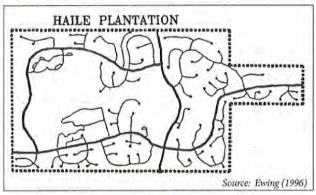


Figure 5.3, Contemporary Branching Network

#### Roadway widening

The planner should first determine if segment improvements, access management, or intersection changes will address the problem, and then consider mainline widening. Widening should be done only if the resulting roadway is compatible with the land use context. Planners should identify the existing roadway role, its consistency with the community vision, and whether an alternative roadway type would better support the community.

#### Parallel roadway

If a parallel roadway is necessary, the planner should consider development of a regional or community arterial. It should be consistent with an area network plan, and be tied in where possible to the existing road system. This would improve the effectiveness of this road link.

#### 5.3.2 Creating a Road Framework for New Development

A newly developing area offers the opportunity to implement a highly connected street system with less reliance on multi-lane arterials. Following are guidelines to be used in laying out a context sensitive roadway network capable of providing safe, multimodal choices for all trips. Initial planning should identify higher order roads needed for ultimate build-out; local roads and neighborhood collectors should then be included, depending upon specific developments proposed.

#### Network Configuration - Areawide

- Arterial roadways should be continuous and networked in generally rectilinear form with spacing of ½ to 1 mile in suburban contexts and ¼ to ½ mile in urban contexts. Closer spacing may be needed depending on activity levels and through movements.
- Collectors may be spaced at 1/8 mile intervals, if needed.
- Urban cores and town centers should be connected by community arterials and community collectors. These roadways should have the area's highest level transit service.
- Collectors should link neighborhood centers with adjacent neighborhood centers and town centers. All such connectors should be able to accommodate transit service.
- Major roadways that are to serve as major truck routes or primary through traffic routes should avoid the centers of urban areas or neighborhoods wherever possible. Community arterials and community collectors may be designated local truck routes to reach clusters of commercial uses in centers or cores.
- Sketch planning demand estimation or travel forecasting models should be used to estimate the density/spacing and capacity needs for major roadways beyond the minimum spacing described above.

#### Spacing

- Irrespective of thoroughfare spacing, pedestrian facilities should be well networked. In suburban contexts, block sizes of no more than 600 feet on a side with a maximum area of 7 acres will provide a reasonable level of connectivity.7 In urban contexts, block sizes of 300 to 400 feet with a maximum area of 3-4 acres are ideal.
- Where streets cannot be connected, provide bike and pedestrian connections at cul-de-sac heads or midblock locations as a secondbest solution to accessibility needs. Recommended maximum spacing is 330 ft.
- Bicycle-compatible roadways should comprise a bicycle network of parallel routes with effective spacing of 1/2 mile.

#### 5.3.3 Network principles

All new networks should be evaluated using the measures on connectivity in Section 5.2.





Route 63, a principal arterial highway, runs through Harleysville, PA (top) and Lansdale, PA (bottom). Harleysville lies six miles northwest of Lansdale, with I-476 passing between the two municipalities. Motorists on Route 63 in Harleysville have an average trip length of 30 miles, much longer than the 10 mile average trip length of motorists found on Route 63 in Lansdale. Motorists commuting from the north prefer to take I-476 into Philadelphia, and avoid driving through Lansdale. Further, Route 63 in Lansdale serves as that borough's main street. The highway thus serves a different role in these two municipalities.

#### 5.4 SIGNAL SPACING

Recommended signal spacing corresponds to the optimal spacing of arterial, collector and local streets (Table 5.2), although signals should be installed only where warranted.

Signal spacing of 300 ft. on arterials and collectors can be an important strategy in complementing traditional grid networks where low traffic speeds and high pedestrian activity are desired. On roadways in traditional urban contexts where regular cross traffic flows can be accommodated by stop-controlled intersections, signal spacing of 500 to 660 ft. on arterials and collectors may be sought.

On lower order suburban roadways, spacing of 660 ft. (1/8 mile) permits safe pedestrian crossings at the upper boundary of desirable block lengths. Signal spacing of 1320 ft. (1/4 mile) begins to permit the speed progression sought by NJDOT or PennDOT on those corridors where traffic flow is a priority.

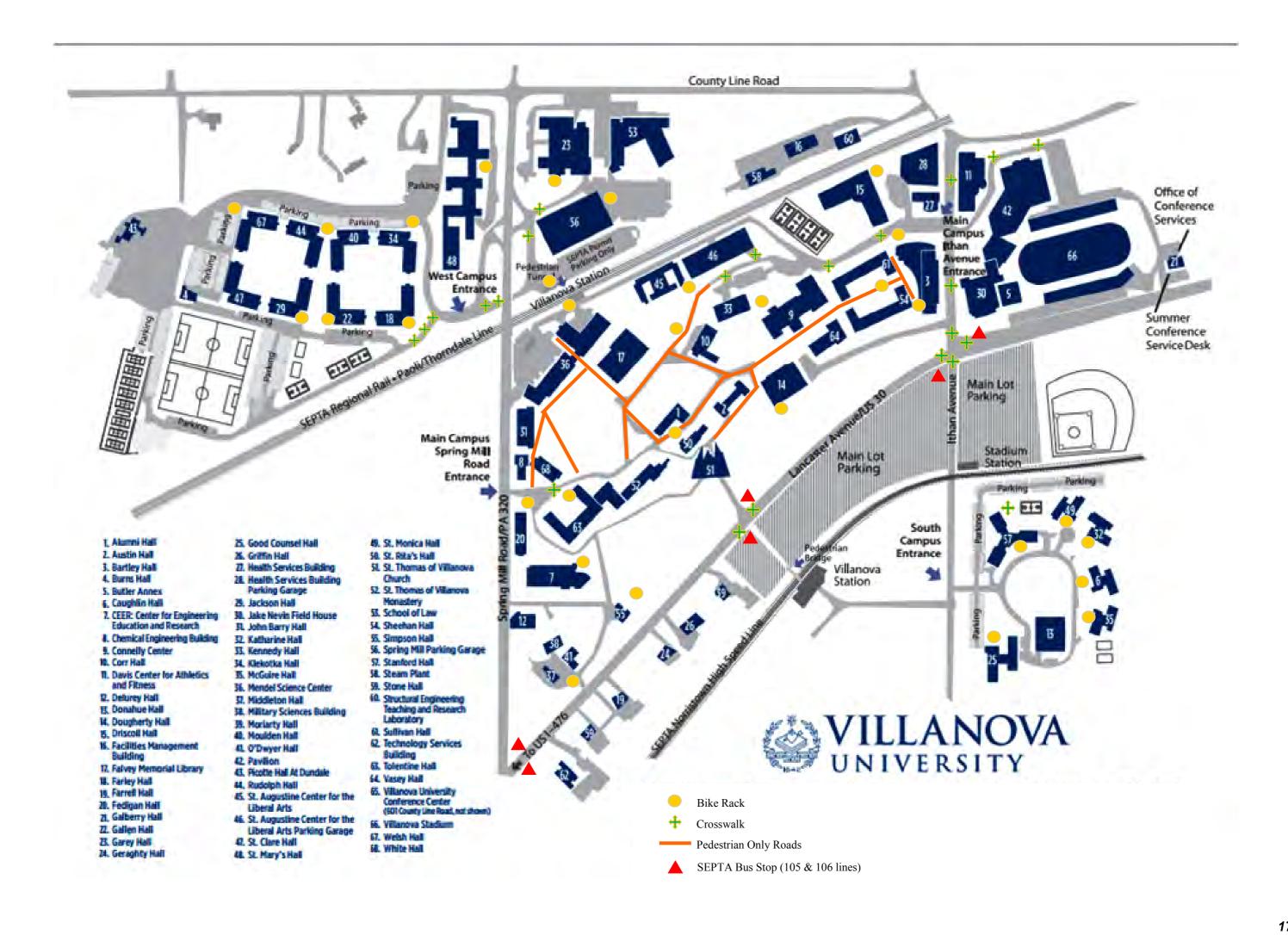
The spacing of traffic signals has a major influence on roadway operating speeds and capacity. Studies have found that a four lane divided arterial roadway with signal spacing of 2640 ft. carries the same amount of traffic as a six lane arterial with signals spaced at 1320 ft.8 Neither situation is optimal for pedestrians. On the one hand, narrower roadways are more amenable to pedestrian crossings. On the other hand, wider signal spacing reduces the opportunities for pedestrians to cross roadways at controlled locations. Further, motorists who desire to turn left onto an undivided major roadway may be tempted to access it at a Stop-controlled crossing, rather than traveling farther out of their way to access the roadway at a signal. On higher-order roadways where major pedestrian generators straddle the corridor, the best choice is sometimes smaller signal spacing and acceptance of a lower progression speed.

Table 5.2. Recommended Signal Spacing

	Urban Contexts	Suburban Contexts	Rural Contexts
Regional Arterial	660 to 1320 ft.	1320 to 1540 ft.	1980 ft.
Community Arterial	300 ft. to 1100 ft.	1320 ft.	1540 ft.
Community Collector	300 to 660 ft.	660 to 1320 ft.	1540 ft.

# **APPENDIX D**

Ped/Bike/Transit Figure



# **APPENDIX E**

Data Collection

#### Data Collection Notes

Project data collection efforts are extensive and span a considerable period of time.

Details of weekday and special event count period (and subsequent peak hour) determination are provided on the next three pages.

Note that the remainder of this text is based on a submittal entitled **Deliverable #1** which was shared with the township and PennDOT in 2013.

FTA conducted turning movement traffic counts at the following 17 intersections in the fall of 2012:

- 1) Lancaster Avenue and Spring Mill Road / Kenilworth Road / Aldwyn Lane
- 2) Lancaster Avenue and Church Walk
- 3) Lancaster Avenue and Ithan Avenue
- 4) Lancaster Avenue and Lowrys Lane
- 5) Lancaster Avenue and Garrett Avenue
- 6) Conestoga Road and Sproul Road
- 7) Conestoga Road and Spring Mill Road
- 8) Conestoga Road and Ithan Avenue
- 9) Conestoga Road and Lowrys Lane
- 10) Conestoga Road and Garrett Avenue
- 11) County Line Road and Spring Mill Road
- 12) County Line Road and Ithan Avenue North
- 13) County Line Road and Ithan Avenue South
- 14) County Line Road and Lowrys Lane
- 15) County Line Road and Airedale Road
- 16) County Line Road and Roberts Road
- 17) Ithan Avenue and Aldwyn Lane

#### **COUNT PERIODS**

The count periods selected for analysis were weekday commuter AM and PM peak periods. These count periods were chosen for multiple reasons. First, Automatic Traffic Recorder (ATR) or 'tube' counts were available and recently conducted along Route 30 by the Delaware Valley Regional Planning Commission (DVRPC). The results of these counts identify that the sum of all traffic volumes in the study area -- which includes both Villanova traffic and non-Villanova traffic (commuter traffic, regional through traffic, other institutional traffic, etc.) -- combine to reach a peak typically between 7 and 9 AM in the morning and 4 and 6 PM in the afternoon. Discussions with Villanova staff also support these hours as featuring peak activity levels on campus. FTA's experience with the campus also supports this claim, and in fact traffic counts conducted for other Villanova projects since 2004 were also conducted during commuter peak periods. Finally, in an email dated 06-14-12, the Township's traffic engineer specifically requested that the AM and PM peak hours be the hours examined (see **Appendix A**).

The basis of this effort are 'ordinary condition' traffic counts, and these counts were conducted over a period of several days beginning the week of 11-05-12 during which time Villanova was in regular session. In addition to these counts, the Township requested the University conduct additional traffic counts during 2 other 'special event' traffic conditions. These events included Homecoming (10-26-12) and a weekday evening during a basketball game (vs St. Joe's, 12-11-12).

#### **COUNT ADJUSTMENTS**

Traffic data collection efforts typically focus on traffic which is processed or 'served' at an intersection. In some cases, however, the traffic 'demand' might be more than what is actually processed at an intersection. When this occurs, it is typically found only at signalized intersections and only in cases where traffic demand is *significantly* greater than intersection capacity. In addition a separate, related phenomenon is called 'initial unmet demand'. This is when a persistent queue of traffic is present at the *beginning* of an analysis period (i.e., the beginning of a peak hour) and also when said queue is not processed adequately at a signalized intersection. Traffic analysis methods and software account for either of these phenomenona to some extent, but if either is excessive, additional measures can be taken to adjust count data.

After the peak hours were determined, FTA revisited the study area in the first week of December 2012 to document additional details regarding the traffic demand vs traffic served issue as well as the initial unmet demands. Summary tables were developed to summarize the following: subject intersection, intersection type, approach, initial unmet demand observations, excessive unmet demand observations, and findings. These tables are included with this appendix. More details behind the purpose and methodology of the investigation are explained under the 'Purpose' heading found on page two of each table (one for each peak hour).

#### ANALYSIS RESULTS -- 'ORDINARY TRAFFIC'

AM and PM commuter 'system peak' hours were determined using a spreadsheet and the identified peak hours were found to be 7:30 to 8:30 AM and 5:00 to 6:00 PM. Spreadsheets were prepared both for the study area and for the Lancaster Avenue corridor and are attached to the end of this report in the appendix. The spreadsheets are based on vehicular volumes – pedestrian volumes were excluded. The highlighting used in the spreadsheets identifies individual intersection peak hours (in red). Only a handful of non-critical locations had individual peak hours different from the system peak (and typically only shifted by 15 minutes as shown in the tables).

#### ANALYSIS RESULTS -- 'HOMECOMING TRAFFIC'

In 2012, Homecoming occurred on Saturday, 10-27-12 and – per discussions with the Township – traffic counts were conducted at a reduced study area from 12:00 Noon to 3:00 PM. Spreadsheets were prepared both for the entire study area and for the Lancaster Avenue corridor and are attached to the end of this report in the appendix. The identified peak hours was found to be: 12:00 to 1:00 PM.

Interestingly, the traffic volumes for virtually every traffic *turning movement* in the study area during the peak hour of Homecoming are either comparable to or significantly less than the data that was collected during the weekday AM or weekday PM peak hour. In many cases, *total intersection* volume – such as at Lancaster Avenue and Spring Mill Road / Kenilworth Road / Aldwyn Lane – were also significantly lower than the 'ordinary traffic' counterpart. Realizing all this, there is no value in performing additional LOS calculations, since the LOS outputs of weekday commuter conditions represent a comparable – or worse – peak hour operational conditions. Additionally, level of service calculations are not even possible at intersections which are under manual police control,

which was the case at certain key locations in the study area during Homecoming. The township traffic engineer agreed with this conclusion in a letter dated 1 February 2013 though the need for a "Special Event Management Plan" was mentioned (see **Appendix A**).

#### ANALYSIS RESULTS -- 'BASKETBALL TRAFFIC'

After Homecoming was over, the Township requested Villanova perform additional data collection during a Basketball home game. This traffic is somewhat different from Homecoming since Homecoming occurs on Saturday while a home basketball game occurs during a week night during which time some lingering remaining 'day' student, faculty, and staff may be *leaving* campus while at the same time some 'night' student, faculty, and staff are *arriving* at campus. Per discussions with the Township – traffic counts were conducted using the same study area as Homecoming and from 6:00 to 8:00 PM since the game starts at approximately 7:00 PM. Once again, a 'system peak' hour was determined using a spreadsheet. The identified peak hours was found to be: 6:00 to 7:00 PM.

Coincidentally, as with Homecoming, the traffic volumes for virtually every traffic *turning movement* in the study area during the peak hour of the Basketball game data collection effort are either comparable to or significantly less than the data that was collected during the weekday AM or weekday PM peak hour. In many cases, *total intersection* volume – such as at Lancaster Avenue and Spring Mill Road / Kenilworth Road / Aldwyn Lane – was also significantly lower than the 'ordinary traffic' counterpart. Realizing all this, there is once again no value in performing additional LOS calculations, and once again levels of service calculations at certain key locations are not even possible due to manual police control. The township traffic engineer agreed with this conclusion in a letter dated 1 February 2013 though the need for a "Special Event Management Plan" was mentioned (see **Appendix A**).

#### **ADDITIONAL ATTACHMENTS:**

- DVRPC ATR data spreadsheet,
- count data system peak spreadsheets (for Ordinary, Homecoming, and Basketball conditions),
- raw manual turning movement traffic count data and unmet demand summary tables
- ped volume figures
- special event volume figures

#### DVRPC ATR TRAFFIC COUNT DATA -- PEAK HOUR DETERMINATION MATRIX

#### DVRPC ATR Data for Rt 30\*

hour	DVIII CATI Data for Itt 50											
	Τι	uesday 9/11,	/12	Wed	dnesday 9/12	2/12	Thursday 9/13/12					
beginning	30 West	30 East	Total	30 West	30 East	Total	30 West	30 East	Total			
6:00 AM		n/a		325	413	738	312	413	725			
7:00 AM		n/a		662	684	1346	683	715	1398			
8:00 AM		n/a		710	752	1462	688	825	1513			
9:00 AM		n/a		565	787	1352	580	803	1383			
10:00 AM				570	778	1348	332	389	721			
11:00 AM				591	695	1286						
12:00 PM				541	781	1322						
1:00 PM	584	658	1242	544	783	1327						
2:00 PM	632	747	1379	573	769	1342						
3:00 PM	437	797	1234	641	807	1448		n/a				
4:00 PM	510	777	1287	660	836	1496		n/a				
5:00 PM	712	855	1567	632	625	1257		n/a				
6:00 PM	558	684	1242	484	604	1088	n/a					
7:00 PM	517	439	956	632	625	1257	n/a					
8:00 PM	438	415	853	484	604	1088	n/a					

#### peak hour indicated in red

volume dbl checked, ~200 lower than day before

#### **Conclusions:**

AM peak hour falls between 7 and 9 AM on both days.

PM peak hour falls between 4 and 6 PM on both days.

<sup>\*</sup>Machines placed between Spring Mill Road and Barleycone Lane

#### "ORDINARY CONDITIONS" TRAFFIC COUNT DATA -- SYSTEM PEAK HOUR DETERMINATION MATRIX

#### **Total Intersection Volume**

time beginging				Sproul &	Conestoga &	Conestoga &	Spring Mill &	County Line	Conestoga &	Conestoga &	Ithan &	Ithan & County Line	Ithan & County Line	County Line	County Line		
	30 & Sproul	30 & Ithan	30 & Lowry	Conestoga	Spring Mill	Ithan	County Line	& Roberts	Garret	Lowrys	Aldwyn	(North)	(South)	& Lowrys	& Aldwyn	total	
7:00	523	234	296	351	192	179	187	220	140	160	46	105	99	55	134	2921	
7:15	677	465	419	486	291	280	252	234	215	219	111	139	127	75	152	4142	
7:30	741	514	533	586	347	377	360	305	225	244	158	258	218	116	191	5173	
7:45	811	555	663	639	385	479	354	337	270	334	206	316	256	166	233	6004	18240
8:00	760	588	658	576	314	375	391	331	231	251	155	277	235	175	202	5519	20838
8:15	807	594	618	524	274	311	394	385	225	244	151	303	258	149	204	5441	22137
8:30	689	493	477	491	281	274	321	310	199	224	104	240	196	126	212	4637	21601
8:45	757	464	487	546	285	290	308	346	230	232	84	222	179	120	196	4746	20343
16:00	732	556	563	437	297	343	316	341	256	279	145	272	174	128	193	5032	
16:15	727	433	491	497	277	323	337	326	269	258	117	234	204	111	199	4803	
16:30	699	509	497	473	282	343	339	309	283	288	125	247	206	136	228	4964	
16:45	727	435	491	583	299	329	298	322	251	258	125	260	227	101	200	4906	19705
17:00	801	542	629	534	299	397	409	308	316	298	139	302	274	139	208	5595	20268
17:15	807	572	625	575	337	332	425	357	291	283	158	322	272	148	220	5724	21189
17:30	841	552	517	537	331	325	387	354	260	273	146	284	236	138	220	5401	21626
17:45	811	514	541	529	325	343	386	332	300	300	130	306	252	132	211	5412	22132

#### "ORDINARY CONDITIONS" TRAFFIC COUNT DATA -- SYSTEM PEAK HOUR DETERMINATION MATRIX (LANCASTER AVENUE CORRIDOR, ONLY)

#### **Total Intersection Volume**

time beginging

96888					
	30 & Sproul	30 & Ithan	30 & Lowry	total	
7:00	523	234	296	1053	
7:15	677	465	419	1561	
7:30	741	514	533	1788	
7:45	811	555	663	2029	6431
8:00	760	588	658	2006	7384
8:15	807	594	618	2019	7842
8:30	689	493	477	1659	7713
8:45	757	464	487	1708	7392
16:00	732	556	563	1851	
16:15	727	433	491	1651	
16:30	699	509	497	1705	
16:45	727	435	491	1653	6860
17:00	801	542	629	1972	6981
17:15	807	572	625	2004	7334
17:30	841	552	517	1910	7539
17:45	811	514	541	1866	7752

#### "HOMECOMING CONDITIONS" TRAFFIC COUNT DATA -- SYSTEM PEAK HOUR DETERMINATION MATRIX

#### **Total Intersection Volume**

time				Conestoga			
beginging	30 &		Sproul &	& Spring	Conestoga		
	Sproul	30 & Ithan	Conestoga	Mill	& Ithan	total	
12:00	721	433	351	196	204	1905	
12:15	717	523	393	217	207	2057	
12:30	663	569	384	211	214	2041	
12:45	684	621	398	224	205	2132	8135
13:00	635	485	362	201	203	1886	8116
13:15	633	619	379	211	206	2048	8107
13:30	661	549	361	219	221	2011	8077
13:45	629	562	402	219	215	2027	7972
14:00	629	523	358	194	194	1898	7984
14:15	569	535	384	211	204	1903	7839
14:30	620	523	339	186	190	1858	7686
14:45	586	566	378	212	193	1935	7594

"HOMECOMING CONDITIONS" TRAFFIC COUNT DATA -- SYSTEM PEAK HOUR DETERMINATION MATRIX (LANCASTER AVENUE CORRIDOR, ONLY)

time		ersection ume		
beginging	30 &			
	Sproul	30 & Ithan	total	
12:00	721	433	1154	
12:15	717	523	1240	
12:30	663	569	1232	
12:45	684	621	1305	4931
13:00	635	485	1120	4897
13:15	633	619	1252	4909
13:30	661	549	1210	4887
13:45	629	562	1191	4773
14:00	629	523	1152	4805
14:15	569	535	1104	4657
14:30	620	523	1143	4590

14:45

#### "BASKETBALL GAME CONDITIONS" TRAFFIC COUNT DATA -- SYSTEM PEAK HOUR DETERMINATION MATRIX

#### **Total Intersection Volume**

				Conestoga			
beginging	30 &		Sproul &	& Spring	Conestoga		
	Sproul	30 & Ithan	Conestoga	Mill	& Ithan	total	
18:00	788	609	504	296	293	2490	
18:15	861	589	500	310	331	2591	
18:30	785	599	477	277	322	2460	
18:45	752	596	371	197	229	2145	9686
19:00	574	497	340	200	203	1814	9010
19:15	542	486	304	171	177	1680	8099
19:30	502	406	236	126	129	1399	7038
19:45	491	362	232	132	113	1330	6223
	18:00 18:15 18:30 18:45 19:00 19:15 19:30	Sproul  18:00 788  18:15 861  18:30 785  18:45 752  19:00 574  19:15 542  19:30 502	Sproul     30 & Ithan       18:00     788     609       18:15     861     589       18:30     785     599       18:45     752     596       19:00     574     497       19:15     542     486       19:30     502     406	Sproul         30 & Ithan         Conestoga           18:00         788         609         504           18:15         861         589         500           18:30         785         599         477           18:45         752         596         371           19:00         574         497         340           19:15         542         486         304           19:30         502         406         236	Sproul         30 & Ithan         Conestoga         Mill           18:00         788         609         504         296           18:15         861         589         500         310           18:30         785         599         477         277           18:45         752         596         371         197           19:00         574         497         340         200           19:15         542         486         304         171           19:30         502         406         236         126	Sproul         30 & Ithan         Conestoga         Mill         & Ithan           18:00         788         609         504         296         293           18:15         861         589         500         310         331           18:30         785         599         477         277         322           18:45         752         596         371         197         229           19:00         574         497         340         200         203           19:15         542         486         304         171         177           19:30         502         406         236         126         129	Sproul         30 & Ithan         Conestoga         Mill         & Ithan         total           18:00         788         609         504         296         293         2490           18:15         861         589         500         310         331         2591           18:30         785         599         477         277         322         2460           18:45         752         596         371         197         229         2145           19:00         574         497         340         200         203         1814           19:15         542         486         304         171         177         1680           19:30         502         406         236         126         129         1399

105 Kenilworth Street Philadelphia, PA 19147

Lancaster Avenue & Spring Mill/Sproul Rd & Kenilworth Rd/Aldwyn Ln

File Name: 01-30SproulAM Site Code: 00000000 Start Date: 11/8/2012

Page No : 1

																		Gr	ou	ps l	Prin <sup>.</sup>	ted	- ca	ırs	<u>- H'</u>	V																	
			- 1	Spi Roa thb	ıd		ill	L	_an∘		ster			ue	l	A Nor		•	La		d		_		oul thbe				L	_an			Av		ue		Ker Sou						
Start Time	Lt oL an c	Lt o Al d					App. Tota	Lt o Al d	Lt o Sp r					App. Tota	Lt o Sp r	Lt oL an c					App. Tota	Lt oL an c	Lt o Ke n					App. Tota	Lt o Ke n	Lt o S Mil					App. Tota	Lt o S Mil	Lt oL an c					App. Tota	Int. Tota
07:00 AM	6	0	12	25	0	0	43	0	0	12	1	0	0	122	0	11	0	1	0	0	12	71	0	26	2	1	0	100	1	43	15 3	11	38	0	246	0	0	0	0	0	0	0	523
07:15 AM	5	5	27	40	0	0	77	0	1	18	0	2	0	191	1	22	0	0	0	0	23	69	1	36	7	3	0	116	0	48	15 4	16	47	0	265	0	0	0	1	4	0	5	677
07:30 AM	8	2	36	32	0	1	79	0	4	19	0	2	0	198	0	16	0	2	0	0	18	36	0	40	7	1	0	84	0	62	22	17	59	1	363	0	0	0	0	1	0	1	743
07:45 AM	4	3	28	28	0	2	65	1	1	22	0	2	0	225	2	7	0	2	0	0	11	50	0	51	17	2	0	120	0	54	23	39	62	0	386	0	0	1	1	4	0	6	813
Tota I	23	10	10	12	0	3	264	1	6	72 2	1	6	0	736	3	56	0	5	0	0	64	22	1	15 3	33	7	0	420	1	20 7	76 2	83	20 6	1	1260	0	0	1	2	9	0	12	2756
08:00 AM	5	3	38	48	0	4	98	1	2	23	0	3	1	240	1	11	0	2	0	0	14	45	0	37	9	4	0	95	2	63	19	13	42	0	313	0	0	0	0	5	0	5	765
08:15 AM	2	0	29	44	0	1	76	2	4	29 3	1	6	1	307	0	14	0	2	0	0	16	47	0	62	16	2	0	127	0	41	17	13	52	0	279	0	0	0	2	2	0	4	809
08:30 AM	11	1	31	40	0	2	85	0	5	20 5	0	8	0	218	0	9	0	2	1	0	12	40	0	44	7	1	0	92	0	72	16 7	7	34	0	280	0	1	0	0	3	0	4	691
08:45 AM	5	2	16	31	0	1	55	0	3	25 5	0	3	2	263	2	6	0	0	0	0	8	46	1	44	8	1	0	100	0	59	21 7	14	42	0	332	0	0	0	1	1	0	2	760
Tota I	23	6	11 4	16 3	0	8	314	3	14	98 6	1	20	4	1028	3	40	0	6	1	0	50	17	1	18 7	40	8	0	414	2	23 5	75 0	47	17 0	0	1204	0	1	0	3	11	0	15	3025
Grand Total	46	16	21	28 8	0	11	578	4	20	17 08	2	26	4	1764	6	96	0	11	1	0	114	40						834	3	44	15 12	13	37 6	1	2464	0	1	1	5	20	0	27	5781
Apprch %	8	2.8	37. 5	49. 8	0	1.9		0.2	1.1	96. 8	0.1	1.5	0.2		5.3	84. 2	0	9.6	0.9	0		48.	0.2	40. 8	8.8	1.8	0		0.1	17. 9	61. 4	5.3	15. 3	0		0	3.7	3.7	18. 5	74. 1	0		
Total %	0.8	0.3	3.8	5	0	0.2	10	0.1	0.3	29. 5	0	0.4	0.1	30.5	0.1	1.7	0	0.2	0	0	2	-			1.3	0.3	0	14.4	0.1	7.6	26. 2	2.2	6.5	0	42.6	0	0	0	0.1	0.3	0	0.5	<u></u>
cars	38	16	18 6	27	0	11	523	4	19	16 60	2	22	4	1711	6	90	0	0	0	0	9 6	37 7	2	32 4	71	15	0	789	3	41	14 62	13 0	33 9	1	2349	0	1	1	4	20	0	2   6	5494
% cars	82. 6	10 0	85. 7	94. 4	0	10 0	90.5	10	95	97. 2	0	6	0	97	0	8					84.2	3	0	3	3	0	0		0	93. 7	7	10	2	10 0	95.3	_	10 0	0	80	10	0	96.3	95
HV	8	0	31	16	0	0	55	0	1	48			0	53	0	6	0			0	18	27	0	16	2	0	0	45	0	28	50	0	37	0	115	0	0	0	1	0	0	1	287
% HV	17. 4	0	14. 3	5.6	0	0	9.5	0	5	2.8	0	15. 4	0	3	0	6.2	0	10	10	0	15.8	6.7	0	4.7	2.7	0	0	5.4	0	6.3	3.3	0	9.8	0	4.7	0	0	0	20	0	0	3.7	5

	N		Ro	prin pad bou	_	lill	L		aste /est			ue	N	Ald	-	n La estb						l Ro bou			L			er A bou		ue	l .	(eni Sout					
Start Time	L to Lan C	L to Ald	T to Spr	R to Lan	R to Ken	App. Total	L to Ald	L to Spr	T to Lan	R to Ken	R to S M ill	App. Total	L to Spr	L to Lan C	T to Ken	R to S M ill	R to Lan	App. Total	L to Lan	L to Ken	T to S M ill	R to Lan	R to Ald	App. Total	L to Ken	L to S M ill	T to Lan	R to Ald	R to Spr	App.	L to S M ill	L to Lan C	T to Ald	R to Spr	R to Lan	App.	Int. Total
Peak Ho			,										1 of	1																							
Peak H	our f	or E	ntire	e Int	erse	ection	ף Be	gins	at (	)7:3		Λ																									
07:30 AM	8	2	36	32	0	78	0	4	192	0	2	198	0	16	0	2	0	18	36	0	40	7	1	84	0	62	224	17	59	362	0	0	0	0	1	1	741
07:45 AM	4	3	28	28	0	63	1	1	221	0	2	225	2	7	0	2	0	11	50	0	51	17	2	120	0	54	231	39	62	386	0	0	1	1	4	6	811
08:00 AM	5	3	38	48	0	94	1	2	233	0	3	239	1	11	0	2	0	14	45	0	37	9	4	95	2	63	193	13	42	313	0	0	0	0	5	5	760
08:15 AM	2	0	29	44	0	75	2	4	293	_1_	6	306	0	14	0	2	0	16	47	0	62	16	2	127	0	41	173	13	52	279	0	0	0	2	2	4	807
Total Volume	19	8	131	152	0	310	4	11	939	1	13	968	3	48	0	8	0	59	178	0	190	49	9	426	2	220	821	82	215	1340	0	0	1	3	12	16	3119
% App. Total	6.1	2.6	42.3	49	0		0.4	1.1	97	0.1	1.3		5.1	81.4	0	13.6	0		41.8	0	44.6	11.5	2.1		0.1	16.4	61.3	6.1	16		0	0	6.2	18.8	75		
PHF	.594	.667	.862	.792	.000	.824	.500	.688	.801	.250	.542	.791	.375	.750	.000	1.00	.000	.819	.890	.000	.766	.721	.563	.839	.250	.873	.889	.526	.867	.868	.000	.000	.250	.375	.600	.667	.961
cars	16	8	111	144	0	279	4	10	914	1	11	940	3	44	0	0	0	47	166	0	181	48	9	404	2	204	802	82	196	1286	0	0	1	2	12	15	2971
% cars	84.2	100	84.7	94.7	0	90.0	100	90.9	97.3	100	84.6	97.1	100	91.7	0	0	0	79.7	93.3	0	95.3	98.0	100	94.8	100	92.7	97.7	100	91.2	96.0	0	0	100	66.7	100	93.8	95.3
HV	3	0	20	8	0	31	0	1	25	0	2	28	0	4	0	8	0	12	12	0	9	1	0	22	0	16	19	0	19	54	0	0	0	1	0	1	148
% HV	15.8	0	15.3	5.3	0	10.0	0	9.1	2.7	0	15.4	2.9	0	8.3	0	100	0	20.3	6.7	0	4.7	2.0	0	5.2	0	7.3	2.3	0	8.8	4.0	0	0	0	33.3	0	6.3	4.7

105 Kenilworth Street Philadelphia, PA 19147

Lancaster Avenue & Spring Mill/Sproul Rd & Kenilworth Rd/Aldwyn Ln

File Name: 01-30SproulAM Site Code: 00000000 Start Date: 11/8/2012

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			rth I Sou	Roa	ıd			L			ster stb			ıe		A Nor		yn ves			d				oul thb				L		cas Eas				ıe	1					load		
Start Time	Lt oL an c	Lt o Al d					App. Tota	Lt o Al d	Lt o Sp r					App. Tota	Lt o Sp r	Lt oL an c					App. Tota	Lt oL an c	Lt o Ke n					App. Tota	L t o Ke n	Lt o s Mil					App. Tota	Lt o S Mil	Lt oL an c					App. Tota	Int. Tota
07:00 AM	0	0	1	1	0	0	2	0	0	1	0	0	0	1	0	1	0	1	0	0	2	9	0	1	0	0	0	10	0	3	3	0	7	0	13	0	0	0	0	0	0	0	28
07:15 AM	0	0	5	3	0	0	8	0	0	3	0	0	0	3	0	0	0	0	0	0	0	2	0	0	1	0	0	3	0	5	9	0	7	0	21	0	0	0	0	0	0	0	35
07:30 AM	2	0	1	1	0	0	4	0	1	5	0	0	0	6	0	2	0	2	0	0	4	2	0	4	0	0	0	6	0	2	3	0	4	0	9	0	0	0	0	0	0	0	29
07:45 AM	0	0	9	_1_	0	0	10	0	0	4	0	0	0	_ 4_	0	0_	0	2	0	0_	2	3	0	4	0	0	0_	7	0	4_	7	0	4	0	15	0	0	0	0_	0_	0_	0	38
Tota I	2	0	16	6	0	0	24	0	1	13	0	0	0	14	0	3	0	5	0	0	8	16	0	9	1	0	0	26	0	14	22	0	22	0	58	0	0	0	0	0	0	0	130
08:00 AM	1	0	8	2	0	0	11	0	0	12	0	1	0	13	0	0	0	2	0	0	2	4	0	1	0	0	0	5	0	6	5	0	5	0	16	0	0	0	0	0	0	0	47
08:15 AM	0	0	2	4	0	0	6	0	0	4	0	1	0	5	0	2	0	2	0	0	4	3	0	0	1	0	0	4	0	4	4	0	6	0	14	0	0	0	1	0	0	1	34
08:30 AM	2	0	3	3	0	0	8	0	0	9	0	1	0	10	0	1	0	2	1	0	4	0	0	5	0	0	0	5	0	1	9	0	2	0	12	0	0	0	0	0	0	0	39
08:45 AM	3	0	2	1	0	0	_6	0	0	10	0	_1	0	11	0	0	0	0	0	0	0	4	0	1	0	0	0	5	0	3	10	0	2	0	15	0	0	0	0	0	0	0	37
Tota I	6	0	15	10	0	0	31	0	0	35	0	4	0	39	0	3	0	6	1	0	10	11	0	7	1	0	0	19	0	14	28	0	15	0	57	0	0	0	1	0	0	1	157
Grand Total	8	0	31	16	0	0	55	0	1	48	0	4	0	53	0	6	0	11	1	0	18	27	0	16	2	0	0	45	0	28	50	0	37	0	115	0	0	0	1	0	0	1	287
Apprch %	14. 5	0	56. 4	29. 1	0	0		0	1.9	90. 6	0	7.5	0		0	33. 3	0	61. 1	5.6	0		60	0	35. 6	4.4	0	0		0	24. 3	43. 5	0	32. 2	0		0	0	0	10	0	0		
Total %	2.8	0	10. 8	5.6	0	0	19.2	0	0.3	16. 7	0	1.4	0	18.5	0	2.1	0	3.8	0.3	0	6.3	9.4	0	5.6	0.7	0	0	15.7	0	9.8	17. 4	0	12. 9	0	40.1	0	0	0	0.3	0	0	0.3	

	N		h Sı Ro outh	oad	_	ill	L		aste /est		ven nd	ue	N		•		ane oun			•		l Ro bou			La			er A	ven nd	ue	-				Roa		
Start Time	L to Lan	L to Ald	T to Spr	R to Lan	R to Ken	App. Total	L to Ald	Spr	T to Lan	R to Ken	R to S M ill	App. Total	L to Spr	L to Lan	T to Ken	R to S M ill	R to Lan	App.	L to Lan	L to Ken	T to S M ill	R to Lan c	R to Ald	App.	L to Ken	L to S M ill	T to Lan	R to Ald	R to Spr	App. Total	L to S M ill	L to Lan c	T to Ald	R to Spr	R to Lan	App. Total	Int. Total
Peak Ho	our /	Anal	lysis	Fro	m 0	7:30	ΑM	to 0	8:15	5 AN	1 - P	eak	1 of	1																							
Peak Ho	our f	or E	ntire	e Int	erse	ection	Ве	gins	at (	07:3	0 AN	Λ																									
07:30 AM	2	0	1	1	0	4	0	1	5	0	0	6	0	2	0	2	0	4	2	0	4	0	0	6	0	2	3	0	4	9	0	0	0	0	0	0	29
07:45 AM	0	0	9	1	0	10	0	0	4	0	0	4	0	0	0	2	0	2	3	0	4	0	0	7	0	4	7	0	4	15	0	0	0	0	0	0	38
08:00 AM	1	0	8	2	0	11	0	0	12	0	1	13	0	0	0	2	0	2	4	0	1	0	0	5	0	6	5	0	5	16	0	0	0	0	0	0	47
08:15 AM	0	0	2	4	0	6	0	0	4	0	1	5	0	2	0	2	0	4	3	0	0	1	0	4	0	4	4	0	6	14	0	0	0	1	0	1	34
Total Volume	3	0	20	8	0	31	0	1	25	0	2	28	0	4	0	8	0	12	12	0	9	1	0	22	0	16	19	0	19	54	0	0	0	1	0	1	148
% App. Total	9.7	0	64.5	25.8	0		0	3.6	89.3	0	7.1		0	33.3	0	66.7	0		54.5	0	40.9	4.5	0		0	29.6	35.2	0	35.2		0	0	0	100	0		
PHF	.375	.000	.556	.500	.000	.705	.000	.250	.521	.000	.500	.538	.000	.500	.000	1.00	.000	.750	.750	.000	.563	.250	.000	.786	.000	.667	.679	.000	.792	.844	.000	.000	.000	.250	.000	.250	.787

105 Kenilworth Street Philadelphia, PA 19147

Lancaster & Ithan Avenues

File Name: 02-30IthanAM

Site Code : 00000000 Start Date : 11/15/2012

Page No : 1

EB Peds = diag peds NE-SW WB Peds = diag peds NW-SE

									G	roups	Printe	a- car	<u>'s - H\</u>	<u> </u>									
		Itha	an Ave	enue			La	ncaste	er Ave	enue			ltha	an Ave	enue			La	ncaste	er Ave	enue		
		So	uthbo	und				West	boun	d			No	rthbo	und				East	oounc	1		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NW-SE Peds	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NE-SW Peds	Peds	App. Total	Int. Total
07:00 AM	3	19	2	7	31	6	106	2	5	13	132	10	8	1	0	19	5	86	4	0	5	100	282
07:15 AM	2	29	14	4	49	19	196	3	12	3	233	12	17	5	0	34	14	193	6	0	5	218	534
07:30 AM	5	48	12	2	67	9	196	6	6	8	225	20	38	18	0	76	22	191	13	1	4	231	599
07:45 AM	9	62	9	6	86	23	196	13	23	7	262	23	55	21	1	100	20	196	8	0	15	239	687
Total	19	158	37	19	233	57	694	24	46	31	852	65	118	45	1	229	61	666	31	1	29	788	2102
08:00 AM	8	38	12	3	61	44	212	15	69	3	343	23	42	23	0	88	20	202	7	0	33	262	754
08:15 AM	3	66	14	3	86	57	235	10	193	10	505	18	38	12	0	68	26	191	7	0	56	280	939
08:30 AM	9	37	11	3	60	16	206	15	57	10	304	13	41	8	0	62	22	166	6	0	26	220	646
08:45 AM	5	19	9	1	34	15	189	6	25	8	243	6	33	9	0	48	33	166	7	0	11	217	542
Total	25	160	46	10	241	132	842	46	344	31	1395	60	154	52	0	266	101	725	27	0	126	979	2881
·																							
Grand Total	44	318	83	29	474	189	1536	70	390	62	2247	125	272	97	1	495	162	1391	58	1	155	1767	4983
Apprch %	9.3	67.1	17.5	6.1		8.4	68.4	3.1	17.4	2.8		25.3	54.9	19.6	0.2		9.2	78.7	3.3	0.1	8.8		
Total %	0.9	6.4	1.7	0.6	9.5	3.8	30.8	1.4	7.8	1.2	45.1	2.5	5.5	1.9	0	9.9	3.3	27.9	1.2	0	3.1	35.5	
cars	42	307	76	29	454	189	1475	67	390	61	2182	120	266	94	1	481	157	1298	53	1	155	1664	4781
% cars	95.5	96.5	91.6	100	95.8	100	96	95.7	100	98.4	97.1	96	97.8	96.9	100	97.2	96.9	93.3	91.4	100	100	94.2	95.9
HV	2	11	7	0	20	0	61	3	0	1	65	5	6	3	0	14	5	93	5	0	0	103	202
% HV	4.5	3.5	8.4	0	4.2	0	4	4.3	0	1.6	2.9	4	2.2	3.1	0	2.8	3.1	6.7	8.6	0	0	5.8	4.1

		141								141							
		itnan i	Avenue		L	ancaste	er Aven	nue			Avenue	- 1	L	ancast	er Aver	nue	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fror	n 07:30	AM to 0	8:15 AM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	n Begins	at 07:30	AM												
07:30 AM	5	48	12	65	9	196	6	211	20	38	18	76	22	191	13	226	578
07:45 AM	9	62	9	80	23	196	13	232	23	55	21	99	20	196	8	224	635
08:00 AM	8	38	12	58	44	212	15	271	23	42	23	88	20	202	7	229	646
08:15 AM	3	66	14	83	57	235	10	302	18	38	12	68	26	191	7	224	677
Total Volume	25	214	47	286	133	839	44	1016	84	173	74	331	88	780	35	903	2536
% App. Total	8.7	74.8	16.4		13.1	82.6	4.3		25.4	52.3	22.4		9.7	86.4	3.9		
PHF	.694	.811	.839	.861	.583	.893	.733	.841	.913	.786	.804	.836	.846	.965	.673	.986	.936
cars	23	205	45	273	133	805	43	981	79	169	71	319	85	729	32	846	2419
% cars	92.0	95.8	95.7	95.5	100	95.9	97.7	96.6	94.0	97.7	95.9	96.4	96.6	93.5	91.4	93.7	95.4
HV	2	9	2	13	0	34	1	35	5	4	3	12	3	51	3	57	117
% HV	8.0	4.2	4.3	4.5	0	4.1	2.3	3.4	6.0	2.3	4.1	3.6	3.4	6.5	8.6	6.3	4.6

105 Kenilworth Street Philadelphia, PA 19147

Lancaster & Ithan Avenues

File Name: 02-30IthanAM

Site Code : 00000000 Start Date : 11/15/2012

Page No : 1

EB Peds = diag peds NE-SW WB Peds = diag peds NW-SE

										GIO	ıps Pri	ntea-	пν										,
			an Av				La	ncaste						an Av				La	ncaste				
		So	uthbo	und				West	boun	d			No	rthbo	und				Eastl	ooung	<u> </u>		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NW-SE Peds	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NE-SW Peds	Peds	App. Total	Int. Total
07:00 AM	0	0	1	0	1	0	3	0	0	0	3	0	0	0	0	0	0	5	1	0	0	6	10
07:15 AM	0	1	1	0	2	0	3	0	0	0	3	0	0	0	0	0	0	12	0	0	0	12	17
07:30 AM	0	6	1	0	7	0	5	1	0	0	6	3	1	1	0	5	1	14	3	0	0	18	36
07:45 AM	1	0	0	0	1	0	10	0	0	0	10	0	1	1	0	2	1	15	0	0	0	16	29
Total	1	7	3	0	11	0	21	1	0	0	22	3	2	2	0	7	2	46	4	0	0	52	92
08:00 AM	0	1	0	0	1	0	7	0	0	0	7	2	1	0	0	3	1	12	0	0	0	13	24
08:15 AM	1	2	1	0	4	0	12	0	0	0	12	0	1	1	0	2	0	10	0	0	0	10	28
08:30 AM	0	1	2	0	3	0	15	2	0	0	17	0	1	0	0	1	0	11	0	0	0	11	32
08:45 AM	0	0	1	0	1	0	6	0	0	1	7	0	1	0	0	1	2	14	1	0	0	17	26
Total	1	4	4	0	9	0	40	2	0	1	43	2	4	1	0	7	3	47	1	0	0	51	110
Grand Total	2	11	7	0	20	0	61	3	0	1	65	5	6	3	0	14	5	93	5	0	0	103	202
Apprch %	10	55	35	0		0	93.8	4.6	0	1.5		35.7	42.9	21.4	0		4.9	90.3	4.9	0	0		
Total %	1	5.4	3.5	0	9.9	0	30.2	1.5	0	0.5	32.2	2.5	3	1.5	0	6.9	2.5	46	2.5	0	0	51	

		Ithan A	Avenue	•	L	ancast	er Aven	ue		lthan	Avenue		L	ancast	er Aver	nue	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fror	n 07:30	AM to 0	8:15 AM -	Peak 1	of 1	_				_				_		
Peak Hour for E	ntire Inte	ersection	Begins	at 07:30	AM												
07:30 AM	0	6	1	7	0	5	1	6	3	1	1	5	1	14	3	18	36
07:45 AM	1	0	0	1	0	10	0	10	0	1	1	2	1	15	0	16	29
08:00 AM	0	1	0	1	0	7	0	7	2	1	0	3	1	12	0	13	24
08:15 AM	1	2	1	4	0	12	0	12	0	11	1	2	0	10	0	10	28
Total Volume	2	9	2	13	0	34	1	35	5	4	3	12	3	51	3	57	117
% App. Total	15.4	69.2	15.4		0	97.1	2.9		41.7	33.3	25		5.3	89.5	5.3		
PHF	.500	.375	.500	.464	.000	.708	.250	.729	.417	1.00	.750	.600	.750	.850	.250	.792	.813

105 Kenilworth Street Philadelphia, PA 19147

Lancaster Avenue & Lowrys Lane

File Name: 03-30LowrAM

Site Code : 00000000 Start Date : 11/7/2012

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									Jioupe	) I IIIILE	<del>u oui</del>	, <b>.</b>									
		Lo	wrys L	_ane			Lanc	aster A	Avenu	Э		Lo	wrys l	_ane			Lanca	aster A	\venu	е	
		So	uthbo	und			W	estbo	und			No	rthbo	und			E	astbou	ınd		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	2	1	1	4	2	122	1	2	127	15	15	6	3	39	1	130	1	1	133	303
07:15 AM	4	4	3	0	11	3	193	3	0	199	22	14	3	0	39	0	162	5	0	167	416
07:30 AM	7	17	4	9	37	6	199	1	1	207	9	25	6	4	44	2	250	4	1	257	545
07:45 AM	4	21	7	3	35	6	271	8	0	285	8	34	17	3	62	7	276	4	0	287	669
Total	15	44	15	13	87	17	785	13	3	818	54	88	32	10	184	10	818	14	2	844	1933
08:00 AM	2	18	4	1	25	3	292	4	0	299	17	28	8	2	55	3	271	8	0	282	661
08:15 AM	8	14	4	0	26	1	301	9	0	311	12	15	7	6	40	6	238	3	0	247	624
08:30 AM	4	8	5	1	18	3	230	10	0	243	3	23	8	6	40	3	177	3	0	183	484
08:45 AM	11	6	2	1	20	2	235	8	1	246	4	11	9	3	27	2	194	3	0	199	492
Total	25	46	15	3	89	9	1058	31	1	1099	36	77	32	17	162	14	880	17	0	911	2261
<b>Grand Total</b>	40	90	30	16	176	26	1843	44	4	1917	90	165	64	27	346	24	1698	31	2	1755	4194
Apprch %	22.7	51.1	17	9.1		1.4	96.1	2.3	0.2		26	47.7	18.5	7.8		1.4	96.8	1.8	0.1		
Total %	1	2.1	0.7	0.4	4.2	0.6	43.9	1	0.1	45.7	2.1	3.9	1.5	0.6	8.2	0.6	40.5	0.7	0	41.8	
cars	39	88	30	16	173	26	1797	44	4	1871	86	164	63	27	340	24	1639	27	2	1692	4076
% cars	97.5	97.8	100	100	98.3	100	97.5	100	100	97.6	95.6	99.4	98.4	100	98.3	100	96.5	87.1	100	96.4	97.2
HV	1	2	0	0	3	0	46	0	0	46	4	1	1	0	6	0	59	4	0	63	118
% HV	2.5	2.2	0	0	1.7	0	2.5	0	0	2.4	4.4	0.6	1.6	0	1.7	0	3.5	12.9	0	3.6	2.8

		,	s Lane		L	ancaste		iue		•	/s Lane		L	ancast		nue	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fror	n 07:30	AM to 0	8:15 AM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	ersection	n Begins	at 07:30	AM												
07:30 AM	7	17	4	28	6	199	1	206	9	25	6	40	2	250	4	256	530
07:45 AM	4	21	7	32	6	271	8	285	8	34	17	59	7	276	4	287	663
08:00 AM	2	18	4	24	3	292	4	299	17	28	8	53	3	271	8	282	658
08:15 AM	8	14	4	26	1	301	9	311	12	15	7	34	6	238	3	247	618
Total Volume	21	70	19	110	16	1063	22	1101	46	102	38	186	18	1035	19	1072	2469
% App. Total	19.1	63.6	17.3		1.5	96.5	2		24.7	54.8	20.4		1.7	96.5	1.8		
PHF	.656	.833	.679	.859	.667	.883	.611	.885	.676	.750	.559	.788	.643	.938	.594	.934	.931
cars	20	68	19	107	16	1038	22	1076	42	102	37	181	18	1009	16	1043	2407
% cars	95.2	97.1	100	97.3	100	97.6	100	97.7	91.3	100	97.4	97.3	100	97.5	84.2	97.3	97.5
HV	1	2	0	3	0	25	0	25	4	0	1	5	0	26	3	29	62
% HV	4.8	2.9	0	2.7	0	2.4	0	2.3	8.7	0	2.6	2.7	0	2.5	15.8	2.7	2.5

105 Kenilworth Street Philadelphia, PA 19147

Lancaster Avenue & Lowrys Lane

File Name: 03-30LowrAM

Site Code : 00000000 Start Date : 11/7/2012

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									<u> </u>	ups i iii	itou i										,
			wrys L outhbo					aster / estbo	Avenu und	е			wrys l orthbo					aster <i>l</i> astbou	Avenuo und	е	
Start Time	Left		Right		App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right		App. Total	Left	Thru			App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	7
07:15 AM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	5	1	0	6	11
07:30 AM	1	1	0	0	2	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	8
07:45 AM	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	13	2	0	15	21
Total	1	1	0	0	2	0	15	0	0	15	0	0	0	0	0	0	27	3	0	30	47
08:00 AM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	4	0	0	4	9
08:15 AM	0	1	0	0	1	0	10	0	0	10	4	0	1	0	5	0	7	1	0	8	24
08:30 AM	0	0	0	0	0	0	7	0	0	7	0	1	0	0	1	0	12	0	0	12	20
08:45 AM	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	9	0	0	9	18_
Total	0	1	0	0	1	0	31	0	0	31	4	1	1	0	6	0	32	1	0	33	71
											ı										
Grand Total	1	2	0	0	3	0	46	0	0	46	4	1	1	0	6	0	59	4	0	63	118
Apprch %	33.3	66.7	0	0		0	100	0	0		66.7	16.7	16.7	0		0	93.7	6.3	0		
Total %	0.8	1.7	0	0	2.5	0	39	0	0	39	3.4	0.8	8.0	0	5.1	0	50	3.4	0	53.4	

		Lowry	s Lane		L	ancaste	er Aver	nue			/s Lane		L	ancast	er Aver	nue	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 07:30	AM to 0	08:15 AM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	n Begins	s at 07:30	AM												
07:30 AM	1	1	0	2	0	4	0	4	0	0	0	0	0	2	0	2	8
07:45 AM	0	0	0	0	0	6	0	6	0	0	0	0	0	13	2	15	21
08:00 AM	0	0	0	0	0	5	0	5	0	0	0	0	0	4	0	4	9
08:15 AM	0	1	0	1	0	10	0	10	4	0	1	5	0	7	1	8	24
Total Volume	1	2	0	3	0	25	0	25	4	0	1	5	0	26	3	29	62
% App. Total	33.3	66.7	0		0	100	0		80	0	20		0	89.7	10.3		
PHF	.250	.500	.000	.375	.000	.625	.000	.625	.250	.000	.250	.250	.000	.500	.375	.483	.646

105 Kenilworth Street Philadelphia, PA 19147

Lancaster & Garrett Avenues

File Name: 04-30GarAM

Site Code : 21102771 Start Date : 11/7/2012

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		Lancaste	r Avenue		Croups	- Garrett				Lancaste	r Avenu	e	
		Westb				North					ound		
Start Time	Left	Thru	Peds A	pp. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	3	0	0	3	0	5	1	6	0	4	0	4	13
07:15 AM	0	0	0	0	0	3	0	3	0	5	0	5	8
07:30 AM	3	0	0	3	0	3	4	7	0	9	0	9	19
07:45 AM	8	0	1	9	0	7	6	13	0	4	0	4	26
Total	14	0	1	15	0	18	11	29	0	22	0	22	66
08:00 AM	4	0	0	4	1	10	4	15	0	4	0	4	23
08:15 AM	4	0	0	4	0	5	6	11	0	7	0	7	22
08:30 AM	2	0	0	2	1	6	4	11	0	3	0	3	16
08:45 AM	4	0	0	4	2	12	2	16	0	12	0	12	32
Total	14	0	0	14	4	33	16	53	0	26	0	26	93
Grand Total	28	0	1	29	4	51	27	82	0	48	0	48	159
Apprch %	96.6	0	3.4		4.9	62.2	32.9		0	100	0		
Total %	17.6	0	0.6	18.2	2.5	32.1	17	51.6	0	30.2	0	30.2	
cars	28	0	1	29	4	51	27	82	0	48	0	48	159
% cars	100	0	100	100	100	100	100	100	0	100	0	100	100
HV	0	0	0	0	0	0	0	0	0	0	0	0	0
% HV	0	0	0	0	0	0	0	0	0	0	0	0	0

		caster Aver Vestbound		_	arrett Aveni Northbound	1		caster Ave Eastbound		
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From	m 07:30 AM to	08:15 AM -	- Peak 1 of 1							
Peak Hour for Entire Inte	ersection Begir	ns at 07:30	AM							
07:30 AM	3	0	3	0	3	3	0	9	9	15
07:45 AM	8	0	8	0	7	7	0	4	4	19
08:00 AM	4	0	4	1	10	11	0	4	4	19
08:15 AM	4	0	4	0	5	5	0	7	7	16
Total Volume	19	0	19	1	25	26	0	24	24	69
% App. Total	100	0		3.8	96.2		0	100		
PHF	.594	.000	.594	.250	.625	.591	.000	.667	.667	.908
cars	19	0	19	1	25	26	0	24	24	69
% cars	100	0	100	100	100	100	0	100	100	100
HV	0	0	0	0	0	0	0	0	0	0
% HV	0	0	0	0	0	0	0	0	0	0

105 Kenilworth Street Philadelphia, PA 19147

Lancaster & Garrett Avenues

File Name: 04-30GarAM

Site Code : 21102771 Start Date : 11/7/2012

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					Oi.	oups Filli	teu- IIV						
		Lancaste	r Avenu oound	е			Avenue bound			Lancaste	er Avenue oound	•	
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
1													
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
				1					ı				
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		
Total %													

	La	ncaster Ave Westboun		(	Sarrett Aven Northboun		Lar	ncaster Ave Eastbound		
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
eak Hour Analysis Fror	m 07:30 AM	to 08:15 AM	- Peak 1 of 1							
eak Hour for Entire Inte	ersection Beg	gins at 07:30	) AM							
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

105 Kenilworth Street Philadelphia, PA 19147

Sproul & Conestoga Roads

File Name: 05-SprConAM

Site Code : 00000000 Start Date : 11/14/2012

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										riiile	u- car										ı
		Sp	roul R	load			Cone	estoga	a Road			Sp	roul R	load			Cone	estoga	Road		
		So	uthbo	und			W	estbo	und			No	rthbo	und			E	astbou	ınd		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	10	30	7	0	47	0	98	17	0	115	36	51	4	0	91	25	65	8	0	98	351
07:15 AM	15	26	22	0	63	6	127	20	0	153	61	57	4	0	122	21	110	17	1	149	487
07:30 AM	19	45	17	0	81	17	137	11	0	165	64	60	7	0	131	30	150	29	0	209	586
07:45 AM	12	62	20	0	94	7	158	11	0	176	48	71	11	0	130	37	161	41	0	239	639
Total	56	163	66	0	285	30	520	59	0	609	209	239	26	0	474	113	486	95	1	695	2063
08:00 AM	12	48	14	0	74	4	157	14	0	175	48	65	2	0	115	45	127	40	0	212	576
08:15 AM	12	41	22	0	75	7	137	20	0	164	49	66	7	0	122	34	104	25	0	163	524
08:30 AM	6	42	22	0	70	3	143	15	0	161	49	58	7	0	114	28	94	24	0	146	491
08:45 AM	12	37	25	0	74	8	134	10	0	152	64	72	11_	0	147	39	107	27	0	173	546
Total	42	168	83	0	293	22	571	59	0	652	210	261	27	0	498	146	432	116	0	694	2137
Grand Total	98	331	149	0	578	52	1091	118	0	1261	419	500	53	0	972	259	918	211	1	1389	4200
Apprch %	17	57.3	25.8	0		4.1	86.5	9.4	0		43.1	51.4	5.5	0		18.6	66.1	15.2	0.1		
Total %	2.3	7.9	3.5	0	13.8	1.2	26	2.8	0	30	10	11.9	1.3	0	23.1	6.2	21.9	5	0	33.1	
cars	77	307	134	0	518	46	1067	108	0	1221	408	464	48	0	920	246	900	199	1	1346	4005
% cars	78.6	92.7	89.9	0	89.6	88.5	97.8	91.5	0	96.8	97.4	92.8	90.6	0	94.7	95	98	94.3	100	96.9	95.4
HV	21	24	15	0	60	6	24	10	0	40	11	36	5	0	52	13	18	12	0	43	195
% HV	21.4	7.3	10.1	0	10.4	11.5	2.2	8.5	0	3.2	2.6	7.2	9.4	0	5.3	5	2	5.7	0	3.1	4.6

		•	I Road		(	Conesto	ga Roa bound	ad			ıl Road bound		(	Conesto	oga Ro bound	ad	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fror				Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	n Begins	at 07:30	AM												
07:30 AM	19	45	17	81	17	137	11	165	64	60	7	131	30	150	29	209	586
07:45 AM	12	62	20	94	7	158	11	176	48	71	11	130	37	161	41	239	639
08:00 AM	12	48	14	74	4	157	14	175	48	65	2	115	45	127	40	212	576
08:15 AM	12	41	22	75	7	137	20	164	49	66	7	122	34	104	25	163	524
Total Volume	55	196	73	324	35	589	56	680	209	262	27	498	146	542	135	823	2325
% App. Total	17	60.5	22.5		5.1	86.6	8.2		42	52.6	5.4		17.7	65.9	16.4		
PHF	.724	.790	.830	.862	.515	.932	.700	.966	.816	.923	.614	.950	.811	.842	.823	.861	.910
cars	44	180	70	294	31	574	54	659	201	245	24	470	139	527	125	791	2214
% cars	80.0	91.8	95.9	90.7	88.6	97.5	96.4	96.9	96.2	93.5	88.9	94.4	95.2	97.2	92.6	96.1	95.2
HV	11	16	3	30	4	15	2	21	8	17	3	28	7	15	10	32	111
% HV	20.0	8.2	4.1	9.3	11.4	2.5	3.6	3.1	3.8	6.5	11.1	5.6	4.8	2.8	7.4	3.9	4.8

105 Kenilworth Street Philadelphia, PA 19147

Sproul & Conestoga Roads

File Name: 05-SprConAM

Site Code : 00000000 Start Date : 11/14/2012

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		Sp	roul R	Road			Cone	estoga	Road	•		Sp	roul R	oad			Con	estoga	Road		
		Sc	uthbo	und			W	estbo	und			No	rthbo	und			E	astbou	und		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	3	1	3	0	7	0	4	4	0	8	0	4	1	0	5	3	0	0	0	3	23
07:15 AM	4	3	7	0	14	1	0	2	0	3	2	1	0	0	3	0	1	1	0	2	22
07:30 AM	2	3	1	0	6	1	7	0	0	8	2	3	1	0	6	4	10	3	0	17	37
07:45 AM	2	6	1	0	9	2	3	1	0	6	1	4	1	0	6	2	2	3	0	7	28
Total	11	13	12	0	36	4	14	7	0	25	5	12	3	0	20	9	13	7	0	29	110
08:00 AM	2	4	1	0	7	1	3	1	0	5	1	4	0	0	5	0	2	3	0	5	22
08:15 AM	5	3	0	0	8	0	2	0	0	2	4	6	1	0	11	1	1	1	0	3	24
08:30 AM	2	2	1	0	5	0	5	1	0	6	1	5	0	0	6	1	2	1	0	4	21
08:45 AM	1	2	1_	0	4	1_	0	1_	0	2	0	9	1_	0	10	2	0	0	0	2	18_
Total	10	11	3	0	24	2	10	3	0	15	6	24	2	0	32	4	5	5	0	14	85
Grand Total	21	24	15	0	60	6	24	10	0	40	11	36	5	0	52	13	18	12	0	43	195
Apprch %	35	40	25	0		15	60	25	0		21.2	69.2	9.6	0		30.2	41.9	27.9	0		
Total %	10.8	12.3	7.7	0	30.8	3.1	12.3	5.1	0	20.5	5.6	18.5	2.6	0	26.7	6.7	9.2	6.2	0	22.1	

			l Road bound		C	Conesto	ga Roa bound				I Road bound		(		oga Roa bound	ad	
Start Time	Left			App. Total	Left	Thru			Left	Thru	Right	App. Total	Left			App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 07:30	AM to 0	8:15 AM -	Peak 1	of 1	-				_				_		
Peak Hour for E	ntire Inte	rsection	Begins	at 07:30	AM												
07:30 AM	2	3	1	6	1	7	0	8	2	3	1	6	4	10	3	17	37
07:45 AM	2	6	1	9	2	3	1	6	1	4	1	6	2	2	3	7	28
08:00 AM	2	4	1	7	1	3	1	5	1	4	0	5	0	2	3	5	22
08:15 AM	5	3	0	8	0	2	0	2	4	6	1	11	1	1	1	3	24
Total Volume	11	16	3	30	4	15	2	21	8	17	3	28	7	15	10	32	111
% App. Total	36.7	53.3	10		19	71.4	9.5		28.6	60.7	10.7		21.9	46.9	31.2		
PHF	.550	.667	.750	.833	.500	.536	.500	.656	.500	.708	.750	.636	.438	.375	.833	.471	.750

105 Kenilworth Street Philadelphia, PA 19147

Conestoga & Spring Mill Roads

File Name: 06-ConSpMAM

Site Code : 00000000 Start Date : 11/14/2012

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			/lill Road bound		•	Conesto Westb	ound				ga Road oound		
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds A	pp. Total	Int. Total
07:00 AM	0	2	0	2	114	0	0	114	0	76	0	76	192
07:15 AM	2	5	0	7	146	1	0	147	1	136	0	137	291
07:30 AM	1	3	0	4	167	0	0	167	0	176	0	176	347
07:45 AM	1_	1_	0	2	183	1	0	184	1	198	0	199	385
Total	4	11	0	15	610	2	0	612	2	586	0	588	1215
08:00 AM	0	3	0	3	172	2	0	174	1	136	0	137	314
08:15 AM	2	1	0	3	156	0	0	156	0	115	0	115	274
08:30 AM	1	2	0	3	166	1	0	167	0	111	0	111	281
08:45 AM	1_	3	0	4	147	1	0	148	1	132	0	133	285
Total	4	9	0	13	641	4	0	645	2	494	0	496	1154
Grand Total	8	20	0	28	1251	6	0	1257	4	1080	0	1084	2369
Apprch %	28.6	71.4	0		99.5	0.5	0		0.4	99.6	0		
Total %	0.3	0.8	0	1.2	52.8	0.3	0	53.1	0.2	45.6	0	45.8	
cars	8	18	0	26	1213	6	0	1219	4	1041	0	1045	2290
% cars	100	90	0	92.9	97	100	0	97	100	96.4	0	96.4	96.7
HV	0	2	0	2	38	0	0	38	0	39	0	39	79
% HV	0	10	0	7.1	3	0	0	3	0	3.6	0	3.6	3.3

		ring Mill Ro Southbound		Co	nestoga Ro Westbound			nestoga Ro Eastbound	l	
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From										
Peak Hour for Entire Inte	ersection Beg	ins at 07:30	AM							
07:30 AM	1	3	4	167	0	167	0	176	176	347
07:45 AM	1	1	2	183	1	184	1	198	199	385
08:00 AM	0	3	3	172	2	174	1	136	137	314
08:15 AM	2	1	3	156	0	156	0	115	115	274
Total Volume	4	8	12	678	3	681	2	625	627	1320
% App. Total	33.3	66.7		99.6	0.4		0.3	99.7		
PHF	.500	.667	.750	.926	.375	.925	.500	.789	.788	.857
cars	4	8	12	656	3	659	2	599	601	1272
% cars	100	100	100	96.8	100	96.8	100	95.8	95.9	96.4
HV	0	0	0	22	0	22	0	26	26	48
% HV	0	0	0	3.2	0	3.2	0	4.2	4.1	3.6

105 Kenilworth Street Philadelphia, PA 19147

Conestoga & Spring Mill Roads

File Name : 06-ConSpMAM Site Code : 00000000 Start Date : 11/14/2012

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						Jupo i iiii							
		Spring N					oga Road				ga Road		
		South	bound			West	bound			Eastk	oound		
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	6	0	0	6	0	3	0	3	9
07:15 AM	0	1	0	1	2	0	0	2	0	5	0	5	8
07:30 AM	0	0	0	0	9	0	0	9	0	11	0	11	20
07:45 AM	0	0	0	0	6	0	0	6	0	5	0	5	11_
Total	0	1	0	1	23	0	0	23	0	24	0	24	48
08:00 AM	0	0	0	0	6	0	0	6	0	2	0	2	8
08:15 AM	0	0	0	0	1	0	0	1	0	8	0	8	9
08:30 AM	0	1	0	1	7	0	0	7	0	3	0	3	11
08:45 AM	0	0	0	0	1_	0	0	1	0	2	0	2	3
Total	0	1	0	1	15	0	0	15	0	15	0	15	31
Grand Total Apprch %	0	2 100	0 0	2	38 100	0 0	0	38	0 0	39 100	0 0	39	79
Total %	0	2.5	0	2.5	48.1	0	0	48.1	0	49.4	0	49.4	

	•	ing Mill Ro outhbound		C	onestoga Ro Westbound			nestoga Ro Eastbound		
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis Fron	n 07:30 AM to	08:15 AM	- Peak 1 of 1							
Peak Hour for Entire Inte	ersection Begi	ns at 07:30	AM							
07:30 AM	0	0	0	9	0	9	0	11	11	20
07:45 AM	0	0	0	6	0	6	0	5	5	11
MA 00:80	0	0	0	6	0	6	0	2	2	8
08:15 AM	0	0	0	1	0	1	0	8	8	9
Total Volume	0	0	0	22	0	22	0	26	26	48
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.611	.000	.611	.000	.591	.591	.600

105 Kenilworth Street Philadelphia, PA 19147

Conestoga Road & Ithan Avenue

File Name: 07-ConlthAM

Site Code : 00000000 Start Date : 11/14/2012

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									Ji Oupc	) I IIIILG	u oui	3 - 11V									1
		lth	an Av	enue			Cone	estoga	Road			lth	an Av	enue			Cone	estoga	Road		
		So	uthbo	und			W	estbo	und			No	orthbo	und			E	astbou	ınd		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	2	0	7	0	9	0	83	5	0	88	1	8	1	0	10	18	54	0	2	74	181
07:15 AM	9	2	21	0	32	0	89	16	0	105	4	14	1	0	19	41	83	0	0	124	280
07:30 AM	13	12	26	0	51	0	113	25	0	138	0	39	1	0	40	53	96	0	0	149	378
07:45 AM	19	16	47	0	82	1	112	54	1	168	2	60	4	0	66	46	116	2	0	164	480
Total	43	30	101	0	174	1	397	100	1	499	7	121	7	0	135	158	349	2	2	511	1319
					· ·																'
08:00 AM	22	16	42	0	80	1	116	25	0	142	9	33	3	0	45	31	77	0	0	108	375
08:15 AM	7	7	21	0	35	0	102	21	0	123	3	21	4	0	28	32	93	0	0	125	311
08:30 AM	3	2	14	0	19	0	113	13	0	126	0	16	1	0	17	30	81	1	0	112	274
08:45 AM	5	3	15	0	23	4	100	13	0	117	0	17	2	1	20	35	96	0	0	131	291
Total	37	28	92	0	157	5	431	72	0	508	12	87	10	1	110	128	347	1	0	476	1251
	'																				'
Grand Total	80	58	193	0	331	6	828	172	1	1007	19	208	17	1	245	286	696	3	2	987	2570
Apprch %	24.2	17.5	58.3	0		0.6	82.2	17.1	0.1		7.8	84.9	6.9	0.4		29	70.5	0.3	0.2		
Total %	3.1	2.3	7.5	0	12.9	0.2	32.2	6.7	0	39.2	0.7	8.1	0.7	0	9.5	11.1	27.1	0.1	0.1	38.4	
cars	78	50	185	0	313	6	800	167	1	974	18	201	15	1	235	269	676	2	2	949	2471
% cars	97.5	86.2	95.9	Ö	94.6	100	96.6	97.1	100	96.7	94.7	96.6	88.2	100	95.9	94.1	97.1	66.7	100	96.1	96.1
HV	2	8	8	0	18	0	28	5	0	33	1	7	2	0	10	17	20	1	0	38	99
% HV	2.5	13.8	4.1	Ö	5.4	Ō	3.4	2.9	Ō	3.3	5.3	3.4	11.8	Ö	4.1	5.9	2.9	33.3	0	3.9	3.9

			Avenue bound		(	Conesto West	ga Roa bound	ad			Avenue bound	•	C		oga Ro bound	ad	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Anal	ysis Fror	n 07:30	AM to 0	8:15 AM -	Peak 1	of 1	_				_				_		
Peak Hour for E	ntire Inte	ersection	n Begins	at 07:30	AM												
07:30 AM	13	12	26	51	0	113	25	138	0	39	1	40	53	96	0	149	378
07:45 AM	19	16	47	82	1	112	54	167	2	60	4	66	46	116	2	164	479
08:00 AM	22	16	42	80	1	116	25	142	9	33	3	45	31	77	0	108	375
08:15 AM	7	7	21	35	0	102	21	123	3	21	4	28	32	93	0	125	311
Total Volume	61	51	136	248	2	443	125	570	14	153	12	179	162	382	2	546	1543
% App. Total	24.6	20.6	54.8		0.4	77.7	21.9		7.8	85.5	6.7		29.7	70	0.4		
PHF	.693	.797	.723	.756	.500	.955	.579	.853	.389	.638	.750	.678	.764	.823	.250	.832	.805
cars	60	43	130	233	2	428	122	552	14	146	10	170	152	368	1	521	1476
% cars	98.4	84.3	95.6	94.0	100	96.6	97.6	96.8	100	95.4	83.3	95.0	93.8	96.3	50.0	95.4	95.7
HV	1	8	6	15	0	15	3	18	0	7	2	9	10	14	1	25	67
% HV	1.6	15.7	4.4	6.0	0	3.4	2.4	3.2	0	4.6	16.7	5.0	6.2	3.7	50.0	4.6	4.3

105 Kenilworth Street Philadelphia, PA 19147

Conestoga Road & Ithan Avenue

File Name: 07-ConlthAM

Site Code : 00000000 Start Date : 11/14/2012

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									GIU	ups riii	iteu- i	1 V									
			an Avo					estoga estbo	Road				an Ave					estoga astbou			
		30	uthbo	una			VV	estbo	una			INC	odinic	una				astbot	ına		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	2	0	2	0	2	1	0	3	1	0	0	0	1	1	2	0	0	3	9
07:15 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	1	2	0	0	3	6
07:30 AM	0	2	2	0	4	0	5	1	0	6	0	4	0	0	4	5	9	0	0	14	28
07:45 AM	0	4	3	0	7	0	2	1	0	3	0	2	0	0	2	3	1	1	0	5	17
Total	0	6	7	0	13	0	12	3	0	15	1	6	0	0	7	10	14	1	0	25	60
08:00 AM	1	1	1	0	3	0	7	1	0	8	0	1	0	0	1	1	1	0	0	2	14
08:15 AM	0	1	0	0	1	0	1	0	0	1	0	0	2	0	2	1	3	0	0	4	8
08:30 AM	0	0	0	0	0	0	6	1	0	7	0	0	0	0	0	4	1	0	0	5	12
08:45 AM	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	1	1_	0	0	2	5_
Total	2	2	1	0	5	0	16	2	0	18	0	1	2	0	3	7	6	0	0	13	39
Grand Total	2	8	8	0	18	0	28	5	0	33	1	7	2	0	10	17	20	1	0	38	99
Apprch %	11.1	44.4	44.4	0		0	84.8	15.2	0		10	70	20	0		44.7	52.6	2.6	0		
Total %	2	8.1	8.1	0	18.2	0	28.3	5.1	0	33.3	1	7.1	2	0	10.1	17.2	20.2	1	0	38.4	

			Avenue		C		ga Ro	ad			Avenue		(		oga Ro	ad	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fror	n 07:30	AM to 0	8:15 AM -	Peak 1	of 1	_								_		
Peak Hour for E	ntire Inte	rsection	Begins	at 07:30	AM												
07:30 AM	0	2	2	4	0	5	1	6	0	4	0	4	5	9	0	14	28
07:45 AM	0	4	3	7	0	2	1	3	0	2	0	2	3	1	1	5	17
08:00 AM	1	1	1	3	0	7	1	8	0	1	0	1	1	1	0	2	14
08:15 AM	0	1	0	1	0	1	0	1	0	0	2	2	1	3	0	4	8
Total Volume	1	8	6	15	0	15	3	18	0	7	2	9	10	14	1	25	67
% App. Total	6.7	53.3	40		0	83.3	16.7		0	77.8	22.2		40	56	4		
PHF	.250	.500	.500	.536	.000	.536	.750	.563	.000	.438	.250	.563	.500	.389	.250	.446	.598

105 Kenilworth Street Philadelphia, PA 19147

Conestoga Road & Lowrys Lane/Strathmore

Drive

File Name: 08-ConLowAM Site Code : 00000000

Start Date : 11/14/2012

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			wrys L uthbo					estoga estbo	Road und				hmore orthbo		•			estoga astbou			
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	1	5	6	1	13	2	76	0	0	78	5	4	4	2	15	3	54	0	1	58	164
07:15 AM	0	3	8	1	12	1	99	3	1	104	11	1	0	0	12	5	83	5	1	94	222
07:30 AM	0	5	19	0	24	4	98	0	1	103	5	2	3	2	12	7	94	7	3	111	250
07:45 AM	0	3	32	0	35	4	133	1	0	138	3	5	3	0	11	18	127	5	0	150	334
Total	1	16	65	2	84	11	406	4	2	423	24	12	10	4	50	33	358	17	5	413	970
08:00 AM	1	5	16	1	23	1	105	2	1	109	3	3	3	0	9	11	99	2	0	112	253
08:15 AM	1	2	14	0	17	0	111	2	0	113	2	4	3	0	9	10	95	0	0	105	244
08:30 AM	2	6	15	0	23	2	103	2	0	107	6	0	2	0	8	9	74	3	0	86	224
08:45 AM	2	4	7	2	15	5	92	3	1_	101	5	2	1_	1_	9	7	101	3_	1_	112	237
Total	6	17	52	3	78	8	411	9	2	430	16	9	9	1	35	37	369	8	1	415	958
Grand Total	7	33	117	5	162	19	817	13	4	853	40	21	19	5	85	70	727	25	6	828	1928
Apprch %	4.3	20.4	72.2	3.1		2.2	95.8	1.5	0.5		47.1	24.7	22.4	5.9		8.5	87.8	3	0.7		
Total %	0.4	1.7	6.1	0.3	8.4	1	42.4	0.7	0.2	44.2	2.1	1.1	1	0.3	4.4	3.6	37.7	1.3	0.3	42.9	
cars	7	32	113	5	157	19	795	13	4	831	39	20	18	5	82	67	712	19	6	804	1874
% cars	100	97	96.6	100	96.9	100	97.3	100	100	97.4	97.5	95.2	94.7	100	96.5	95.7	97.9	76	100	97.1	97.2
HV	0	1	4	0	5	0	22	0	0	22	1	1	1	0	3	3	15	6	0	24	54
% HV	0	3	3.4	0	3.1	0	2.7	0	0	2.6	2.5	4.8	5.3	0	3.5	4.3	2.1	24	0	2.9	2.8

		,	s Lane bound		(	Conesto West	oga Roa bound	ad	S		ore Dri	ve	(		oga Roa bound	ad	
Start Time	Left			App. Total	Left	Thru		App. Total	Left	Thru	Right	App. Total	Left	Thru		App. Total	Int. Total
Peak Hour Anal	ysis Fror				Peak 1	of 1							•				
Peak Hour for E	ntire Inte	ersection	Begins	at 07:30	AM												
07:30 AM	0	5	19	24	4	98	0	102	5	2	3	10	7	94	7	108	244
07:45 AM	0	3	32	35	4	133	1	138	3	5	3	11	18	127	5	150	334
08:00 AM	1	5	16	22	1	105	2	108	3	3	3	9	11	99	2	112	251
08:15 AM	1	2	14	17	0	111	2	113	2	4	3	9	10	95	0	105	244
Total Volume	2	15	81	98	9	447	5	461	13	14	12	39	46	415	14	475	1073
% App. Total	2	15.3	82.7		2	97	1.1		33.3	35.9	30.8		9.7	87.4	2.9		
PHF	.500	.750	.633	.700	.563	.840	.625	.835	.650	.700	1.00	.886	.639	.817	.500	.792	.803
cars	2	14	79	95	9	435	5	449	12	13	12	37	45	406	10	461	1042
% cars	100	93.3	97.5	96.9	100	97.3	100	97.4	92.3	92.9	100	94.9	97.8	97.8	71.4	97.1	97.1
HV	0	1	2	3	0	12	0	12	1	1	0	2	1	9	4	14	31
% HV	0	6.7	2.5	3.1	0	2.7	0	2.6	7.7	7.1	0	5.1	2.2	2.2	28.6	2.9	2.9

105 Kenilworth Street Philadelphia, PA 19147

Conestoga Road & Lowrys Lane/Strathmore

Drive

File Name: 08-ConLowAM Site Code : 00000000

Start Date : 11/14/2012

Page No : 1

										ups i iii				<u> </u>							1
			wrys L						Road					e Drive	<del>)</del>				Road		
		Sc	uthbo	und			W	estbo	und			No	orthbo	und			E	astboı	ınd		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	3	0	0	3	6
07:15 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	1	0	1	0	2	5
07:30 AM	0	0	1	0	1	0	4	0	0	4	0	0	0	0	0	0	4	3	0	7	12
07:45 AM	0	1	0	0	1	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	8
Total	0	1	1	0	2	0	13	0	0	13	0	0	1	0	1	1	10	4	0	15	31
08:00 AM	0	0	1	0	1	0	4	0	0	4	1	0	0	0	1	1	1	1	0	3	9
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
08:30 AM	0	0	2	0	2	0	2	0	0	2	0	0	0	0	0	1	1	1	0	3	7
08:45 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	5
Total	0	0	3	0	3	0	9	0	0	9	1	1	0	0	2	2	5	2	0	9	23
Grand Total	0	1	4	0	5	0	22	0	0	22	1	1	1	0	3	3	15	6	0	24	54
Apprch %	0	20	80	0		0	100	0	0		33.3	33.3	33.3	0		12.5	62.5	25	0		
Total %	0	1.9	7.4	0	9.3	0	40.7	0	0	40.7	1.9	1.9	1.9	0	5.6	5.6	27.8	11.1	0	44.4	

		. ,	s Lane		C		ga Roa bound	ad	S		ore Driv	ve	(	Conesto	oga Roa bound	ad	
Start Time	Left			App. Total	Left			App. Total	Left	Thru		App. Total	Left			App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 07:30	AM to 0	08:15 AM -	Peak 1		-										
Peak Hour for E	ntire Inte	rsection	Begins	s at 07:30	AM												
07:30 AM	0	0	1	1	0	4	0	4	0	0	0	0	0	4	3	7	12
07:45 AM	0	1	0	1	0	4	0	4	0	0	0	0	0	3	0	3	8
08:00 AM	0	0	1	1	0	4	0	4	1	0	0	1	1	1	1	3	9
08:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
Total Volume	0	1	2	3	0	12	0	12	1	1	0	2	1	9	4	14	31
% App. Total	0	33.3	66.7		0	100	0		50	50	0		7.1	64.3	28.6		
PHF	.000	.250	.500	.750	.000	.750	.000	.750	.250	.250	.000	.500	.250	.563	.333	.500	.646

# **F. Tavani and Associates, Inc.** 105 Kenilworth Street

Philadelphia, PA 19147

Conestoga Road & Garrett Avenue/ Williams Road

File Name: 09-ConGarAM Site Code : 21102701

Start Date : 11/14/2012

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			rett Av						Road	7111110		Wil	liams l					estoga astbou			
O( - 1 T'	1 - 61					1 - 61					1 - 6			-		1 - 6					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	1	0	5	1	7	0	63	1	3	67	3	1	0	0	4	3	62	1	0	66	144
07:15 AM	6	2	5	2	15	0	102	2	0	104	4	2	2	0	8	3	87	0	0	90	217
07:30 AM	5	1	7	0	13	3	98	1	2	104	2	2	3	3	10	1	102	0	0	103	230
07:45 AM	3	2	7	0	12	0	116	1	1	118	2	1	2	0	5	11	125	0	1	137	272
Total	15	5	24	3	47	3	379	5	6	393	11	6	7	3	27	18	376	1	1	396	863
08:00 AM	3	0	13	1	17	1	94	1	1	97	1	1	2	1	5	5	110	0	0	115	234
08:15 AM	4	0	10	0	14	0	102	1	1	104	1	2	2	0	5	8	94	1	2	105	228
08:30 AM	7	1	2	0	10	1	91	1	0	93	1	4	4	1	10	7	80	0	1	88	201
08:45 AM	7	1	5	0	13	1	92	5	0	98	2	1	1	1	5	7	106	2	0	115	231
Total	21	2	30	1	54	3	379	8	2	392	5	8	9	3	25	27	390	3	3	423	894
<b>Grand Total</b>	36	7	54	4	101	6	758	13	8	785	16	14	16	6	52	45	766	4	4	819	1757
Apprch %	35.6	6.9	53.5	4		0.8	96.6	1.7	1		30.8	26.9	30.8	11.5		5.5	93.5	0.5	0.5		
Total %	2	0.4	3.1	0.2	5.7	0.3	43.1	0.7	0.5	44.7	0.9	0.8	0.9	0.3	3	2.6	43.6	0.2	0.2	46.6	
cars	36	7	54	4	101	6	758	13	8	785	16	14	16	6	52	45	766	4	4	819	1757
% cars	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	(		Avenue	е	(		ga Roa	ad			ns Roa		C		oga Ro	ad	
		South	bound			west	bound			NOIT	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 07:30	AM to 0	8:15 AM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	<b>Begins</b>	at 07:30	AM												
07:30 AM	5	1	7	13	3	98	1	102	2	2	3	7	1	102	0	103	225
07:45 AM	3	2	7	12	0	116	1	117	2	1	2	5	11	125	0	136	270
08:00 AM	3	0	13	16	1	94	1	96	1	1	2	4	5	110	0	115	231
08:15 AM	4	0	10	14	0	102	1	103	1	2	2	5	8	94	1	103	225
Total Volume	15	3	37	55	4	410	4	418	6	6	9	21	25	431	1	457	951
% App. Total	27.3	5.5	67.3		1	98.1	1		28.6	28.6	42.9		5.5	94.3	0.2		
PHF	.750	.375	.712	.859	.333	.884	1.00	.893	.750	.750	.750	.750	.568	.862	.250	.840	.881
cars	15	3	37	55	4	410	4	418	6	6	9	21	25	431	1	457	951
% cars	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

105 Kenilworth Street Philadelphia, PA 19147

Conestoga Road & Garrett Avenue/ Williams Road

File Name: 09-ConGarAM

Site Code : 21102701 Start Date : 11/14/2012

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									GIO	ups Prii	itea- r	1 V									
		Gar	rett Av	enue/			Cone	estoga	Road			Will	liams l	Road			Cone	estoga	Road		
		So	uthbo	und				estbo				No	rthbo	und			Ea	astbou	ınd		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

		Garrett		-	C	onesto	_	ad			ns Road	i	(	Conesto	_	ad	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 07:30	AM to 0	08:15 AM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	n Begins	s at 07:30	AM												
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

105 Kenilworth Street Philadelphia, PA 19147

Spring Mill and County Line Roads

File Name: 10-SpMCoLAM

Site Code : 00000000 Start Date : 11/13/2012

Page No : 1

										)	u oui	,									1
		Coun	ty Lin	e Roa	d		Sprii	ng Mil	I Road			Coun	ty Lin	e Road	t		Sprii	ng Mill	Road		
		So	uthbo	und			W	estbo	und			No	rthbo	und			E	astbou	ınd		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	3	18	17	0	38	7	47	5	0	59	11	16	3	0	30	4	46	10	0	60	187
07:15 AM	6	36	12	0	54	14	55	5	0	74	11	29	7	0	47	11	53	13	0	77	252
07:30 AM	9	70	13	0	92	16	72	23	0	111	9	41	7	0	57	6	80	14	0	100	360
07:45 AM	13	78	11	0	102	13	54	15	0	82	9	54	16	0	79	11	61	19	0	91	354
Total	31	202	53	0	286	50	228	48	0	326	40	140	33	0	213	32	240	56	0	328	1153
08:00 AM	7	84	13	0	104	17	51	24	0	92	10	87	9	0	106	6	71	12	0	89	391
08:15 AM	3	90	15	0	108	15	83	14	0	112	12	63	12	0	87	11	62	14	0	87	394
08:30 AM	9	49	16	0	74	8	45	15	0	68	11	62	8	0	81	15	70	13	0	98	321
08:45 AM	6	66	20	0	92	12	47	13	0	72	8	53	7	0	68	15	49	12	0	76	308
Total	25	289	64	0	378	52	226	66	0	344	41	265	36	0	342	47	252	51	0	350	1414
<b>Grand Total</b>	56	491	117	0	664	102	454	114	0	670	81	405	69	0	555	79	492	107	0	678	2567
Apprch %	8.4	73.9	17.6	0		15.2	67.8	17	0		14.6	73	12.4	0		11.7	72.6	15.8	0		
Total %	2.2	19.1	4.6	0	25.9	4	17.7	4.4	0	26.1	3.2	15.8	2.7	0	21.6	3.1	19.2	4.2	0	26.4	
cars	54	480	105	0	639	101	430	110	0	641	77	397	66	0	540	70	473	102	0	645	2465
% cars	96.4	97.8	89.7	0	96.2	99	94.7	96.5	0	95.7	95.1	98	95.7	0	97.3	88.6	96.1	95.3	0	95.1	96
HV	2	11	12	0	25	1	24	4	0	29	4	8	3	0	15	9	19	5	0	33	102
% HV	3.6	2.2	10.3	0	3.8	1	5.3	3.5	0	4.3	4.9	2	4.3	0	2.7	11.4	3.9	4.7	0	4.9	4

	С	-	Line Roanbound	ad	,	Spring I West	Mill Roa bound	ad	С	•	Line Ro		8		Mill Roabound	ad	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 07:30	AM to 0	3:15 AM -	Peak 1	of 1	_				_				_		
Peak Hour for E	ntire Inte	rsection	n Begins	at 07:30	AM												
07:30 AM	9	70	13	92	16	72	23	111	9	41	7	57	6	80	14	100	360
07:45 AM	13	78	11	102	13	54	15	82	9	54	16	79	11	61	19	91	354
08:00 AM	7	84	13	104	17	51	24	92	10	87	9	106	6	71	12	89	391
08:15 AM	3	90	15	108	15	83	14	112	12	63	12	87	11	62	14	87	394
Total Volume	32	322	52	406	61	260	76	397	40	245	44	329	34	274	59	367	1499
% App. Total	7.9	79.3	12.8		15.4	65.5	19.1		12.2	74.5	13.4		9.3	74.7	16.1		
PHF	.615	.894	.867	.940	.897	.783	.792	.886	.833	.704	.688	.776	.773	.856	.776	.918	.951
cars	31	317	47	395	60	246	75	381	37	239	42	318	30	263	58	351	1445
% cars	96.9	98.4	90.4	97.3	98.4	94.6	98.7	96.0	92.5	97.6	95.5	96.7	88.2	96.0	98.3	95.6	96.4
HV	1	5	5	11	1	14	1	16	3	6	2	11	4	11	1	16	54
% HV	3.1	1.6	9.6	2.7	1.6	5.4	1.3	4.0	7.5	2.4	4.5	3.3	11.8	4.0	1.7	4.4	3.6

105 Kenilworth Street Philadelphia, PA 19147

Spring Mill and County Line Roads

File Name : 10-SpMCoLAM Site Code : 00000000

Site Code : 00000000 Start Date : 11/13/2012

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		Coun	ty Lin	e Roa	d		Sprii	ng Mill	Road	•		Coun	ty Lin	e Roa	d		Spri	ng Mil	Road		
		So	uthbo	und			W	estbo	und			No	rthbo	und			E	astbou	und		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	1	0	1	0	1	1	0	2	1	0	0	0	1	1	1	1	0	3	7
07:15 AM	0	1	3	0	4	0	4	1	0	5	0	0	0	0	0	0	3	2	0	5	14
07:30 AM	0	3	1	0	4	0	2	1	0	3	1	2	0	0	3	2	3	0	0	5	15
07:45 AM	1	0	2	0	3	0	8	0	0	8	1	2	1	0	4	1	0	1	0	2	17
Total	1	4	7	0	12	0	15	3	0	18	3	4	1	0	8	4	7	4	0	15	53
08:00 AM	0	1	0	0	1	1	3	0	0	4	0	0	0	0	0	0	2	0	0	2	7
08:15 AM	0	1	2	0	3	0	1	0	0	1	1	2	1	0	4	1	6	0	0	7	15
08:30 AM	1	3	2	0	6	0	1	1	0	2	0	0	0	0	0	1	3	0	0	4	12
08:45 AM	0	2	1	0	3	0	4	0	0	4	0	2	1	0	3	3	1	1	0	5	15
Total	1	7	5	0	13	1	9	1	0	11	1	4	2	0	7	5	12	1	0	18	49
Grand Total	2	11	12	0	25	1	24	4	0	29	4	8	3	0	15	9	19	5	0	33	102
Apprch %	8	44	48	0		3.4	82.8	13.8	0		26.7	53.3	20	0		27.3	57.6	15.2	0		
Total %	2	10.8	11.8	0	24.5	1	23.5	3.9	0	28.4	3.9	7.8	2.9	0	14.7	8.8	18.6	4.9	0	32.4	

	С	ounty L	ine Ro	ad	5		Mill Roa	ad	С	ounty L	ine Ro	ad	5	Spring I	Mill Roa	ad	
Start Time	Left			App. Total	Left	Thru		App. Total	Left			App. Total	Left	Thru		App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 07:30	AM to 0	8:15 AM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	Begins	at 07:30	AM												
07:30 AM	0	3	1	4	0	2	1	3	1	2	0	3	2	3	0	5	15
07:45 AM	1	0	2	3	0	8	0	8	1	2	1	4	1	0	1	2	17
08:00 AM	0	1	0	1	1	3	0	4	0	0	0	0	0	2	0	2	7
08:15 AM	0	1	2	3	0	1	0	1	1	2	1	4	1	6	0	7	15_
Total Volume	1	5	5	11	1	14	1	16	3	6	2	11	4	11	1	16	54
% App. Total	9.1	45.5	45.5		6.2	87.5	6.2		27.3	54.5	18.2		25	68.8	6.2		
PHF	.250	.417	.625	.688	.250	.438	.250	.500	.750	.750	.500	.688	.500	.458	.250	.571	.794

105 Kenilworth Street Philadelphia, PA 19147

Ithan Avenue & County Line Road N

File Name: 11-IthCoLNAM

Site Code : 00000000 Start Date : 11/15/2012

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					Group	5 Filliteu	- cais - r	1 V					
		Ithan /	Avenue			Ithan A	Avenue			County L	ine Road	t	
		South	bound			North	bound			Eastl	oound		
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
07:00 AM	15	2	2	19	37	11	0	48	16	24	0	40	107
07:15 AM	26	12	0	38	38	11	0	49	18	34	0	52	139
07:30 AM	35	18	0	53	73	30	0	103	42	60	0	102	258
07:45 AM	44	19	0	63	89	33	0	122	58	73	0	131	316
Total	120	51	2	173	237	85	0	322	134	191	0	325	820
08:00 AM	34	25	0	59	84	27	0	111	37	70	1	108	278
08:15 AM	39	37	0	76	92	18	0	110	27	90	1	118	304
08:30 AM	29	29	0	58	77	17	0	94	25	63	0	88	240
08:45 AM	19	30	0	49	74	13	0	87	36	50	2	88	224
Total	121	121	0	242	327	75	0	402	125	273	4	402	1046
Grand Total	241	172	2	415	564	160	0	724	259	464	4	727	1866
Apprch %	58.1	41.4	0.5		77.9	22.1	0		35.6	63.8	0.6		
Total %	12.9	9.2	0.1	22.2	30.2	8.6	0	38.8	13.9	24.9	0.2	39	
cars	235	167	2	404	554	160	0	714	255	449	4	708	1826
% cars	97.5	97.1	100	97.3	98.2	100	0	98.6	98.5	96.8	100	97.4	97.9
HV	6	5	0	11	10	0	0	10	4	15	0	19	40
% HV	2.5	2.9	0	2.7	1.8	0	0	1.4	1.5	3.2	0	2.6	2.1

		han Avenu	-		Ithan Avenu Northbound	-		ınty Line R Eastbound		
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From	m 07:30 AM to	08:15 AM	- Peak 1 of 1							
Peak Hour for Entire Inte	ersection Begi	ns at 07:30	AM							
07:30 AM	35	18	53	73	30	103	42	60	102	258
07:45 AM	44	19	63	89	33	122	58	73	131	316
08:00 AM	34	25	59	84	27	111	37	70	107	277
08:15 AM	39	37	76	92	18	110	27	90	117	303
Total Volume	152	99	251	338	108	446	164	293	457	1154
% App. Total	60.6	39.4		75.8	24.2		35.9	64.1		
PHF	.864	.669	.826	.918	.818	.914	.707	.814	.872	.913
cars	148	95	243	331	108	439	160	286	446	1128
% cars	97.4	96.0	96.8	97.9	100	98.4	97.6	97.6	97.6	97.7
HV	4	4	8	7	0	7	4	7	11	26
% HV	2.6	4.0	3.2	2.1	0	1.6	2.4	2.4	2.4	2.3

105 Kenilworth Street Philadelphia, PA 19147

Ithan Avenue & County Line Road N

File Name: 11-IthCoLNAM

Site Code : 00000000 Start Date : 11/15/2012

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					GIU	ups Filli	LEU- IIV						
			Avenue bound				Avenue bound			County I	ine Road	d	
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
07:00 AM	1	0	0	1	0	0	0	0	0	1	0	1	2
07:15 AM	0	0	0	0	0	0	0	0	0	3	0	3	3
07:30 AM	3	1	0	4	4	0	0	4	2	1	0	3	11
07:45 AM	0	0	0	0	0	0	0	0	1	1_	0	2	2
Total	4	1	0	5	4	0	0	4	3	6	0	9	18
08:00 AM	0	1	0	1	2	0	0	2	0	2	0	2	5
08:15 AM	1	2	0	3	1	0	0	1	1	3	0	4	8
08:30 AM	0	1	0	1	2	0	0	2	0	3	0	3	6
08:45 AM	1	0	0	1	1_	0	0	1	0	1_	0	1	3
Total	2	4	0	6	6	0	0	6	1	9	0	10	22
1				1									
Grand Total	6	5	0	11	10	0	0	10	4	15	0	19	40
Apprch %	54.5	45.5	0		100	0	0		21.1	78.9	0		
Total %	15	12.5	0	27.5	25	0	0	25	10	37.5	0	47.5	

		than Avenu Southboun	-		Ithan Avenu Northbound			inty Line R Eastbound		
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
eak Hour Analysis Fror	m 07:30 AM t	to 08:15 AM	- Peak 1 of 1			.,				
eak Hour for Entire Inte	ersection Beg	gins at 07:30	AM							
07:30 AM	3	1	4	4	0	4	2	1	3	11
07:45 AM	0	0	0	0	0	0	1	1	2	2
08:00 AM	0	1	1	2	0	2	0	2	2	5
08:15 AM	1	2	3	1	0	1	11	3	4	8
Total Volume	4	4	8	7	0	7	4	7	11	26
% App. Total	50	50		100	0		36.4	63.6		
PHF	.333	.500	.500	.438	.000	.438	.500	.583	.688	.591

105 Kenilworth Street Philadelphia, PA 19147

Ithan Avenue & County Line Road S

File Name: 12-IthCoLSAM

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			venue			County L	ine Road				Avenue		
		South	bound			Westk	ound			North	bound		
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds /	App. Total	Int. Total
07:00 AM	10	25	0	35	0	34	0	34	25	5	0	30	99
07:15 AM	19	41	0	60	8	35	0	43	24	0	0	24	127
07:30 AM	35	65	0	100	7	55	0	62	52	4	0	56	218
07:45 AM	39	91	0	130	4	64	0	68	54	4	0	58	256
Total	103	222	0	325	19	188	0	207	155	13	0	168	700
08:00 AM	33	77	0	110	13	54	0	67	56	2	0	58	235
08:15 AM	31	95	0	126	13	77	0	90	37	5	0	42	258
08:30 AM	34	57	0	91	6	55	0	61	39	5	0	44	196
08:45 AM	30	44	0	74	14	60	0	74	30	1_	0	31	179
Total	128	273	0	401	46	246	0	292	162	13	0	175	868
Grand Total	231	495	0	726	65	434	0	499	317	26	0	343	1568
Apprch %	31.8	68.2	0		13	87	0		92.4	7.6	0		
Total %	14.7	31.6	0	46.3	4.1	27.7	0	31.8	20.2	1.7	0	21.9	
cars	228	478	0	706	64	430	0	494	308	23	0	331	1531
% cars	98.7	96.6	0	97.2	98.5	99.1	0	99	97.2	88.5	0	96.5	97.6
HV	3	17	0	20	1	4	0	5	9	3	0	12	37
% HV	1.3	3.4	0	2.8	1.5	0.9	0	1	2.8	11.5	0	3.5	2.4

		nan Avenu	-		ınty Line R			han Avenu		
	S	outhbound	t		Westbound			Northbound	d	
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From	m 07:30 AM to	08:15 AM	- Peak 1 of 1		_			_		
Peak Hour for Entire Inte	ersection Begir	ns at 07:30	AM							
07:30 AM	35	65	100	7	55	62	52	4	56	218
07:45 AM	39	91	130	4	64	68	54	4	58	256
08:00 AM	33	77	110	13	54	67	56	2	58	235
08:15 AM	31	95	126	13	77	90	37	5	42	258
Total Volume	138	328	466	37	250	287	199	15	214	967
% App. Total	29.6	70.4		12.9	87.1		93	7		
PHF	.885	.863	.896	.712	.812	.797	.888	.750	.922	.937
cars	136	319	455	36	248	284	194	14	208	947
% cars	98.6	97.3	97.6	97.3	99.2	99.0	97.5	93.3	97.2	97.9
HV	2	9	11	1	2	3	5	1	6	20
% HV	1.4	2.7	2.4	2.7	0.8	1.0	2.5	6.7	2.8	2.1

105 Kenilworth Street Philadelphia, PA 19147

Ithan Avenue & County Line Road S

File Name: 12-IthCoLSAM

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					0.1								
		Ithan A	Avenue			County I	₋ine Roa	d		lthan /	Avenue		
		South	bound			West	bound			North	bound		
Γime	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
MA (	1	0	0	1	0	0	0	0	0	1	0	1	2
5 AM	0	3	0	3	0	0	0	0	2	0	0	2	5
) AM	0	4	0	4	0	2	0	2	2	1	0	3	9
5 AM	11	0	0	1	0	0	0	0	0	0	0	0	1_
Total	2	7	0	9	0	2	0	2	4	2	0	6	17
) AM	0	2	0	2	0	0	0	0	2	0	0	2	4
5 AM	1	3	0	4	1	0	0	1	1	0	0	1	6
) AM	0	4	0	4	0	1	0	1	1	1	0	2	7
AM	0	1	0	1	0	1	0	1	1	0	0	1	3_
Total	1	10	0	11	1	2	0	3	5	1	0	6	20
Γotal	3	17	0	20	1	4	0	5	9	3	0	12	37
ch %	15	85	0		20	80	0		75	25	0		
	8.1	45.9	0	54.1	2.7	10.8	0	13.5	24.3	8.1	0	32.4	
	Fime D AM	1	South   Fime   Left   Thru   O AM   1	0 AM     1     0     0       5 AM     0     3     0       0 AM     0     4     0       5 AM     1     0     0       6 AM     1     0     0       5 AM     1     3     0       5 AM     0     4     0       5 AM     0     1     0       6 AM     0     1     0       6 Total     1     10     0       Total     3     17     0       5 Ch %     15     85     0	Southbound   Fime   Left   Thru   Peds   App. Total   O AM   1	Ithan Avenue   Southbound   Fime   Left   Thru   Peds   App. Total   Left   O AM   1   0   0   1   0   0   0   0   0   0	Ithan Avenue	Southbound   Westbound   Fime   Left   Thru   Peds   App. Total   Left   Right   Peds   App. Total   Left   Right   Peds   AM   1   0   0   0   0   0   0   0   0   0	Ithan Avenue   Southbound   Westbound   Westbound   Westbound   Westbound   Westbound   Mestbound   Mestbound	Ithan Avenue   Southbound   Westbound   Westbound   Time   Left   Thru   Peds   App. Total   Left   Right   Peds   App. Total   Thru   O AM   1   0   0   0   1   0   0   0   0   0	Ithan Avenue   Southbound   Westbound   Westbound   North	Ithan Avenue   Southbound   S	Southbound   County Line Road   Westbound   Northbound   Northbound

		han Avenu Southbound	-	Co	unty Line R Westbound			lthan Avenu Northbound		
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis Fror	m 07:30 AM to	08:15 AM	- Peak 1 of 1			.,				
Peak Hour for Entire Inte	ersection Begi	ins at 07:30	AM							
07:30 AM	0	4	4	0	2	2	2	1	3	9
07:45 AM	1	0	1	0	0	0	0	0	0	1
08:00 AM	0	2	2	0	0	0	2	0	2	4
08:15 AM	1	3	4	1	0	1	1	0	1	6
Total Volume	2	9	11	1	2	3	5	1	6	20
% App. Total	18.2	81.8		33.3	66.7		83.3	16.7		
PHF	.500	.563	.688	.250	.250	.375	.625	.250	.500	.556

105 Kenilworth Street Philadelphia, PA 19147

County Line Road & Lowrys Lane

File Name: 13-CoLLowAM

Site Code : 21102791 Start Date : 11/13/2012

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				_		<u> </u>							
		County L	ine Road	d		County L	ine Road			Lowry	s Lane		
		South	bound			North	oound			Eastb	oound		
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
07:00 AM	19	0	1	20	2	21	0	23	7	6	1	14	57
07:15 AM	20	2	0	22	3	38	0	41	4	8	1	13	76
07:30 AM	32	9	1	42	11	33	0	44	12	19	1	32	118
07:45 AM	39	5	0	44	22	59	0	81	11	30	0	41	166
Total	110	16	2	128	38	151	0	189	34	63	3	100	417
08:00 AM	42	6	0	48	17	72	0	89	19	19	0	38	175
08:15 AM	34	10	0	44	7	69	0	76	18	11	1	30	150
08:30 AM	34	5	0	39	9	58	0	67	11	9	1	21	127
08:45 AM	19	11	00	30	5	61	0	66	13	11	3	27	123
Total	129	32	0	161	38	260	0	298	61	50	5	116	575
Grand Total	239	48	2	289	76	411	0	487	95	113	8	216	992
Apprch %	82.7	16.6	0.7		15.6	84.4	0		44	52.3	3.7		
Total %	24.1	4.8	0.2	29.1	7.7	41.4	0	49.1	9.6	11.4	0.8	21.8	
cars	239	48	2	289	76	411	0	487	95	113	8	216	992
% cars	100	100	100	100	100	100	0	100	100	100	100	100	100
HV	0	0	0	0	0	0	0	0	0	0	0	0	0
% HV	0	0	0	0	0	0	0	0	0	0	0	0	0

		inty Line Ro Southbound			unty Line Ro		I	Lowrys Lan Eastbound	I	
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From	m 07:30 AM to	08:15 AM	- Peak 1 of 1							
Peak Hour for Entire Inte	ersection Begi	ns at 07:30	AM .							
07:30 AM	32	9	41	11	33	44	12	19	31	116
07:45 AM	39	5	44	22	59	81	11	30	41	166
08:00 AM	42	6	48	17	72	89	19	19	38	175
08:15 AM	34	10	44	7	69	76	18	11	29	149
Total Volume	147	30	177	57	233	290	60	79	139	606
% App. Total	83.1	16.9		19.7	80.3		43.2	56.8		
PHF	.875	.750	.922	.648	.809	.815	.789	.658	.848	.866
cars	147	30	177	57	233	290	60	79	139	606
% cars	100	100	100	100	100	100	100	100	100	100
HV	0	0	0	0	0	0	0	0	0	0
% HV	0	0	0	0	0	0	0	0	0	0

105 Kenilworth Street Philadelphia, PA 19147

County Line Road & Lowrys Lane

File Name: 13-CoLLowAM

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					G	oups Prin	teu- nv						
		County L		d		County I		d			s Lane		
		South	bound			North	bound			Eastb			
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds A	pp. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
 07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
 08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		
Total %													

		nty Line Ro outhbound			nty Line Roorthbound			owrys Lan Eastbound	I	
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
eak Hour Analysis From	n 07:30 AM to	08:15 AM -	Peak 1 of 1					<u>-</u>	.,	
eak Hour for Entire Inte	rsection Begir	ns at 07:30 A	AM .							
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

105 Kenilworth Street Philadelphia, PA 19147

County Line & Airdale Roads

File Name: 14-CoLAirAM

Site Code : 00000000 Start Date : 11/13/2012

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		Airdale Southl				County Li Westb					Road ound		
Start Time	Left	Right	Peds A	pp. Total	Thru	Right	Peds A	pp. Total	Left	Thru	Peds A	op. Total	Int. Total
07:00 AM	2	14	1	17	42	2	0	44	20	54	0	74	135
07:15 AM	2	20	2	24	43	3	0	46	31	53	0	84	154
07:30 AM	3	24	2	29	57	3	0	60	28	76	0	104	193
07:45 AM	4	23	4	31	85	7	0	92	58	56	1	115	238
Total	11	81	9	101	227	15	0	242	137	239	1	377	720
08:00 AM	4	27	3	34	73	6	2	81	51	41	0	92	207
08:15 AM	4	22	9	35	67	4	0	71	62	43	1	106	212
08:30 AM	2	28	3	33	56	2	0	58	50	74	0	124	215
08:45 AM	1	18	6	25	70	3	5	78	53	51	0	104	207
Total	11	95	21	127	266	15	7	288	216	209	1	426	841
Grand Total	22	176	30	228	493	30	7	530	353	448	2	803	1561
Apprch %	9.6	77.2	13.2		93	5.7	1.3		44	55.8	0.2		
Total %	1.4	11.3	1.9	14.6	31.6	1.9	0.4	34	22.6	28.7	0.1	51.4	
cars	19	176	30	225	479	28	7	514	350	444	2	796	1535
% cars	86.4	100	100	98.7	97.2	93.3	100	97	99.2	99.1	100	99.1	98.3
HV	3	0	0	3	14	2	0	16	3	4	0	7	26
% HV	13.6	0	0	1.3	2.8	6.7	0	3	8.0	0.9	0	0.9	1.7

	= =	irdale Roa	-		unty Line Ro Westbound		A	Airdale Roa Eastbound		
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From	m 07:30 AM to	08:15 AM	- Peak 1 of 1		<u>-</u>					
Peak Hour for Entire Inte	ersection Begi	ns at 07:30	AM							
07:30 AM	3	24	27	57	3	60	28	76	104	191
07:45 AM	4	23	27	85	7	92	58	56	114	233
08:00 AM	4	27	31	73	6	79	51	41	92	202
08:15 AM	4	22	26	67	4	71	62	43	105	202
Total Volume	15	96	111	282	20	302	199	216	415	828
% App. Total	13.5	86.5		93.4	6.6		48	52		
PHF	.938	.889	.895	.829	.714	.821	.802	.711	.910	.888
cars	13	96	109	276	19	295	197	215	412	816
% cars	86.7	100	98.2	97.9	95.0	97.7	99.0	99.5	99.3	98.6
HV	2	0	2	6	1	7	2	1	3	12
% HV	13.3	0	1.8	2.1	5.0	2.3	1.0	0.5	0.7	1.4

105 Kenilworth Street Philadelphia, PA 19147

County Line & Airdale Roads

File Name: 14-CoLAirAM

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					Gro	oups Prin	tea- nv						
		Airdale	Road			County L	ine Roa	d		Airdale	e Road		
		South	oound			Westl	bound			Eastb	ound		
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
07:00 AM	1	0	0	1	1	0	0	1	0	1	0	1	3
07:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
07:30 AM	0	0	0	0	3	1	0	4	1	0	0	1	5
07:45 AM	2	0	0	2	1	0	0	1	1	1_	0	2	5_
Total	3	0	0	3	6	1	0	7	2	2	0	4	14
ı									1				
08:00 AM	0	0	0	0	2	0	0	2	0	0	0	0	2
00.00 414	0	0	•	0	4	0	0		1 0		0	4.1	0
08:30 AM	U	0	U	0	1	0	0	1	0	1	U	1	2
08:45 AM	0	0	0	0	5	1	0	6	1	11	0	2	8_
Total	0	0	0	0	8	1	0	9	1	2	0	3	12
Grand Total	3	0	0	3	14	2	0	16	3	4	0	7	26
Apprch %	100	0	0		87.5	12.5	0	10	42.9	57.1	0	'	20
Total %	11.5	Ö	Ö	11.5	53.8	7.7	0	61.5	1	15.4	0	26.9	

		Airdale Roa Southboun		Co	unty Line R Westbound		,	Airdale Roa Eastbound		
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
eak Hour Analysis Fror	m 07:30 AM to	o 08:15 AM	- Peak 1 of 1		<u>-</u>				• •	
Peak Hour for Entire Inte	ersection Beg	ins at 07:30	) AM							
07:30 AM	0	0	0	3	1	4	1	0	1	5
07:45 AM	2	0	2	1	0	1	1	1	2	5
08:00 AM	0	0	0	2	0	2	0	0	0	2
08:15 AM	0	0	0	0	0	0	0	0	0	0_
Total Volume	2	0	2	6	1	7	2	1	3	12
% App. Total	100	0		85.7	14.3		66.7	33.3		
PHF	.250	.000	.250	.500	.250	.438	.500	.250	.375	.600

105 Kenilworth Street Philadelphia, PA 19147

County Line & Roberts Roads

File Name: 15-CoLRobAM

Site Code : 00000000 Start Date : 11/13/2012

Page No : 1

									roups	Printe	a- cars	<u>з - пу</u>									
		Coun	ty Lin	e Roa	d		Rol	berts F	Road			Coun	ty Lin	e Road	t		Rol	berts F	Road		
		So	uthbo	und			W	estbo	und			No	rthbo	und			Ea	astbou	ınd		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	1	70	0	0	71	1	1	2	0	4	0	129	1	0	130	11	4	0	0	15	220
07:15 AM	1	83	4	3	91	1	3	0	1	5	0	124	2	0	126	11	4	1	0	16	238
07:30 AM	0	110	10	1	121	0	3	0	0	3	1	141	10	0	152	13	14	3	1	31	307
07:45 AM	5	119	11	2	137	0	5	4	1_	10	3	143	2	0	148	14	30	1_	0	45	340
Total	7	382	25	6	420	2	12	6	2	22	4	537	15	0	556	49	52	5	1	107	1105
08:00 AM	1	124	9	0	134	2	5	0	1	8	6	132	6	1	145	18	28	0	1	47	334
08:15 AM	2	111	7	1	121	0	10	2	1	13	4	191	7	0	202	21	26	4	0	51	387
08:30 AM	4	107	11	0	122	1	5	1	0	7	0	146	10	2	158	13	12	0	0	25	312
08:45 AM	0	136	7	1_	144	0	7	4	0	11	0	153	15	0	168	14	10	0	1_	25	348
Total	7	478	34	2	521	3	27	7	2	39	10	622	38	3	673	66	76	4	2	148	1381
Grand Total	14	860	59	8	941	5	39	13	4	61	14	1159	53	3	1229	115	128	9	3	255	2486
Apprch %	1.5	91.4	6.3	0.9		8.2	63.9	21.3	6.6		1.1	94.3	4.3	0.2		45.1	50.2	3.5	1.2		
Total %	0.6	34.6	2.4	0.3	37.9	0.2	1.6	0.5	0.2	2.5	0.6	46.6	2.1	0.1	49.4	4.6	5.1	0.4	0.1	10.3	
cars	14	813	57	8	892	5	37	13	4	59	14	1150	51	3	1218	114	128	9	3	254	2423
% cars	100	94.5	96.6	100	94.8	100	94.9	100	100	96.7	100	99.2	96.2	100	99.1	99.1	100	100	100	99.6	97.5
HV	0	47	2	0	49	0	2	0	0	2	0	9	2	0	11	1	0	0	0	1	63
% HV	0	5.5	3.4	0	5.2	0	5.1	0	0	3.3	0	8.0	3.8	0	0.9	0.9	0	0	0	0.4	2.5

	С		ine Ro	ad			ts Road bound	t	С	ounty l	Line Ro	ad			ts Road	t	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Anal	ysis Fron	n 07:30	AM to 0	8:15 AM -	Peak 1	of 1	-								_		
Peak Hour for E	ntire Inte	rsection	n Begins	at 07:30	AM												
07:30 AM	0	110	10	120	0	3	0	3	1	141	10	152	13	14	3	30	305
07:45 AM	5	119	11	135	0	5	4	9	3	143	2	148	14	30	1	45	337
08:00 AM	1	124	9	134	2	5	0	7	6	132	6	144	18	28	0	46	331
08:15 AM	2	111	7	120	0	10	2	12	4	191	7	202	21	26	4	51	385
Total Volume	8	464	37	509	2	23	6	31	14	607	25	646	66	98	8	172	1358
% App. Total	1.6	91.2	7.3		6.5	74.2	19.4		2.2	94	3.9		38.4	57	4.7		
PHF	.400	.935	.841	.943	.250	.575	.375	.646	.583	.795	.625	.800	.786	.817	.500	.843	.882
cars	8	442	35	485	2	23	6	31	14	603	23	640	66	98	8	172	1328
% cars	100	95.3	94.6	95.3	100	100	100	100	100	99.3	92.0	99.1	100	100	100	100	97.8
HV	0	22	2	24	0	0	0	0	0	4	2	6	0	0	0	0	30
% HV	0	4.7	5.4	4.7	0	0	0	0	0	0.7	8.0	0.9	0	0	0	0	2.2

105 Kenilworth Street Philadelphia, PA 19147

County Line & Roberts Roads

File Name: 15-CoLRobAM

Site Code : 00000000 Start Date : 11/13/2012

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		Coun	ty Lin	e Roa	d		Rol	berts I	Road	•		Coun	ty Lin	e Roa	d		Rol	berts l	Road		
		So	uthbo	und			W	estbo	und			No	rthbo	und			E	astbou	und		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	5	0	0	5	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	7
07:15 AM	0	6	0	0	6	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	7
07:30 AM	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
07:45 AM	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Total	0	21	0	0	21	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	24
08:00 AM	0	5	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
08:15 AM	0	7	1	0	8	0	0	0	0	0	0	4	2	0	6	0	0	0	0	0	14
08:30 AM	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	6
08:45 AM	0	9	0	0	9	0	1	0	0	1	0	2	0	0	2	1	0	0	0	1	13
Total	0	26	2	0	28	0	1	0	0	1	0	7	2	0	9	1	0	0	0	1	39
Grand Total	0	47	2	0	49	0	2	0	0	2	0	9	2	0	11	1	0	0	0	1	63
Apprch %	0	95.9	4.1	0		0	100	0	0		0	81.8	18.2	0		100	0	0	0		
Total %	0	74.6	3.2	0	77.8	0	3.2	0	0	3.2	0	14.3	3.2	0	17.5	1.6	0	0	0	1.6	

	С	ounty L South	ine Ro			Robert	ts Road bound	t	С	ounty I North	ine Ro	ad			ts Road	t	
Start Time	Left				Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 07:30	AM to 0	08:15 AM	Peak 1	of 1	-								_		
Peak Hour for E	ntire Inte	rsection	Begins	s at 07:30	AM												
07:30 AM	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
07:45 AM	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
08:00 AM	0	5	1	6	0	0	0	0	0	0	0	0	0	0	0	0	6
08:15 AM	0	7	1	8	0	0	0	0	0	4	2	6	0	0	0	0	14
Total Volume	0	22	2	24	0	0	0	0	0	4	2	6	0	0	0	0	30
% App. Total	0	91.7	8.3		0	0	0		0	66.7	33.3		0	0	0		
PHF	.000	.786	.500	.750	.000	.000	.000	.000	.000	.250	.250	.250	.000	.000	.000	.000	.536

105 Kenilworth Street Philadelphia, PA 19147

Ithan & Aldwyn Lanes

File Name : 16-IthAldAM

Site Code : 00000000 Start Date : 11/15/2012

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									Joups	Fillite	u- car	5 - IIV									1
		lth	an Ave	enue			Sou	ıth Caı	mpus			lth	an Ave	enue			Ald	l nywb	_ane		
		So	uthbo	und			W	estbo	und			No	rthbo	und			E	astbou	ınd		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	1	9	1	4	15	0	0	0	3	3	7	21	1	0	29	0	0	6	0	6	53
07:15 AM	3	37	0	0	40	2	0	3	1	6	13	33	2	0	48	5	0	13	0	18	112
07:30 AM	6	51	2	1	60	2	0	1	2	5	1	67	2	0	70	5	0	21	0	26	161
07:45 AM	5	68	0	5	78	2	0	6	5	13	4	96	1	1	102	5	0	20	1	26	219
Total	15	165	3	10	193	6	0	10	11	27	25	217	6	1	249	15	0	60	1	76	545
08:00 AM	4	26	1	80	111	2	1	1	2	6	0	103	2	2	107	5	0	10	1	16	240
08:15 AM	1	44	0	115	160	1	0	4	0	5	4	85	4	0	93	1	0	8	0	9	267
08:30 AM	6	23	0	9	38	2	0	6	3	11	6	56	1	0	63	1	0	3	1	5	117
08:45 AM	7	19	0	16	42	1	0	4	5	10	1	45	1	3	50	3	0	3	0	6	108
Total	18	112	1	220	351	6	1	15	10	32	11	289	8	5	313	10	0	24	2	36	732
<b>Grand Total</b>	33	277	4	230	544	12	1	25	21	59	36	506	14	6	562	25	0	84	3	112	1277
Apprch %	6.1	50.9	0.7	42.3		20.3	1.7	42.4	35.6		6.4	90	2.5	1.1		22.3	0	75	2.7		
Total %	2.6	21.7	0.3	18	42.6	0.9	0.1	2	1.6	4.6	2.8	39.6	1.1	0.5	44	2	0	6.6	0.2	8.8	
cars	30	267	4	230	531	11	1	21	21	54	28	496	13	6	543	25	0	78	3	106	1234
% cars	90.9	96.4	100	100	97.6	91.7	100	84	100	91.5	77.8	98	92.9	100	96.6	100	0	92.9	100	94.6	96.6
HV	3	10	0	0	13	1	0	4	0	5	8	10	1	0	19	0	0	6	0	6	43
% HV	9.1	3.6	0	0	2.4	8.3	0	16	0	8.5	22.2	2	7.1	0	3.4	0	0	7.1	0	5.4	3.4

			Avenue bound			South (	Campu bound	s			Avenue	•		•	n Lane	•	
Start Time	Left			App. Total	Left	Thru		App. Total	Left	Thru	Right	App. Total	Left	Thru		App. Total	Int. Total
Peak Hour Analy	ysis Fron				Peak 1	of 1				,							
Peak Hour for E	ntire Inte	rsection	n Begins	at 07:30	AM												
07:30 AM	6	51	2	59	2	0	1	3	1	67	2	70	5	0	21	26	158
07:45 AM	5	68	0	73	2	0	6	8	4	96	1	101	5	0	20	25	207
08:00 AM	4	26	1	31	2	1	1	4	0	103	2	105	5	0	10	15	155
08:15 AM	1	44	0	45	1	0	4	5	4	85	4	93	1	0	8	9	152
Total Volume	16	189	3	208	7	1	12	20	9	351	9	369	16	0	59	75	672
% App. Total	7.7	90.9	1.4		35	5	60		2.4	95.1	2.4		21.3	0	78.7		
PHF	.667	.695	.375	.712	.875	.250	.500	.625	.563	.852	.563	.879	.800	.000	.702	.721	.812
cars	14	180	3	197	7	1	9	17	4	343	9	356	16	0	58	74	644
% cars	87.5	95.2	100	94.7	100	100	75.0	85.0	44.4	97.7	100	96.5	100	0	98.3	98.7	95.8
HV	2	9	0	11	0	0	3	3	5	8	0	13	0	0	1	1	28
% HV	12.5	4.8	0	5.3	0	0	25.0	15.0	55.6	2.3	0	3.5	0	0	1.7	1.3	4.2

105 Kenilworth Street Philadelphia, PA 19147

Ithan & Aldwyn Lanes

File Name: 16-IthAldAM

Site Code : 00000000 Start Date : 11/15/2012

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									GIU	ира гн	iiieu- i	1 V									_
			an Ave					th Car					an Ave					dwyn I astbou			
			Juliibo	unu				e2moi	unu			140	טמווו וכ	una				asibui	anu		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
07:30 AM	1	7	0	0	8	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	11
07:45 AM	0	0	0	0	0	0	0	1	0	1	1	4	0	0	5	0	0	0	0	0	6
Total	1	7	0	0	8	0	0	2	0	2	3	5	0	0	8	0	0	3	0	3	21
08:00 AM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	3
08:15 AM	0	2	0	0	2	0	0	1	0	1	3	2	0	0	5	0	0	0	0	0	8
08:30 AM	0	1	0	0	1	1	0	0	0	1	2	2	1	0	5	0	0	1	0	1	8
08:45 AM	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	3
Total	2	3	0	0	5	1	0	2	0	3	5	5	1	0	11	0	0	3	0	3	22
			_	_	1		_		_	_			_	_	1	_	_	_	_	_	
Grand Total	3	10	0	0	13	1	0	4	0	5	8	10	1	0	19	0	0	6	0	6	43
Apprch %	23.1	76.9	0	0		20	0	80	0		42.1	52.6	5.3	0		0	0	100	0		
Total %	7	23.3	0	0	30.2	2.3	0	9.3	0	11.6	18.6	23.3	2.3	0	44.2	0	0	14	0	14	1

		Ithan A	Avenue	•		South	Campu	s		Ithan A	Avenue			Aldwy	n Lane	•	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Southbound   Right   App. Total				Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 07:30	AM to 0	8:15 AM -	Peak 1	of 1	_				_						
Peak Hour for E	ntire Inte	rsection	Begins	at 07:30	AM												
07:30 AM	1	7	0	8	0	0	1	1	1	1	0	2	0	0	0	0	11
07:45 AM	0	0	0	0	0	0	1	1	1	4	0	5	0	0	0	0	6
08:00 AM	1	0	0	1	0	0	0	0	0	1	0	1	0	0	1	1	3
08:15 AM	0	2	0	2	0	0	1	1	3	2	0	5	0	0	0	0	8
Total Volume	2	9	0	11	0	0	3	3	5	8	0	13	0	0	1	1	28
% App. Total	18.2	81.8	0		0	0	100		38.5	61.5	0		0	0	100		
PHF	.500	.321	.000	.344	.000	.000	.750	.750	.417	.500	.000	.650	.000	.000	.250	.250	.636

105 Kenilworth Street Philadelphia, PA 19147

Lancaster Avenue & Spring Mill/Sproul Rd & Kenilworth Rd/Aldwyn Ln

File Name : 01-30SproulPM Site Code : 00000000 Start Date : 11/8/2012

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																		Gr	ou	os I	Prin	ted	- ca	ırs	<u>- H\</u>	<u> </u>																	
			-	Sp Roa thb	ad	g M nd	ill	L				Avo		ıe	ı	A Nor		yn ves			d			•	ul l				L		cas Eas				ue		Ker Sou					-	
Start Time	Lt oL an c	Lt o Al d					App. Tota	Lt o Al d	Lt o Sp r					App. Tota	Lt o Sp r	Lt oL an c					App. Tota	Lt oL an c	Lt o Ke n					App. Tota	L t o Ke n	Lt o S Mil					App. Tota	Lt o S Mil	Lt oL an c					App. Tota	Int. Tota
04:00 PM	5	1	33	59	0	2	100	1	9	23 8	0	4	1	253	2	7	0	1	2	0	12	63	0	34	3	0	0	100	1	43	16 6	8	49	0	267	0	0	0	1	2	0	3	735
04:15 PM	7	1	30	59	0	2	99	1	2	20 6	0	5	0	214	1	20	0	1	3	0	25	37	1	24	3	0	0	65	1	47	19 2	11	69	0	320	0	0	0	3	3	0	6	729
04:30 PM	8	0	32	52	0	3	95	0	5	19 9	0	3	0	207	1	20	0	1	3	0	25	57	1	31	7	2	0	98	0	44	16 9	3	60	0	276	0	0	0	0	1	0	1	702
04:45 PM	10	1	54	50	0	5	120	0	2	18 8	0	4	0	194	3	14	0	2	2	0	21	49	0	26	6	0	0	81	0	53	18 5	7	67	0	312	0	0	0	2	2	0	4	732
Tota I	30	3	14 9	22 0	0	12	414	2	18	83 1	0	16	1	868	7	61	0	5	10	0	83	20 6	2	11 5	19	2	0	344	2	18 7	71 2	29	24 5	0	1175	0	0	0	6	8	0	14	2898
05:00 PM	11	2	36	64	1	4	118	0	4	22	0	4	0	232	0	9	0	1	3	2	15	36	0	30	3	0	0	69	0	63	22	5	77	0	368	0	0	0	1	4	0	5	807
05:15 PM	11	2	45	70	0	2	130	1	9	20 6	0	8	0	224	1	15	0	2	2	0	20	61	0	26	4	0	0	91	1	45	21 5	7	71	0	339	1	1	0	0	3	0	5	809
05:30 PM	7	3	40	50	0	0	100	0	2	22 4	0	10	0	236	2	14	0	0	4	1	21	45	0	23	3	0	0	71	1	66	26 9	7	66	1	410	0	0	0	2	3	0	5	843
05:45 PM	9				_	0	99	1	7	18 1	0	10	0	199	4	13	0	1	1	0	19	45	0	31	10	1	0	87	2	70	25 8	11	62	0	403	0	0	0	0	4	0	4	811
Tota I	38	9	16 3	23	1	6	447	2	22	83 5	0	32	0	891	7	51	0	4	10	3	75	18 7	0	11	20	1	0	318	4	24 4	96 5	30	27 6	1	1520	1	1	0	3	14	0	19	3270
Grand Total	68	12	31	45 0	1	18	861	4	40	16 66	0	48	1	1759	14	11	0	9	20	3	158	39	2	22	39	3	0	662	6	43 1	16 77	59	52 1	1	2695	1	1	0	9	22	0	33	6168
Apprch %	7.9	1.4	36. 2	52. 3	0.1	2.1		0.2	2.3	94. 7	0	2.7	0.1		8.9	70. 9	0	5.7	12. 7	1.9		59. 4	0.3	34	5.9	0.5	0		0.2	16	62. 2	2.2	19. 3	0		3	3	0	27. 3	66. 7	0		
Total %	1.1	0.2	5.1	7.3	0	0.3	14	0.1	0.6	27	0	0.8	0	28.5	0.2	1.8	0	0.1	0.3	0	2.6	6.4	0	3.6	0.6	0	0	10.7	0.1	7	27.	1	8.4	0	43.7	0	0	0	0.1	0.4	0	0.5	
cars	68	12	29 9	44 0	1	18	838	4	39	16 24	0	47	1	1715	14	10 7	0	7	19	3	150	37 8	2	21 8	39	3	0	640	6	42 2	16 51	59	51 6	1	2655	1	1	0	8	22	0	3 2	6030
% cars	0	0	95. 8	8	10	0	97.3	0	97. 5	5	0	97. 9	0	97.5	0	95. 5	0	8	95	10 0	94.9	2	0	9	10 0	0		96.7	0	97. 9	98.	10	99	10	98.5	0	10	0	9	10		97	97.8
HV	0						23	1				1		44	0						8				0					9	26	0	5	0		0	-	0	1	0	0	1	138
% HV	0	0	4.2	2.2	0	0	2.7	0	2.5	2.5	0	2.1	0	2.5	0	4.5	0	22.	5	0	5.1	3.8	0	3.1	0	0	0	3.3	0	2.1	1.6	0	1	0	1.5	0	0	0	11.	0	0	3	2.2

	N		Ro	prin pad bou	_	lill	L		aste /est			ue	N	Ald Nort	-	n L estb						l Ro bou			L		aste astl		ven nd	ue	1				Roa		
Start Time	L to Lan c	L to Ald	T to Spr	R to Lan	R to Ken	App. Total	L to Ald	L to Spr	T to Lan	R to Ken	R to S M ill	App. Total	L to Spr	L to Lan C	T to Ken	R to S M ill	R to Lan	App. Total	L to Lan	L to Ken	T to S M ill	R to Lan	R to Ald	App. Total	L to Ken	L to S M ill	T to Lan	R to Ald	R to Spr	App. Total	L to S M ill	L to Lan	T to	R to Spr	R to Lan	App. Total	Int. Total
Peak Ho	our A	4nal	ysis	Fro	m 0	5:00	PΜ	to 0	5:45	PN	1 - P	eak '	1 of	1																							
Peak Ho	our f	or E	ntire	e Int	erse	ection	Ве	gins	at 0	5:00	PI C	V																									
05:00 PM	11	2	36	64	1	114	0	4	224	0	4	232	0	9	0	1	3	13	36	0	30	3	0	69	0	63	223	5	77	368	0	0	0	1	4	5	801
05:15 PM	11	2	45	70	0	128	1	9	206	0	8	224	1	15	0	2	2	20	61	0	26	4	0	91	1	45	215	7	71	339	1	1	0	0	3	5	807
05:30 PM	7	3	40	50	0	100	0	2	224	0	10	236	2	14	0	0	4	20	45	0	23	3	0	71	1	66	269	7	66	409	0	0	0	2	3	5	841
05:45 PM	9	2	42	46	0	99	1	7	181	0	10	199	4	13	0	1	1	19	45	0	31	10	1	87	2	70	258	11	62	403	0	0	0	0	4	4	811
Total Volume	38	9	163	230	1	441	2	22	835	0	32	891	7	51	0	4	10	72	187	0	110	20	1	318	4	244	965	30	276	1519	1	1	0	3	14	19	3260
% App. Total	8.6	2	37	52.2	0.2		0.2	2.5	93.7	0	3.6		9.7	70.8	0	5.6	13.9		58.8	0	34.6	6.3	0.3		0.3	16.1	63.5	2	18.2		5.3	5.3	0	15.8	73.7		
PHF	.864	.750	.906	.821	.250	.861	.500	.611	.932	.000	.800	.944	.438	.850	.000	.500	.625	.900	.766	.000	.887	.500	.250	.874	.500	.871	.897	.682	.896	.928	.250	.250	.000	.375	.875	.950	.969
cars	38	9	160	226	1	434	2	22	817	0	31	872	7	51	0	4	9	71	186	0	109	20	1	316	4	237	955	30	274	1500	1	1	0	3	14	19	3212
% cars	100	100	98.2	98.3	100	98.4	100	100	97.8	0	96.9	97.9	100	100	0	100	90.0	98.6	99.5	0	99.1	100	100	99.4	100	97.1	99.0	100	99.3	98.7	100	100	0	100	100	100	98.5
HV	0	0	3	4	0	7	0	0	18	0	1	19	0	0	0	0	1	1	1	0	1	0	0	2	0	7	10	0	2	19	0	0	0	0	0	0	48
% HV	0	0	1.8	1.7		1.6			2.2		3.1	2.1					10.0	1.4	0.5		0.9			0.6		2.9	1.0		0.7	1.3							1.5

105 Kenilworth Street Philadelphia, PA 19147

Lancaster Avenue & Spring Mill/Sproul Rd & Kenilworth Rd/Aldwyn Ln

File Name: 01-30SproulPM Site Code: 00000000 Start Date: 11/8/2012

Page No : 1

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		North Spring Mill Road Southbound Lancaster Avenue Westbound												ıe				yn ves		ne un	d				oul thb				L	and			Av oun		ıe						Road		
Start Time	Lt oL an	Lt o Al d					App. Tota	Lt o Al d	Lt o Sp					App. Tota	Lt o Sp r	Lt oL an					App. Tota	Lt oL an c	Lt o Ke n					App. Tota	Lt o Ke n	Lt o s Mil					App. Tota	Lt o S Mil	Lt oL an c					App. Tota	Int. Tota
04:00 PM	0	0	0	0	0	0	0	0	0	10	0	0	0	10	0	2	0	0	0	0	2	3	0	1	0	0	0	4	0	1	1	0	0	0	2	0	0	0	1	0	0	1	19
04:15 PM	0	0	2	2	0	0	4	0	0	7	0	0	0	7	0	3	0	1	0	0	4	3	0	2	0	0	0	5	0	0	6	0	2	0	8	0	0	0	0	0	0	0	28
04:30 PM	0	0	3	0	0	0	3	0	1	3	0	0	0	4	0	0	0	1	0	0	1	6	0	0	0	0	0	6	0	1	3	0	1	0	5	0	0	0	0	0	0	0	19
04:45 PM	0	0	5	4	0	0	_ 9	0	0	4	0	0	0	4	0	0	0	0	0	0	0	2	0	3	0	0	0	5	0	0	6	0	0	0	6	0	0	0	0	0	0	0	24
Tota I	0	0	10	6	0	0	16	0	1	24	0	0	0	25	0	5	0	2	0	0	7	14	0	6	0	0	0	20	0	2	16	0	3	0	21	0	0	0	1	0	0	1	90
05:00 PM	0	0	1	3	0	0	4	0	0	6	0	1	0	7	0	0	0	0	0	0	0	1	0	1	0	0	0	2	0	5	1	0	0	0	6	0	0	0	0	0	0	0	19
05:15 PM	0	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	4
05:30 PM	0	0	1	0	0	0	1	0	0	5	0	0	0	5	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	2	4	0	2	0	8	0	0	0	0	0	0	0	15
05:45 PM	0	0	1	0	0	0	1	0	0	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	10
Tota I	0	0	3	4	0	0	7	0	0	18	0	1	0	19	0	0	0	0	1	0	1	1	0	1	0	0	0	2	0	7	10	0	2	0	19	0	0	0	0	0	0	0	48
Grand Total	0	0	13	10	0	0	23	0	1	42	0	1	0	44	0	5	0	2	1	0	8	15	0	7	0	0	0	22	0	9	26	0	5	0	40	0	0	0	1	0	0	1	138
Approh %	0	0	56. 5	43. 5	0	0		0	2.3	95. 5	0	2.3	0		0	62. 5	0	25	12. 5	0		68. 2	0	31. 8	0	0	0		0	22. 5	65	0	12. 5	0		0	0	0	10 0	0	0		
Total %	0	0	9.4	7.2	0	0	16.7	0	0.7	30. 4	0	0.7	0	31.9	0	3.6	0	1.4	0.7	0	5.8	10. 9	0	5.1	0	0	0	15.9	0	6.5	18. 8	0	3.6	0	29	0	0	0	0.7	0	0	0.7	

	N		Ro	orin oad bou	g Mi ınd	II	L		aste estl		veni nd	ne	N		-		ane oun			•	rou orthi				La		aste astk		ven nd	ue	-				Roa		
Start Time	L to Lan	L to Ald	T to Spr	R to Lan	R to Ken	App.	L to Ald	L to Spr	T to Lan	R to Ken	R to S M ill	App.	L to Spr	L to Lan	T to Ken	R to S M	R to Lan	App. Total	L to Lan	L to Ken	T to S M ill	R to Lan	R to Ald	App.	L to Ken	L to S M ill	T to Lan	R to Ald	R to Spr	App. Total	L to S M ill	L to Lan	T to Ald	R to Spr	R to Lan	App. Total	Int. Total
Peak Ho													1 of	1																							
Peak Ho	our f	or E	ntire	e Int	erse	ction	Ве	gins	at C	)5:00	0 PM	1													1												
05:00 PM	0	0	1	3	0	4	0	0	6	0	1	7	0	0	0	0	0	0	1	0	1	0	0	2	0	5	1	0	0	6	0	0	0	0	0	0	19
05:15 PM	0	0	0	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
05:30 PM	0	0	1	0	0	1	0	0	5	0	0	5	0	0	0	0	1	1	0	0	0	0	0	0	0	2	4	0	2	8	0	0	0	0	0	0	15
05:45 PM	0	0	1	0	0	1	0	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	10
Total Volume	0	0	3	4	0	7	0	0	18	0	1	19	0	0	0	0	1	1	1	0	1	0	0	2	0	7	10	0	2	19	0	0	0	0	0	0	48
% App. Total			42.9	57.1	0		0	0	94.7	0	5.3						100		50	0	50	0	0		0	36.8	52.6	0	10.5		0	0	0	0	0		<u> </u>

105 Kenilworth Street Philadelphia, PA 19147

Lancaster & Ithan Avenues

File Name: 02-30IthanPM

Site Code : 00000000 Start Date : 11/15/2012

EB Peds = diag peds NE-SW WB Peds = diag peds NW-SE Page No : 1

Groups	Printed-	cars - HV
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			an Avo				La	ncaste West	er Ave					an Avo				La	ncaste East	er Ave			
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NW-SE Peds	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NE-SW Peds	Peds	App. Total	Int. Total
04:00 PM	11	26	10	6	53	19	141	3	67	10	240	23	39	22	0	84	13	208	5	4	43	273	650
04:15 PM	15	50	26	3	94	12	153	5	81	13	264	8	36	15	0	59	19	174	11	1	30	235	652
04:30 PM	12	43	23	1	79	17	209	15	45	13	299	12	26	17	0	55	12	188	13	1	29	243	676
04:45 PM	18	49	20	1_	88	19	124	10	72	11	236	15	22	12	0	49	24	193	16	5	31	269	642
Total	56	168	79	11	314	67	627	33	265	47	1039	58	123	66	0	247	68	763	45	11	133	1020	2620
05:00 PM	10	58	19	2	89	21	197	6	81	14	319	13	33	19	1	66	25	211	17	2	61	316	790
05:15 PM	16	55	26	T	98	22 18	178	8	175	14	397	21	38	22 20	6	87 53	22	243	18 31	3	84	370	952
05:30 PM	25	61	20	0	106		166	6	99	4	293	13	20	-	0		14	264	-	4	69	382	834
05:45 PM	14	58	8	1	81	34	143	11	104	12	304	16	32	15	0	63	19	219	25	0	88	351	799
Total	65	232	73	4	374	95	684	31	459	44	1313	63	123	76	/	269	80	937	91	9	302	1419	3375
Grand Total Apprch %	121 17.6	400 58.1	152 22.1	15 2.2	688	162 6.9	1311 55.7	64 2.7	724 30.8	91 3.9	2352	121 23.4	246 47.7	142 27.5	7 1.4	516	148 6.1	1700 69.7	136 5.6	20 0.8	435 17.8	2439	5995
Total %	17.0	6.7	2.5	0.3	11.5		21.9	2.7	12.1		39.2			2.4	0.1	8.6	2.5	28.4	2.3	0.8	7.3	40.7	
	120	392	<u>∠.5_</u> 152	15	679	2.7 162		63	724	<u>1.5_</u> 91	<u>39.2</u> 2314	121	<u>4.1</u> 239	<u>2.4</u> 141	<u> </u>	508	2.5 146		<u>2.3_</u> 136	20	<u>7.3</u> 435	2412	5913
cars	_			-		_	1274				-	ł			100			1675					
% cars_	99.2	98	100	100	98.7	100	97.2	98.4	100	100	98.4	100	97.2	99.3	100	98.4	98.6	98.5	100	100	100	98.9	98.6
HV	1	8	0	0	9	0	37	1	0	0	38	0	7	1	0	8	2	25	0	0	0	27	82
% HV	0.8	2	0	0	1.3	0	2.8	1.6	0	0	1.6	0	2.8	0.7	0	1.6	1.4	1.5	0	0	0	1.1	1.4

		Ithan A	Avenue	,	L	ancaste	er Aven	ue		Ithan	Avenue		L	ancast	er Aver	nue	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 05:00	PM to 0	)5:45 PM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	n Begins	at 05:00	PM												
05:00 PM	10	58	19	87	21	197	6	224	13	33	19	65	25	211	17	253	629
05:15 PM	16	55	26	97	22	178	8	208	21	38	22	81	22	243	18	283	669
05:30 PM	25	61	20	106	18	166	6	190	13	20	20	53	14	264	31	309	658
05:45 PM	14	58	8	80	34	143	11	188	16	32	15	63	19	219	25	263	594
Total Volume	65	232	73	370	95	684	31	810	63	123	76	262	80	937	91	1108	2550
% App. Total	17.6	62.7	19.7		11.7	84.4	3.8		24	46.9	29		7.2	84.6	8.2		
PHF	.650	.951	.702	.873	.699	.868	.705	.904	.750	.809	.864	.809	.800	.887	.734	.896	.953
cars	65	228	73	366	95	667	30	792	63	119	76	258	78	925	91	1094	2510
% cars	100	98.3	100	98.9	100	97.5	96.8	97.8	100	96.7	100	98.5	97.5	98.7	100	98.7	98.4
HV	0	4	0	4	0	17	1	18	0	4	0	4	2	12	0	14	40
% HV	0	1.7	0	1.1	0	2.5	3.2	2.2	0	3.3	0	1.5	2.5	1.3	0	1.3	1.6

105 Kenilworth Street Philadelphia, PA 19147

Lancaster & Ithan Avenues

File Name: 02-30IthanPM

Site Code : 00000000 Start Date : 11/15/2012

EB Peds = diag peds NE-SW

WB Peds = diag peds NW-SE

Start Date : 1

Page No : 1

										GIO	ups Pri	nteu-	п۷										
			an Avo				La	ncaste West						n Ave				La	ncaste East	er Ave bound			
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NW-SE Peds	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NE-SW Peds	Peds	App. Total	Int. Total
04:00 PM	1	0	0	0	1	0	4	0	0	0	4	0	0	0	0	0	0	4	0	0	0	4	9
04:15 PM	0	2	0	0	2	0	4	0	0	0	4	0	1	1	0	2	0	3	0	0	0	3	11
04:30 PM	0	1	0	0	1	0	9	0	0	0	9	0	1	0	0	1	0	2	0	0	0	2	13
04:45 PM	0	1	0	0	1	0	3	0	0	0	3	0	1	0	0	1	0	4	0	0	0	4	9
Total	1	4	0	0	5	0	20	0	0	0	20	0	3	1	0	4	0	13	0	0	0	13	42
05:00 PM	0	1	0	0	1	0	5	0	0	0	5	0	0	0	0	0	0	4	0	0	0	4	10
05:15 PM	0	1	0	0	1	0	5	1	0	0	6	0	2	0	0	2	1	3	0	0	0	4	13
05:30 PM	0	1	0	0	1	0	4	0	0	0	4	0	0	0	0	0	0	4	0	0	0	4	9
05:45 PM	0	1	0	0	1	0	3	0	0	0	3	0	2	0	0	2	1	1	0	0	0	2	8
Total	0	4	0	0	4	0	17	1	0	0	18	0	4	0	0	4	2	12	0	0	0	14	40
Grand Total	1	8	0	0	9	0	37	1	0	0	38	0	7	1	0	8	2	25	0	0	0	27	82
Apprch %	11.1	88.9	0	0		0	97.4	2.6	0	0		0	87.5	12.5	0		7.4	92.6	0	0	0		
Total %	1.2	9.8	0	0	11	0	45.1	1.2	0	0	46.3	0	8.5	1.2	0	9.8	2.4	30.5	0	0	0	32.9	l

		lthan A	Avenue	)	L	ancast	er Aver	nue		lthan .	Avenue	•	L	ancast	er Aver	nue	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 05:00	PM to 0	)5:45 PM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	n Begins	at 05:00	PM												
05:00 PM	0	1	0	1	0	5	0	5	0	0	0	0	0	4	0	4	10
05:15 PM	0	1	0	1	0	5	1	6	0	2	0	2	1	3	0	4	13
05:30 PM	0	1	0	1	0	4	0	4	0	0	0	0	0	4	0	4	9
05:45 PM	0	1	0	1	0	3	0	3	0	2	0	2	1	1	0	2	8
Total Volume	0	4	0	4	0	17	1	18	0	4	0	4	2	12	0	14	40
% App. Total	0	100	0		0	94.4	5.6		0	100	0		14.3	85.7	0		
PHF	.000	1.00	.000	1.00	.000	.850	.250	.750	.000	.500	.000	.500	.500	.750	.000	.875	.769

105 Kenilworth Street Philadelphia, PA 19147

Lancaster Avenue & Lowrys Lane

File Name: 03-30LowrPM

Site Code : 00000000 Start Date : 11/8/2012

Page No : 1

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		Lo	wrys L	Lane			Lanc	aster A	Avenu	Э		Lo	wrys l	_ane			Lanca	aster A	\venu	е	
		So	uthbo	und			W	estbo	und			No	rthbo	und			E	astbou	ınd		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	17	17	3	1	38	4	226	4	1	235	13	11	6	3	33	0	254	8	1	263	569
04:15 PM	13	6	3	0	22	3	200	0	0	203	3	2	6	8	19	3	246	6	3	258	502
04:30 PM	22	18	2	1	43	7	200	1	0	208	5	8	4	4	21	1	220	9	0	230	502
04:45 PM	13	11	1	0	25	3	199	1	1	204	10	4	8	10	32	1	232	8	0	241	502
Total	65	52	9	2	128	17	825	6	2	850	31	25	24	25	105	5	952	31	4	992	2075
05:00 PM	30	24	2	0	56	4	265	1	0	270	4	10	3	2	19	0	278	8	0	286	631
05:15 PM	32	12	3	0	47	5	223	0	0	228	7	12	1	7	27	0	327	3	0	330	632
05:30 PM	18	20	2	2	42	4	191	1	0	196	4	8	3	7	22	1	261	4	0	266	526
05:45 PM	16	13	3	0	32	2	208	2	0	212	4	5	8	3	20	1	272	7	0	280	544
Total	96	69	10	2	177	15	887	4	0	906	19	35	15	19	88	2	1138	22	0	1162	2333
<b>Grand Total</b>	161	121	19	4	305	32	1712	10	2	1756	50	60	39	44	193	7	2090	53	4	2154	4408
Apprch %	52.8	39.7	6.2	1.3		1.8	97.5	0.6	0.1		25.9	31.1	20.2	22.8		0.3	97	2.5	0.2		
Total %	3.7	2.7	0.4	0.1	6.9	0.7	38.8	0.2	0	39.8	1.1	1.4	0.9	1	4.4	0.2	47.4	1.2	0.1	48.9	
cars	161	121	19	4	305	32	1681	10	2	1725	47	60	37	44	188	6	2065	49	4	2124	4342
% cars	100	100	100	100	100	100	98.2	100	100	98.2	94	100	94.9	100	97.4	85.7	98.8	92.5	100	98.6	98.5
HV	0	0	0	0	0	0	31	0	0	31	3	0	2	0	5	1	25	4	0	30	66
% HV	0	0	0	0	0	0	1.8	0	0	1.8	6	0	5.1	0	2.6	14.3	1.2	7.5	0	1.4	1.5

		•	s Lane		L		er Aven bound	nue		•	/s Lane	!	L	ancast	er Aver bound	nue	
Start Time	Left			App. Total	Left	Thru		App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Anal	ysis Fron				Peak 1	of 1				,			,				
Peak Hour for E	ntire Inte	rsection	n Begins	at 05:00	PM												
05:00 PM	30	24	2	56	4	265	1	270	4	10	3	17	0	278	8	286	629
05:15 PM	32	12	3	47	5	223	0	228	7	12	1	20	0	327	3	330	625
05:30 PM	18	20	2	40	4	191	1	196	4	8	3	15	1	261	4	266	517
05:45 PM	16	13	3	32	2	208	2	212	4	5	8	17	1	272	7	280	541
Total Volume	96	69	10	175	15	887	4	906	19	35	15	69	2	1138	22	1162	2312
% App. Total	54.9	39.4	5.7		1.7	97.9	0.4		27.5	50.7	21.7		0.2	97.9	1.9		
PHF	.750	.719	.833	.781	.750	.837	.500	.839	.679	.729	.469	.863	.500	.870	.688	.880	.919
cars	96	69	10	175	15	875	4	894	17	35	15	67	2	1128	20	1150	2286
% cars	100	100	100	100	100	98.6	100	98.7	89.5	100	100	97.1	100	99.1	90.9	99.0	98.9
HV	0	0	0	0	0	12	0	12	2	0	0	2	0	10	2	12	26
% HV	0	0	0	0	0	1.4	0	1.3	10.5	0	0	2.9	0	0.9	9.1	1.0	1.1

105 Kenilworth Street Philadelphia, PA 19147

Lancaster Avenue & Lowrys Lane

File Name: 03-30LowrPM

Site Code : 00000000 Start Date : 11/8/2012

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		Lowrys Lane Southbound					Lanc	aster A	Avenu	е		Lo	wrys L	ane			Lanca	aster /	Avenu	е	
		So	uthbo	und			W	estbo	und			No	rthbo	und			E	astbou	und		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	6	0	0	6	1	0	1	0	2	0	1	1	0	2	10
04:15 PM	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	1	7	1	0	9	16
04:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	2	0	0	2	5
04:45 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	9
Total	0	0	0	0	0	0	19	0	0	19	1	0	2	0	3	1	15	2	0	18	40
05:00 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
05:15 PM	0	0	0	0	0	0	3	0	0	3	2	0	0	0	2	0	3	0	0	3	8
05:30 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	2	1	0	3	6
05:45 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	4	1	0	5	8_
Total	0	0	0	0	0	0	12	0	0	12	2	0	0	0	2	0	10	2	0	12	26
Grand Total	0	0	0	0	0	0	31	0	0	31	3	0	2	0	5	1	25	4	0	30	66
Apprch %	0	0	0	0		0	100	0	0		60	0	40	0		3.3	83.3	13.3	0		
Total %	0	0	0	0	0	0	47	0	0	47	4.5	0	3	0	7.6	1.5	37.9	6.1	0	45.5	

		,	s Lane		La		er Aven	iue		,	s Lane		L		er Aven	nue	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 05:00	PM to 0	5:45 PM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	Begins	at 05:00	PM												
05:00 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	1	0	1	4
05:15 PM	0	0	0	0	0	3	0	3	2	0	0	2	0	3	0	3	8
05:30 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	2	1	3	6
05:45 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	4	1	5	8
Total Volume	0	0	0	0	0	12	0	12	2	0	0	2	0	10	2	12	26
% App. Total	0	0	0		0	100	0		100	0	0		0	83.3	16.7		
PHF	.000	.000	.000	.000	.000	1.00	.000	1.00	.250	.000	.000	.250	.000	.625	.500	.600	.813

105 Kenilworth Street Philadelphia, PA 19147

Lancaster & Garrett Avenues

File Name: 04-30GarPM

Site Code : 21102772 Start Date : 11/8/2012

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					Group	5 Filliteu	- cais - i	1 V					
		Lancaste	er Avenu	ie		Garrett	Avenue			Lancaste	r Avenue		
		West	bound			North	bound			Eastb	ound		
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds A	App. Total	Int. Total
04:00 PM	9	0	0	9	3	13	4	20	0	10	0	10	39
04:15 PM	14	0	0	14	0	4	7	11	0	10	0	10	35
04:30 PM	9	0	0	9	0	7	5	12	0	9	0	9	30
04:45 PM	11	0	0	11	1_	8	8	17	0	6	0	6	34
Total	43	0	0	43	4	32	24	60	0	35	0	35	138
05:00 PM	10	0	0	10	2	17	3	22	0	11	0	11	43
05:15 PM	16	0	0	16	2	3	7	12	0	14	0	14	42
05:30 PM	16	0	0	16	2	9	2	13	0	12	0	12	41
05:45 PM	5	0	0	5	0	8	5	13	0	9	0	9	27_
Total	47	0	0	47	6	37	17	60	0	46	0	46	153
Grand Total	90	0	0	90	10	69	41	120	0	81	0	81	291
Apprch %	100	0	0		8.3	57.5	34.2		0	100	0		
Total %	30.9	0	0	30.9	3.4	23.7	14.1	41.2	0	27.8	0	27.8	
cars	90	0	0	90	10	69	41	120	0	81	0	81	291
% cars	100	0	0	100	100	100	100	100	0	100	0	100	100
HV	0	0	0	0	0	0	0	0	0	0	0	0	0
% HV	0	0	0	0	0	0	0	0	0	0	0	0	0

		aster Aver Vestbound			arrett Aveni Northbound			caster Ave Eastbound		
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis Fron	m 05:00 PM to	05:45 PM -	- Peak 1 of 1							
Peak Hour for Entire Inte	ersection Begin	ns at 05:00	PM							
05:00 PM	10	0	10	2	17	19	0	11	11	40
05:15 PM	16	0	16	2	3	5	0	14	14	35
05:30 PM	16	0	16	2	9	11	0	12	12	39
05:45 PM	5	0	5	0	8	8	0	9	9	22
Total Volume	47	0	47	6	37	43	0	46	46	136
% App. Total	100	0		14	86		0	100		
PHF	.734	.000	.734	.750	.544	.566	.000	.821	.821	.850
cars	47	0	47	6	37	43	0	46	46	136
% cars	100	0	100	100	100	100	0	100	100	100
HV	0	0	0	0	0	0	0	0	0	0
% HV	0	0	0	0	0	0	0	0	0	0

105 Kenilworth Street Philadelphia, PA 19147

Lancaster & Garrett Avenues

File Name: 04-30GarPM

Site Code : 21102772 Start Date : 11/8/2012

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					<u> </u>	<u> </u>							
		Lancaste	r Avenu	e		Garrett	Avenue			Lancaste	er Avenue		
		Westl	oound			North	bound			Eastl	oound		
Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds A	App. Total	Int. Total
0 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
0 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5 PM	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
0 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
0 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5 PM	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
ch %	0	0	0		0	0	0		0	0	0		
	Time 0 PM 5 PM 0 PM 5 PM Total 0 PM 5 PM Total 0 PM 5 PM Total Total Total Ch % tal %	0 PM 0 5 PM 0 0 5 PM 0 0 Total 0 PM 0 5 PM 0 0 PM 0 5 PM 0 0 Total 0 Total 0 Total 0 Ch % 0 0	West    Time	Westbound   Time   Left   Thru   Peds   0 PM   0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Time         Left         Thru         Peds         App. Total           0 PM         0         0         0         0           5 PM         0         0         0         0           0 PM         0         0         0         0           5 PM         0         0         0         0           Total         0         0         0         0           0 PM         0         0         0         0           5 PM         0         0         0         0           Total         0         0         0         0           Total         0         0         0         0	Lancaster Avenue   Westbound	Company	Westbound   Northbound   Time   Left   Thru   Peds   App. Total   Left   Right   Peds   O PM   O O O O O O O O O O O O O O O O O O	Lancaster Avenue   Westbound   Northbound	Lancaster Avenue   Westbound   Left   Right   Peds   App. Total   Left   Right   Peds   App. Total   Thru   O PM   O O O O O O O O O O O O O O O O O O	Lancaster Avenue   Westbound   Left   Northbound   Peds   App. Total   Left   Right   Peds   App. Total   Thru   Right   O PM   O O O O O O O O O O O O O O O O O O	Lancaster Avenue   Westbound   Left   Right   Peds   App. Total   Left   Right   Peds   App. Total   Peds   App. Total   Peds   App. Total   Peds   App. Total   Thru   Right   Peds   App. Total   Thru   Thru   Right   Peds   App. Total   Thru   Thru   Thru   Right   Peds   App. Total   Thru   Thru	Company   Comp

		caster Avei Vestbound		_	arrett Aven Northbound			caster Ave Eastbound		
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis Fror	m 05:00 PM to	05:45 PM -	Peak 1 of 1		<u>-</u>					
Peak Hour for Entire Inte	ersection Begin	ns at 05:00	PM							
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

105 Kenilworth Street Philadelphia, PA 19147

Sproul & Conestoga Roads

File Name : 05-SprConPM Site Code : 00000000

Site Code : 00000000 Start Date : 11/14/2012

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									J. Oups	) I IIIIC	u oui	, <b>.</b>									
		Sp	oul R	oad			Cone	estoga	a Road			S	ooul R	oad			Cone	estoga	Road		
		So	uthbo	und			W	estbo	und			No	orthbo	und			E	astbou	ınd		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	20	48	20	0	88	11	112	8	0	131	16	32	2	0	50	18	99	51	0	168	437
04:15 PM	9	67	19	0	95	6	140	10	0	156	30	33	4	0	67	24	115	40	0	179	497
04:30 PM	12	55	20	0	87	10	114	11	0	135	23	35	5	0	63	33	105	50	0	188	473
04:45 PM	9	88	23	0	120	13	124	10	0	147	37	54	4	0	95	24	130	67	0	221	583
Total	50	258	82	0	390	40	490	39	0	569	106	154	15	0	275	99	449	208	0	756	1990
05:00 PM	13	75	24	0	112	7	125	6	0	138	27	41	7	0	75	29	126	54	0	209	534
05:15 PM	11	72	25	0	108	11	155	11	0	177	19	36	9	0	64	32	136	58	0	226	575
05:30 PM	13	69	11	0	93	3	119	15	0	137	30	61	8	0	99	19	140	49	1	209	538
05:45 PM	13	71	21	0	105	6	115	14	0	135	27	44	3	0	74	23	139	53	0	215	529
Total	50	287	81	0	418	27	514	46	0	587	103	182	27	0	312	103	541	214	1	859	2176
<b>Grand Total</b>	100	545	163	0	808	67	1004	85	0	1156	209	336	42	0	587	202	990	422	1	1615	4166
Apprch %	12.4	67.5	20.2	0		5.8	86.9	7.4	0		35.6	57.2	7.2	0		12.5	61.3	26.1	0.1		
Total %	2.4	13.1	3.9	0	19.4	1.6	24.1	2	0	27.7	5	8.1	1	0	14.1	4.8	23.8	10.1	0	38.8	
cars	99	537	161	0	797	62	986	82	0	1130	205	330	41	0	576	197	984	420	1	1602	4105
% cars	99	98.5	98.8	0	98.6	92.5	98.2	96.5	0	97.8	98.1	98.2	97.6	0	98.1	97.5	99.4	99.5	100	99.2	98.5
HV	1	8	2	0	11	5	18	3	0	26	4	6	1	0	11	5	6	2	0	13	61
% HV	1	1.5	1.2	0	1.4	7.5	1.8	3.5	0	2.2	1.9	1.8	2.4	0	1.9	2.5	0.6	0.5	0	0.8	1.5

			l Road bound		C	Conesto West	oga Roa bound	ad		•	I Road bound		(		oga Ro bound	ad	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 05:00	PM to 0	5:45 PM -	Peak 1	of 1	_				_				_		
Peak Hour for E	ntire Inte	rsection	n Begins	at 05:00	PM												
05:00 PM	13	75	24	112	7	125	6	138	27	41	7	75	29	126	54	209	534
05:15 PM	11	72	25	108	11	155	11	177	19	36	9	64	32	136	58	226	575
05:30 PM	13	69	11	93	3	119	15	137	30	61	8	99	19	140	49	208	537
05:45 PM	13	71	21	105	6	115	14	135	27	44	3	74	23	139	53	215	529
Total Volume	50	287	81	418	27	514	46	587	103	182	27	312	103	541	214	858	2175
% App. Total	12	68.7	19.4		4.6	87.6	7.8		33	58.3	8.7		12	63.1	24.9		
PHF	.962	.957	.810	.933	.614	.829	.767	.829	.858	.746	.750	.788	.805	.966	.922	.949	.946
cars	50	284	80	414	24	510	45	579	102	179	27	308	102	538	213	853	2154
% cars	100	99.0	98.8	99.0	88.9	99.2	97.8	98.6	99.0	98.4	100	98.7	99.0	99.4	99.5	99.4	99.0
HV	0	3	1	4	3	4	1	8	1	3	0	4	1	3	1	5	21
% HV	0	1.0	1.2	1.0	11.1	0.8	2.2	1.4	1.0	1.6	0	1.3	1.0	0.6	0.5	0.6	1.0

105 Kenilworth Street Philadelphia, PA 19147

Sproul & Conestoga Roads

File Name : 05-SprConPM Site Code : 00000000

Start Date : 11/14/2012

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										ups i iii											1
			ooul R				Cone	estoga	Road				ooul R				Cone	estoga	Road		
		So	uthbo	und			W	estbo	und			No	rthbo	und			E	astbou	ınd		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	1	1	0	0	2	1	9	1	0	11	0	1	0	0	1	2	2	0	0	4	18
04:15 PM	0	2	1	0	3	0	4	0	0	4	1	1	0	0	2	2	0	0	0	2	11
04:30 PM	0	0	0	0	0	0	1	1	0	2	2	0	0	0	2	0	1	1	0	2	6
04:45 PM	0	2	0	0	2	1	0	0	0	1	0	1	1	0	2	0	0	0	0	0	5
Total	1	5	1	0	7	2	14	2	0	18	3	3	1	0	7	4	3	1	0	8	40
05:00 PM	0	2	1	0	3	0	1	1	0	2	1	3	0	0	4	0	1	0	0	1	10
05:15 PM	0	1	0	0	1	2	2	0	0	4	0	0	0	0	0	0	1	0	0	1	6
05:30 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	1	0	1	3
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2
Total	0	3	1	0	4	3	4	1	0	8	1	3	0	0	4	1	3	1	0	5	21
Grand Total	1	8	2	0	11	5	18	3	0	26	4	6	1	0	11	5	6	2	0	13	61
Apprch %	9.1	72.7	18.2	0		19.2	69.2	11.5	0		36.4	54.5	9.1	0		38.5	46.2	15.4	0		
Total %	1.6	13.1	3.3	0	18	8.2	29.5	4.9	0	42.6	6.6	9.8	1.6	0	18	8.2	9.8	3.3	0	21.3	

			Road bound		C		oga Roa bound	ad			I Road bound		(		oga Roa bound	ad	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	า 05:00	PM to 0	5:45 PM -	Peak 1	of 1					_						
Peak Hour for E	ntire Inte	rsection	<b>Begins</b>	at 05:00	PM												
05:00 PM	0	2	1	3	0	1	1	2	1	3	0	4	0	1	0	1	10
05:15 PM	0	1	0	1	2	2	0	4	0	0	0	0	0	1	0	1	6
05:30 PM	0	0	0	0	1	1	0	2	0	0	0	0	0	0	1	1	3
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
Total Volume	0	3	1	4	3	4	1	8	1	3	0	4	1	3	1	5	21
% App. Total	0	75	25		37.5	50	12.5		25	75	0		20	60	20		
PHF	.000	.375	.250	.333	.375	.500	.250	.500	.250	.250	.000	.250	.250	.750	.250	.625	.525

105 Kenilworth Street Philadelphia, PA 19147

Conestoga & Spring Mill Roads

File Name: 06-ConSpMPM

Site Code : 00000000 Start Date : 11/14/2012

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		•			Ol Cup.	2 1 11111111111111111111111111111111111				_			
		Spring M				Conesto	ga Road			Conesto	ga Road		
		South	oound			Westb	ound			Eastb	ound		
Start Time	Left	Right	Peds /	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds /	App. Total	Int. Total
04:00 PM	5	3	0	8	165	1	0	166	1	122	0	123	297
04:15 PM	2	3	0	5	141	1	0	142	1	129	0	130	277
04:30 PM	2	6	0	8	141	2	0	143	3	128	0	131	282
04:45 PM	0	2	0	2	147	11	0	148	1	148	0	149	299
Total	9	14	0	23	594	5	0	599	6	527	0	533	1155
05:00 PM	3	1	0	4	142	0	0	142	2	151	0	153	299
05:15 PM	3	2	0	5	172	1	0	173	3	156	0	159	337
05:30 PM	5	5	0	10	144	0	0	144	4	173	0	177	331
05:45 PM	6	1	0	7	149	2	0	151	1	166	0	167	325
Total	17	9	0	26	607	3	0	610	10	646	0	656	1292
Grand Total	26	23	0	49	1201	8	0	1209	16	1173	0	1189	2447
Apprch %	53.1	46.9	0		99.3	0.7	0		1.3	98.7	0		
Total %	1.1	0.9	0	2	49.1	0.3	0	49.4	0.7	47.9	0	48.6	
cars	25	21	0	46	1174	8	0	1182	15	1163	0	1178	2406
% cars	96.2	91.3	0	93.9	97.8	100	0	97.8	93.8	99.1	0	99.1	98.3
HV	1	2	0	3	27	0	0	27	1	10	0	11	41
% HV	3.8	8.7	0	6.1	2.2	0	0	2.2	6.2	0.9	0	0.9	1.7

	•	ring Mill Ro Southbound			nestoga Ro Westbound			nestoga Ro Eastbound		
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From	m 05:00 PM to	05:45 PM	- Peak 1 of 1							
Peak Hour for Entire Inte	ersection Begi	ns at 05:00	PM							
05:00 PM	3	1	4	142	0	142	2	151	153	299
05:15 PM	3	2	5	172	1	173	3	156	159	337
05:30 PM	5	5	10	144	0	144	4	173	177	331
05:45 PM	6	1	7	149	2	151	1	166	167	325
Total Volume	17	9	26	607	3	610	10	646	656	1292
% App. Total	65.4	34.6		99.5	0.5		1.5	98.5		
PHF	.708	.450	.650	.882	.375	.882	.625	.934	.927	.958
cars	17	8	25	601	3	604	10	644	654	1283
% cars	100	88.9	96.2	99.0	100	99.0	100	99.7	99.7	99.3
HV	0	1	1	6	0	6	0	2	2	9
% HV	0	11.1	3.8	1.0	0	1.0	0	0.3	0.3	0.7

105 Kenilworth Street Philadelphia, PA 19147

Conestoga & Spring Mill Roads

File Name : 06-ConSpMPM Site Code : 00000000 Start Date : 11/14/2012

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					<u> </u>	<u> </u>	<del></del>						
		Spring N	IIII Road	I		Conesto	ga Road	l		Conesto	oga Road	I	
			bound			West	bound			East	bound		
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
04:00 PM	1	0	0	1	11	0	0	11	1	4	0	5	17
04:15 PM	0	0	0	0	6	0	0	6	0	0	0	0	6
04:30 PM	0	1	0	1	1	0	0	1	0	3	0	3	5
04:45 PM	0	0	0	0	3	0	0	3	0	1	0	1	4
Total	1	1	0	2	21	0	0	21	1	8	0	9	32
05:00 PM	0	0	0	0	2	0	0	2	0	1	0	1	3
05:15 PM	0	0	0	0	3	0	0	3	0	0	0	0	3
05:30 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	1_	0	1	1_
Total	0	1	0	1	6	0	0	6	0	2	0	2	9
Grand Total	1	2	0	3	27	0	0	27	1	10	0	11	41
Apprch %	33.3	66.7	0		100	0	0		9.1	90.9	0		
Total %	2.4	4.9	0	7.3	65.9	0	0	65.9	2.4	24.4	0	26.8	

		ing Mill Ro outhbound			nestoga Ro Westbound			nestoga Ro Eastbound		
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
eak Hour Analysis Fron	n 05:00 PM to	05:45 PM -	Peak 1 of 1						• •	
eak Hour for Entire Inte	rsection Begi	ns at 05:00	PM							
05:00 PM	0	0	0	2	0	2	0	1	1	3
05:15 PM	0	0	0	3	0	3	0	0	0	3
05:30 PM	0	1	1	1	0	1	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	1	1	1
Total Volume	0	1	1	6	0	6	0	2	2	9
% App. Total	0	100		100	0		0	100		
PHF	.000	.250	.250	.500	.000	.500	.000	.500	.500	.750

105 Kenilworth Street Philadelphia, PA 19147

Conestoga Road & Ithan Avenue

File Name: 07-ConlthPM

Site Code : 00000000 Start Date : 11/14/2012

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									JiOups	Fillite	u- car	3 - 11V									1
		lth	an Ave	enue			Cone	estoga	Road			lth	an Av	enue			Cone	estoga	Road		
		So	uthbo	und			W	estbo	und			No	orthbo	und			E	astbou	ınd		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	15	29	52	0	96	3	99	8	1	111	1	3	1	0	5	19	111	2	0	132	344
04:15 PM	13	18	43	1	75	2	111	9	1	123	0	7	2	0	9	16	101	1	0	118	325
04:30 PM	12	32	30	2	76	2	121	8	0	131	1	8	2	0	11	15	112	0	0	127	345
04:45 PM	8	23	36	0	67	2	107	12	0	121	2	5	0	0	7	27	105	2	0	134	329
Total	48	102	161	3	314	9	438	37	2	486	4	23	5	0	32	77	429	5	0	511	1343
05:00 PM	17	36	45	0	98	2	125	11	1	139	1	4	1	0	6	20	134	1	0	155	398
05:15 PM	9	27	24	0	60	2	118	9	1	130	3	6	1	0	10	14	119	0	2	135	335
05:30 PM	10	11	21	0	42	2	115	7	0	124	2	5	2	0	9	15	131	4	0	150	325
05:45 PM	16	12	44	0	72	5	104	12	0	121	1	3	2	0	6	14	128	2	0	144	343
Total	52	86	134	0	272	11	462	39	2	514	7	18	6	0	31	63	512	7	2	584	1401
<b>Grand Total</b>	100	188	295	3	586	20	900	76	4	1000	11	41	11	0	63	140	941	12	2	1095	2744
Apprch %	17.1	32.1	50.3	0.5		2	90	7.6	0.4		17.5	65.1	17.5	0		12.8	85.9	1.1	0.2		
Total %	3.6	6.9	10.8	0.1	21.4	0.7	32.8	2.8	0.1	36.4	0.4	1.5	0.4	0	2.3	5.1	34.3	0.4	0.1	39.9	
cars	100	187	285	3	575	20	885	73	4	982	9	40	11	0	60	138	931	12	2	1083	2700
% cars	100	99.5	96.6	100	98.1	100	98.3	96.1	100	98.2	81.8	97.6	100	0	95.2	98.6	98.9	100	100	98.9	98.4
HV	0	1	10	0	11	0	15	3	0	18	2	1	0	0	3	2	10	0	0	12	44
% HV	0	0.5	3.4	0	1.9	0	1.7	3.9	0	1.8	18.2	2.4	0	0	4.8	1.4	1.1	0	0	1.1	1.6

			Avenue bound		(	Conesto West	oga Roa bound	ad			Avenue bound		(	Conesto Eastl	oga Ro bound	ad	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 05:00	PM to 0	5:45 PM	Peak 1	of 1	_				_				_		
Peak Hour for E	ntire Inte	rsection	n Begins	at 05:00	PM												
05:00 PM	17	36	45	98	2	125	11	138	1	4	1	6	20	134	1	155	397
05:15 PM	9	27	24	60	2	118	9	129	3	6	1	10	14	119	0	133	332
05:30 PM	10	11	21	42	2	115	7	124	2	5	2	9	15	131	4	150	325
05:45 PM	16	12	44	72	5	104	12	121	1	3	2	6	14	128	2	144	343
Total Volume	52	86	134	272	11	462	39	512	7	18	6	31	63	512	7	582	1397
% App. Total	19.1	31.6	49.3		2.1	90.2	7.6		22.6	58.1	19.4		10.8	88	1.2		
PHF	.765	.597	.744	.694	.550	.924	.813	.928	.583	.750	.750	.775	.788	.955	.438	.939	.880
cars	52	86	129	267	11	462	38	511	5	18	6	29	63	510	7	580	1387
% cars	100	100	96.3	98.2	100	100	97.4	99.8	71.4	100	100	93.5	100	99.6	100	99.7	99.3
HV	0	0	5	5	0	0	1	1	2	0	0	2	0	2	0	2	10
% HV	0	0	3.7	1.8	0	0	2.6	0.2	28.6	0	0	6.5	0	0.4	0	0.3	0.7

105 Kenilworth Street Philadelphia, PA 19147

Conestoga Road & Ithan Avenue

File Name: 07-ConlthPM

Site Code : 00000000 Start Date : 11/14/2012

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										ups i ii	iiica i										
			an Avo					estoga estbo	Road				an Av					estoga astbol	Road		
			uthbo	una			VV	estbo	una			INC	rthbo	una				astbot	una		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	3	0	3	0	7	1	0	8	0	1	0	0	1	0	2	0	0	2	14
04:15 PM	0	0	1	0	1	0	5	1	0	6	0	0	0	0	0	0	2	0	0	2	9
04:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	4	0	0	5	6
04:45 PM	0	1	1	0	2	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	5
Total	0	1	5	0	6	0	15	2	0	17	0	1	0	0	1	2	8	0	0	10	34
05:00 PM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3
05:15 PM	0	0	2	0	2	0	0	1	0	1	2	0	0	0	2	0	1	0	0	1	6
05:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	5	0	5	0	0	1	0	1	2	0	0	0	2	0	2	0	0	2	10
<b>Grand Total</b>	0	1	10	0	11	0	15	3	0	18	2	1	0	0	3	2	10	0	0	12	44
Apprch %	0	9.1	90.9	0		0	83.3	16.7	0		66.7	33.3	0	0		16.7	83.3	0	0		
Total %	0	2.3	22.7	0	25	0	34.1	6.8	0	40.9	4.5	2.3	0	0	6.8	4.5	22.7	0	0	27.3	

			Avenue		C	onesto	_	ad			Avenue		(		oga Ro	ad	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 05:00	PM to 0	5:45 PM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	Begins	at 05:00	PM												
05:00 PM	0	0	2	2	0	0	0	0	0	0	0	0	0	1	0	1	3
05:15 PM	0	0	2	2	0	0	1	1	2	0	0	2	0	1	0	1	6
05:30 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total Volume	0	0	5	5	0	0	1	1	2	0	0	2	0	2	0	2	10
% App. Total	0	0	100		0	0	100		100	0	0		0	100	0		
PHF	.000	.000	.625	.625	.000	.000	.250	.250	.250	.000	.000	.250	.000	.500	.000	.500	.417

105 Kenilworth Street Philadelphia, PA 19147

Conestoga Road & Lowrys Lane/Strathmore

Drive

File Name: 08-ConLowPM Site Code: 00000000

Start Date : 11/14/2012

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			wrys L outhbo						Road	7 1 11110		Strat	hmore		•			estoga astbou	Road		
Ctaut Times	1 -44					1 -44					1 -44			-		1 -44					
Start Time	Left	Thru	Right		App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	3	7	13	2	25	6	115	5	0	126	2	5	5	0	12	15	101	2	0	118	281
04:15 PM	0	5	7	0	12	3	107	1	0	111	3	2	8	1	14	8	110	4	0	122	259
04:30 PM	4	7	18	0	29	2	108	4	1	115	9	4	5	0	18	12	111	4	0	127	289
04:45 PM	1	1	9	0	11	6	111	1	0	118	6	1	2	0	9	12	103	5	0	120	258
Total	8	20	47	2	77	17	441	11	1	470	20	12	20	1	53	47	425	15	0	487	1087
																					'
05:00 PM	3	4	17	0	24	4	131	3	0	138	1	5	4	0	10	9	115	2	0	126	298
05:15 PM	2	3	9	0	14	5	111	5	0	121	4	2	3	0	9	11	123	5	0	139	283
05:30 PM	3	3	11	0	17	3	109	3	0	115	2	1	6	0	9	8	119	5	1	133	274
05:45 PM	1	7	15	Ö	23	5	105	5	Ö	115	8	0	4	1	13	8	137	5	0	150	301
Total	9	17	52	0	78	17	456	16	0	489	15	8	17	1	41	36	494	17	1	548	1156
Total	) 3	17	32	U	70	17	450	10	U	409	13	O	17	'	411	30	434	17		340	1130
Grand Total	17	37	99	2	155	34	897	27	1	959	35	20	37	2	94	83	919	32	1	1035	2243
	11		63.9	1.3	100	3.5	93.5	2.8	0.1	333	37.2	21.3	39.4	2.1	34	8	88.8	3.1	0.1	1033	2243
Apprch %		23.9						-		40.0	_					_		-		40.4	
Total %	0.8	1.6	4.4	0.1	6.9	1.5	40	1.2	0_	42.8	1.6	0.9	1.6	0.1	4.2	3.7	41	1.4	0	46.1	
cars	16	33	98	2	149	32	883	26	1	942	35	20	35	2	92	82	907	31	1	1021	2204
% cars	94.1	89.2	99	100	96.1	94.1	98.4	96.3	100	98.2	100	100	94.6	100	97.9	98.8	98.7	96.9	100	98.6	98.3
HV	1	4	1	0	6	2	14	1	0	17	0	0	2	0	2	1	12	1	0	14	39
% HV	5.9	10.8	1	0	3.9	5.9	1.6	3.7	0	1.8	0	0	5.4	0	2.1	1.2	1.3	3.1	0	1.4	1.7

		•	s Lane		(		oga Roa bound	ad	S		ore Dri	ve	C		oga Ro bound	ad	ı
Start Time	Left	Thru		App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru		App. Total	Int. Total
Peak Hour Anal	ysis Fror	n 05:00	PM to 0	5:45 PM -	Peak 1	of 1			,								
Peak Hour for E	ntire Inte	ersection	n Begins	at 05:00	PM												
05:00 PM	3	4	17	24	4	131	3	138	1	5	4	10	9	115	2	126	298
05:15 PM	2	3	9	14	5	111	5	121	4	2	3	9	11	123	5	139	283
05:30 PM	3	3	11	17	3	109	3	115	2	1	6	9	8	119	5	132	273
05:45 PM	1	7	15	23	5	105	5	115	8	0	4	12	8	137	5	150	300
Total Volume	9	17	52	78	17	456	16	489	15	8	17	40	36	494	17	547	1154
% App. Total	11.5	21.8	66.7		3.5	93.3	3.3		37.5	20	42.5		6.6	90.3	3.1		
PHF	.750	.607	.765	.813	.850	.870	.800	.886	.469	.400	.708	.833	.818	.901	.850	.912	.962
cars	9	15	52	76	16	455	16	487	15	8	17	40	36	491	17	544	1147
% cars	100	88.2	100	97.4	94.1	99.8	100	99.6	100	100	100	100	100	99.4	100	99.5	99.4
HV	0	2	0	2	1	1	0	2	0	0	0	0	0	3	0	3	7
% HV	0	11.8	0	2.6	5.9	0.2	0	0.4	0	0	0	0	0	0.6	0	0.5	0.6

105 Kenilworth Street Philadelphia, PA 19147

Conestoga Road & Lowrys Lane/Strathmore

Drive

File Name: 08-ConLowPM

Site Code : 00000000 Start Date : 11/14/2012

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		Lo	wrys l	Lane			Cone	estoga	Road	•		Strat	hmore	Drive	•		Con	estoga	Road		
		So	uthbo	und			W	estbo	und			No	rthbo	und			E	astbou	und		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	1	0	1	0	2	0	5	1	0	6	0	0	1	0	1	1	2	0	0	3	12
04:15 PM	0	1	0	0	1	1	4	0	0	5	0	0	1	0	1	0	0	0	0	0	7
04:30 PM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	8
04:45 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	1	0	2	5
Total	1	2	1	0	4	1	13	1	0	15	0	0	2	0	2	1	9	1	0	11	32
05:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:15 PM	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	5
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1_
Total	0	2	0	0	2	1	1	0	0	2	0	0	0	0	0	0	3	0	0	3	7
<b>Grand Total</b>	1	4	1	0	6	2	14	1	0	17	0	0	2	0	2	1	12	1	0	14	39
Apprch %	16.7	66.7	16.7	0		11.8	82.4	5.9	0		0	0	100	0		7.1	85.7	7.1	0		
Total %	2.6	10.3	2.6	0	15.4	5.1	35.9	2.6	0	43.6	0	0	5.1	0	5.1	2.6	30.8	2.6	0	35.9	

		. ,	s Lane bound		C	onesto West	ga Roa bound	ad	S	Strathm North	ore Driv bound	ve	(		oga Roa bound	ad	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 05:00	PM to 0	5:45 PM -	Peak 1	of 1					_						
Peak Hour for E	ntire Inte	rsection	Begins	at 05:00	PM												
05:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
05:15 PM	0	2	0	2	0	1	0	1	0	0	0	0	0	2	0	2	5
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1_
Total Volume	0	2	0	2	1	1	0	2	0	0	0	0	0	3	0	3	7
% App. Total	0	100	0		50	50	0		0	0	0		0	100	0		
PHF	.000	.250	.000	.250	.250	.250	.000	.500	.000	.000	.000	.000	.000	.375	.000	.375	.350

105 Kenilworth Street Philadelphia, PA 19147

Conestoga Road & Garrett Avenue/ Williams Road

File Name: 09-ConGarPM

Site Code : 21102702 Start Date : 11/14/2012

Page No : 1

			rett Av						Road	7 1 11110		Will	liams orthbo					estoga astbou	Road		
Start Time	Left	Thru	Right	Peds	Ann Total	Left	Thru	Right	Peds	Ann Total	Left	Thru	Right	Peds	Ann Total	Left	Thru	Right	Peds	A T-t-I	Int. Total
04:00 PM	11	2	Kigiit 8	reus	App. Total	3	114	Kigiit 6	0	App. Total	2	1111111	Nigit	r eus	App. Total	7	94	Kigiit 6	7 Eus	App. Total	257
	3	_	-	0	1	5		0	-	-		1		0		,		0	1		-
04:15 PM	3	6	15	1	25	5	107	1	0	113	1	1	5	3	10	8	116	1	1	126	274
04:30 PM	11	3	17	1	32	6	111	6	0	123	5	2	3	2	12	7	108	4	1	120	287
04:45 PM	9	7	13_	0_	29	1_	104	3_	1_	109	4_	2	2	0	8	12	91	3_	0_	106	252
Total	34	18	53	2	107	15	436	16	1	468	12	6	12	5	35	34	409	14	3	460	1070
05:00 PM	9	3	10	0	22	6	147	7	0	160	5	0	4	8	17	13	111	1	0	125	324
05:15 PM	6	2	16	0	24	2	118	4	0	124	3	0	1	4	8	4	135	0	0	139	295
05:30 PM	5	1	11	0	17	2	103	10	0	115	3	0	3	2	8	4	117	1	0	122	262
05:45 PM	7	6	14	0	27	2	118	7	2	129	5	1	3	3	12	5	125	7	0	137	305
Total	27	12	51	0	90	12	486	28	2	528	16	1	11	17	45	26	488	9	0	523	1186
																					'
Grand Total	61	30	104	2	197	27	922	44	3	996	28	7	23	22	80	60	897	23	3	983	2256
Apprch %	31	15.2	52.8	1		2.7	92.6	4.4	0.3		35	8.8	28.8	27.5		6.1	91.3	2.3	0.3	000	
Total %	2.7	1.3	4.6	0.1	8.7	1.2	40.9	2	0.1	44.1	1.2	0.3	1	1	3.5	2.7	39.8	1	0.1	43.6	
cars	61	30	104	2	197	27	922	44	3	996	28	7	23	22	80	60	897	23	3	983	2256
% cars	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
HV	0	0	100	0	0	100	0	100	0	0	100	100	0	0	0	0	0	0	0	0	0
	0	0	0	0		0	0	0	-	-	0	0	0	0	٠ ا	-	-	-	-	•	0
% HV	U	U	U	Ü	0	Ü	Ü	Ü	0	0	0	Ü	0	0	0	0	0	0	0	0	0

			Avenu	е	C	Conesto	oga Roa bound	ad			ns Roa bound		C		oga Ro bound	ad	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Anal	ysis Fror	n 05:00	PM to 0	5:45 PM -	Peak 1	of 1	-								_		
Peak Hour for E	ntire Inte	ersection	n Begins	at 05:00	PM												
05:00 PM	9	3	10	22	6	147	7	160	5	0	4	9	13	111	1	125	316
05:15 PM	6	2	16	24	2	118	4	124	3	0	1	4	4	135	0	139	291
05:30 PM	5	1	11	17	2	103	10	115	3	0	3	6	4	117	1	122	260
05:45 PM	7	6	14	27	2	118	7	127	5	1_	3	9	5	125	7	137	300
Total Volume	27	12	51	90	12	486	28	526	16	1	11	28	26	488	9	523	1167
% App. Total	30	13.3	56.7		2.3	92.4	5.3		57.1	3.6	39.3		5	93.3	1.7		
PHF	.750	.500	.797	.833	.500	.827	.700	.822	.800	.250	.688	.778	.500	.904	.321	.941	.923
cars	27	12	51	90	12	486	28	526	16	1	11	28	26	488	9	523	1167
% cars	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

105 Kenilworth Street Philadelphia, PA 19147

Conestoga Road & Garrett Avenue/ Williams Road

File Name: 09-ConGarPM

Site Code : 21102702 Start Date : 11/14/2012

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									GIU	ups Fili	iteu- i	1 V									
		_	rett Av					estoga estbo	Road				liams l					estoga			
		30	uthbo	una			VV	estbo	una			NC	rthbo	una			E	astbοι	ına		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch % Total %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		

		Garrett	Avenu	е	C	onesto	ga Ro	ad		Willian	ns Road	i	(	Conesto	oga Ro	ad	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 05:00	PM to 0	5:45 PM -	Peak 1	of 1	_				_				_		
Peak Hour for E	ntire Inte	rsection	Begins	at 05:00	PM												
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

105 Kenilworth Street Philadelphia, PA 19147

Spring Mill and County Line Roads

File Name : 10-SpMCoLPM Site Code : 00000000

Start Date : 11/13/2012

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			ty Lin	e Road	d				Road	, , , , , , , ,		Coun	ty Lin	e Road	t			ng MIII astbou			
Start Time	Left	Thru	Right		App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	13	54	13	0	80	9	59	10	0	78	13	46	9	0	68	15	55	20	6	96	322
04:15 PM	11	45	13	1	70	11	65	9	0	85	9	45	17	0	71	16	74	22	1	113	339
04:30 PM	10	61	10	0	81	11	52	12	0	75	18	40	12	0	70	17	80	16	6	119	345
04:45 PM	9	48	8	2	67	9	45	15	0	69	17	33	8	0	58	16	60	30	3	109	303
Total	43	208	44	3	298	40	221	46	0	307	57	164	46	0	267	64	269	88	16	437	1309
05:00 PM	21	100	11	0	132	4	65	8	0	77	15	57	10	0	82	15	76	27	8	126	417
05:15 PM	15	101	16	0	132	16	53	16	0	85	17	64	14	0	95	14	77	22	7	120	432
05:30 PM	17	79	8	0	104	19	53	20	0	92	17	40	7	0	64	22	83	22	4	131	391
05:45 PM	11	110	9_	0	130	16	69	7	0_	92	22	38	6	0	66	12	64	22	2	100	388
Total	64	390	44	0	498	55	240	51	0	346	71	199	37	0	307	63	300	93	21	477	1628
Grand Total	107	E00	88	3	796	95	461	97	0	CE 2	100	363	83	0	574	127	569	181	37	014	2937
	107	598 75.4		0.4	796			-	-	653	128			0	5/4					914	2937
Apprch %	13.4	75.1	11.1		07.4	14.5	70.6	14.9	0	20.0	22.3	63.2	14.5	-	40.5	13.9	62.3	19.8	4	24.4	
Total %	3.6	20.4	3_	0.1	27.1	3.2	15.7	3.3	0	22.2	4.4	12.4	2.8	0	19.5	4.3	19.4	6.2	1.3	31.1	0000
cars	107	591	83	3	784	95	451	96	0	642	128	363	82	0	573	127	555	180	37	899	2898
% cars	100	98.8	94.3	100	98.5	100	97.8	99	0	98.3	100	100	98.8	0	99.8	100	97.5	99.4	100	98.4	98.7
HV	0	7	_ 5	0	12	0	10	1	0	11	0	0	1	0	1	0	14	1	0	15	39
% HV	0	1.2	5.7	0	1.5	0	2.2	1	0	1.7	0	0	1.2	0	0.2	0	2.5	0.6	0	1.6	1.3

	С	•	ine Robound	ad	5		MIII Roa bound	ad	С	ounty I North	ine Ro		5	Spring I Eastl	MIII Roa	ad	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 05:00	PM to 0	5:45 PM -	Peak 1	of 1	_				_				_		
Peak Hour for E	ntire Inte	rsection	n Begins	at 05:00	PM												
05:00 PM	21	100	11	132	4	65	8	77	15	57	10	82	15	76	27	118	409
05:15 PM	15	101	16	132	16	53	16	85	17	64	14	95	14	77	22	113	425
05:30 PM	17	79	8	104	19	53	20	92	17	40	7	64	22	83	22	127	387
05:45 PM	11	110	9	130	16	69	7	92	22	38	6	66	12	64	22	98	386
Total Volume	64	390	44	498	55	240	51	346	71	199	37	307	63	300	93	456	1607
% App. Total	12.9	78.3	8.8		15.9	69.4	14.7		23.1	64.8	12.1		13.8	65.8	20.4		
PHF	.762	.886	.688	.943	.724	.870	.638	.940	.807	.777	.661	.808	.716	.904	.861	.898	.945
cars	64	386	41	491	55	234	51	340	71	199	37	307	63	296	93	452	1590
% cars	100	99.0	93.2	98.6	100	97.5	100	98.3	100	100	100	100	100	98.7	100	99.1	98.9
HV	0	4	3	7	0	6	0	6	0	0	0	0	0	4	0	4	17
% HV	0	1.0	6.8	1.4	0	2.5	0	1.7	0	0	0	0	0	1.3	0	0.9	1.1

105 Kenilworth Street Philadelphia, PA 19147

Spring Mill and County Line Roads

File Name : 10-SpMCoLPM Site Code : 00000000

Start Date : 11/13/2012

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		Cour	tv I in	e Roa	d		Spri	na MII	I Road	иро і і і			tv I in	e Roa	d		Sprii	na MII	Road		]
			uthbo		-		•	estbo					rthbo		-			astbo		'	
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	1	1	0	2	0	1	1	0	2	0	0	0	0	0	0	2	0	0	2	6
04:15 PM	0	1	0	0	1	0	1	0	0	1	0	0	1	0	1	0	3	1	0	4	7
04:30 PM	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	4
04:45 PM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	5
Total	0	3	2	0	5	0	4	1	0	5	0	0	1	0	1	0	10	1	0	11	22
05:00 PM	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	3
05:15 PM	0	1	3	0	4	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	7
05:30 PM	0	1	0	0	1	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	6
05:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11_
Total	0	4	3	0	7	0	6	0	0	6	0	0	0	0	0	0	4	0	0	4	17
Grand Total	0	7	5	0	12	0	10	1	0	11	0	0	1	0	1	0	14	1	0	15	39
Apprch %	0	58.3	41.7	0		0	90.9	9.1	0		0	0	100	0		0	93.3	6.7	0		
Total %	0	17.9	12.8	0	30.8	0	25.6	2.6	0	28.2	0	0	2.6	0	2.6	0	35.9	2.6	0	38.5	

	С	ounty L	ine Ro	ad	S	pring I	MIII Ro	ad	С	ounty I	ine Ro	ad		Spring	MIII Roa	ad	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fror	n 05:00	PM to 0	5:45 PM -	Peak 1	of 1	_				_				_		
Peak Hour for E	ntire Inte	rsection	Begins	at 05:00	PM												
05:00 PM	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
05:15 PM	0	1	3	4	0	1	0	1	0	0	0	0	0	2	0	2	7
05:30 PM	0	1	0	1	0	3	0	3	0	0	0	0	0	2	0	2	6
05:45 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1_
Total Volume	0	4	3	7	0	6	0	6	0	0	0	0	0	4	0	4	17
% App. Total	0	57.1	42.9		0	100	0		0	0	0		0	100	0		
PHF	.000	1.00	.250	.438	.000	.500	.000	.500	.000	.000	.000	.000	.000	.500	.000	.500	.607

105 Kenilworth Street Philadelphia, PA 19147

Ithan Avenue & County Line Road N

File Name: 11-IthCoLNPM

Site Code : 00000000 Start Date : 11/15/2012

Page No : 1

					<u> </u>		<u> </u>						
			venue bound			Ithan A				•	ine Road ound		
Start Time	Thru	Right		App. Total	Left	Thru		App. Total	Left	Right		pp. Total	Int. Total
04:00 PM	24	19	1	44	89	31	0	120	28	81	0	109	273
04:15 PM	29	14	0	43	57	21	1	79	21	92	1	114	236
04:30 PM	28	15	0	43	58	23	0	81	33	90	0	123	247
04:45 PM	22	14	0	36	58	32	2	92	41	93	1	135	263
Total	103	62	1	166	262	107	3	372	123	356	2	481	1019
05:00 PM	42	14	0	56	86	26	0	112	38	96	0	134	302
05:15 PM	22	14	0	36	70	36	0	106	44	136	2	182	324
05:30 PM	20	13	0	33	45	29	0	74	46	131	0	177	284
05:45 PM	28	20	0	48	63	24	0	87	51	120	0	171	306
Total	112	61	0	173	264	115	0	379	179	483	2	664	1216
Grand Total	215	123	1	339	526	222	3	751	302	839	4	1145	2235
Apprch %	63.4	36.3	0.3		70	29.6	0.4		26.4	73.3	0.3		
Total %	9.6	5.5	0	15.2	23.5	9.9	0.1	33.6	13.5	37.5	0.2	51.2	
cars	213	122	1	336	521	220	3	744	301	825	4	1130	2210
% cars	99.1	99.2	100	99.1	99	99.1	100	99.1	99.7	98.3	100	98.7	98.9
HV	2	1	0	3	5	2	0	7	1	14	0	15	25
% HV	0.9	8.0	0	0.9	1	0.9	0	0.9	0.3	1.7	0	1.3	1.1

		han Avenu Southbound	~		Ithan Avenu Northbound	-		unty Line R Eastbound		
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From	m 05:00 PM to	05:45 PM	- Peak 1 of 1							_
Peak Hour for Entire Inte	ersection Begi	ns at 05:00	PM .							
05:00 PM	42	14	56	86	26	112	38	96	134	302
05:15 PM	22	14	36	70	36	106	44	136	180	322
05:30 PM	20	13	33	45	29	74	46	131	177	284
05:45 PM	28	20	48	63	24	87	51	120	171	306
Total Volume	112	61	173	264	115	379	179	483	662	1214
% App. Total	64.7	35.3		69.7	30.3		27	73		
PHF	.667	.763	.772	.767	.799	.846	.877	.888	.919	.943
cars	111	61	172	260	114	374	179	478	657	1203
% cars	99.1	100	99.4	98.5	99.1	98.7	100	99.0	99.2	99.1
HV	1	0	1	4	1	5	0	5	5	11
% HV	0.9	0	0.6	1.5	0.9	1.3	0	1.0	0.8	0.9

105 Kenilworth Street Philadelphia, PA 19147

Ithan Avenue & County Line Road N

File Name: 11-IthCoLNPM

Site Code : 00000000 Start Date : 11/15/2012

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					Gro	oups Prini	teu- nv						
		Ithan A	venue			Ithan A	venue			County L	ine Road	d	
		Southl	oound			North	bound			Eastb	ound		
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
04:00 PM	1	1	0	2	1	0	0	1	0	2	0	2	5
04:15 PM	0	0	0	0	0	0	0	0	1	2	0	3	3
04:30 PM	0	0	0	0	0	0	0	0	0	4	0	4	4
 04:45 PM	0	0	0	0	0	1	0	1	0	1	0	1	2_
Total	1	1	0	2	1	1	0	2	1	9	0	10	14
05:00 PM	0	0	0	0	2	0	0	2	0	2	0	2	4
05:15 PM	0	0	0	0	1	0	0	1	0	1	0	1	2
05:30 PM	1	0	0	1	1	1	0	2	0	2	0	2	5
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	4	1	0	5	0	5	0	5	11
Grand Total	2	1	0	3	5	2	0	7	1	14	0	15	25
Apprch %	66.7	33.3	0		71.4	28.6	0		6.7	93.3	0		
Total %	8	4	0	12	20	8	0	28	4	56	0	60	

		han Avenue Southbound	_		than Avenu Northbound			inty Line R Eastbound	I .	
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis Fron	n 05:00 PM to	05:45 PM -	Peak 1 of 1							
Peak Hour for Entire Inte	rsection Begi	ns at 05:00	PM							
05:00 PM	0	0	0	2	0	2	0	2	2	4
05:15 PM	0	0	0	1	0	1	0	1	1	2
05:30 PM	1	0	1	1	1	2	0	2	2	5
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	1	4	1	5	0	5	5	11
% App. Total	100	0		80	20		0	100		
PHF	.250	.000	.250	.500	.250	.625	.000	.625	.625	.550

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Ithan Avenue & County Line Road S

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			venue			County L	ine Road				venue		
		South	bound			Westk	ound			North	bound		
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds /	App. Total	Int. Total
04:00 PM	41	48	0	89	4	30	0	34	46	4	0	50	173
04:15 PM	60	63	0	123	4	36	0	40	34	7	0	41	204
04:30 PM	54	64	0	118	2	32	0	34	46	8	0	54	206
04:45 PM	64	59	1_	124	6	45	0	51	45	8	0	53	228
Total	219	234	1	454	16	143	0	159	171	27	0	198	811
05.00.004	00	00		440	0		•	04		4.4	•	70	07.4
05:00 PM	60	80	0	140	3	58	0	61	59	14	0	73	274
05:15 PM	77	85	0	162	5	37	0	42	62	6	0	68	272
05:30 PM	74	73	2	149	8	27	0	35	46	8	0	54	238
05:45 PM	85	64	0	149	7	37	0	44	51	8	0	59	252
Total	296	302	2	600	23	159	0	182	218	36	0	254	1036
Grand Total	515	536	3	1054	39	302	0	341	389	63	0	452	1847
Apprch %	48.9	50.9	0.3	1004	11.4	88.6	0	041	86.1	13.9	0	102	10-17
Total %	27.9	29	0.2	57.1	2.1	16.4	0	18.5	21.1	3.4	0	24.5	
cars	511	524	3	1038	38	299	0	337	387	63	0	450	1825
% cars	99.2	97.8	100	98.5	97.4	99	0	98.8	99.5	100	Ö	99.6	98.8
HV	4	12	0	16	1	3	0	4	2	0	0	2	22
% HV	0.8	2.2	0	1.5	2.6	1	0	1.2	0.5	0	Ö	0.4	1.2

		Ithan Avenu Southbound	-	Co	unty Line R Westbound			lthan Avenu Northbound		
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis Fro	m 05:00 PM 1	to 05:45 PM	- Peak 1 of 1		<u> </u>			-		
Peak Hour for Entire Inte	ersection Beg	gins at 05:00	PM							
05:00 PM	60	80	140	3	58	61	59	14	73	274
05:15 PM	77	85	162	5	37	42	62	6	68	272
05:30 PM	74	73	147	8	27	35	46	8	54	236
05:45 PM	85	64	149	7	37	44	51	8	59	252
Total Volume	296	302	598	23	159	182	218	36	254	1034
% App. Total	49.5	50.5		12.6	87.4		85.8	14.2		
PHF	.871	.888	.923	.719	.685	.746	.879	.643	.870	.943
cars	295	297	592	23	156	179	217	36	253	1024
% cars	99.7	98.3	99.0	100	98.1	98.4	99.5	100	99.6	99.0
HV	1	5	6	0	3	3	1	0	1	10
% HV	0.3	1.7	1.0	0	1.9	1.6	0.5	0	0.4	1.0

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Ithan Avenue & County Line Road S

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					Gro	oups Print	tea- nv						
		Ithan A	venue			County L	ine Roa	d		Ithan A	venue		
		South	oound			Westl	oound			North	bound		
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	1	3	0	4	1	0	0	1	0	0	0	0	5
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	2	3	0	5	0	0	0	0	0	0	0	0	5
04:45 PM	0	1	0	1	0	0	0	0	1	0	0	1	2
Total	3	7	0	10	1	0	0	1	1	0	0	1	12
05:00 PM	0	2	0	2	0	2	0	2	0	0	0	0	4
05:15 PM	1	0	0	1	0	1	0	1	1	0	0	1	3
05:30 PM	0	3	0	3	0	0	0	0	0	0	0	0	3
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total	1	5	0	6	0	3	0	3	1	0	0	1	10
Grand Total	4	12	0	16	1	3	0	4	2	0	0	2	22
Apprch %	25	75	0		25	75	0		100	0	0		
Total %	18.2	54.5	0	72.7	4.5	13.6	0	18.2	9.1	0	0	9.1	

		Ithan Avenu Southboun		Co	ounty Line R Westbound			than Avenu Northbound		
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
eak Hour Analysis Fron	m 05:00 PM	to 05:45 PM	- Peak 1 of 1						• •	
eak Hour for Entire Inte	ersection Be	gins at 05:00	) PM							
05:00 PM	0	2	2	0	2	2	0	0	0	4
05:15 PM	1	0	1	0	1	1	1	0	1	3
05:30 PM	0	3	3	0	0	0	0	0	0	3
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	1	5	6	0	3	3	1	0	1	10
% App. Total	16.7	83.3		0	100		100	0		
PHF	.250	.417	.500	.000	.375	.375	.250	.000	.250	.625

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County Line Road & Lowrys Lane

File Name: 13-CoLLowPM

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		O 1	D			2					- 1		
		County L		1		County L		1			s Lane		
		South				Northl	bound				ound		
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
04:00 PM	42	27	1	70	7	42	0	49	7	3	3	13	132
04:15 PM	37	18	0	55	10	39	0	49	3	4	1	8	112
04:30 PM	50	22	2	74	8	41	0	49	7	8	1	16	139
04:45 PM	32	17	0	49	14	32	0	46	2	4	0	6	101
Total	161	84	3	248	39	154	0	193	19	19	5	43	484
05:00 PM	40	38	0	78	9	41	0	50	6	5	1	12	140
05:15 PM	33	33	0	66	20	49	0	69	2	4	4	10	145
05:30 PM	43	24	0	67	9	47	0	56	4	5	3	12	135
05:45 PM	37	27	1	65	13	42	0	55	4	4	0	8	128
Total	153	122	1	276	51	179	0	230	16	18	8	42	548
Grand Total	314	206	4	524	90	333	0	423	35	37	13	85	1032
Apprch %	59.9	39.3	0.8		21.3	78.7	0		41.2	43.5	15.3		
Total %	30.4	20	0.4	50.8	8.7	32.3	0	41	3.4	3.6	1.3	8.2	
cars	314	206	4	524	90	333	0	423	35	37	13	85	1032
% cars	100	100	100	100	100	100	0	100	100	100	100	100	100
HV	0	0	0	0	0	0	0	0	0	0	0	0	0
% HV	0	0	0	0	0	0	0	0	0	0	0	0	0

		nty Line Ro outhbound			unty Line R Northbound			owrys Lan Eastbound		
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis Fror	m 05:00 PM to	05:45 PM	- Peak 1 of 1					_		
Peak Hour for Entire Inte	ersection Begin	ns at 05:00	PM							
05:00 PM	40	38	78	9	41	50	6	5	11	139
05:15 PM	33	33	66	20	49	69	2	4	6	141
05:30 PM	43	24	67	9	47	56	4	5	9	132
05:45 PM	37	27	64	13	42	55	4	4	8	127
Total Volume	153	122	275	51	179	230	16	18	34	539
% App. Total	55.6	44.4		22.2	77.8		47.1	52.9		
PHF	.890	.803	.881	.638	.913	.833	.667	.900	.773	.956
cars	153	122	275	51	179	230	16	18	34	539
% cars	100	100	100	100	100	100	100	100	100	100
HV	0	0	0	0	0	0	0	0	0	0
% HV	0	0	0	0	0	0	0	0	0	0

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County Line Road & Lowrys Lane

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		County L	ine Roa	d		County		d		Lowry	s Lane		
			bound	-			bound				oound		
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds A	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		
Total %													

		inty Line Ro Southbound			unty Line R Northbound			owrys Lan Eastbound		
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
eak Hour Analysis Fron	n 05:00 PM to	05:45 PM -	- Peak 1 of 1			•••			• •	
Peak Hour for Entire Inte	rsection Begi	ns at 05:00	PM							
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	000	000	000	000	000	000	000	000	000	000

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County Line & Airdale Roads

File Name: 14-CoLAirPM

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					<u> </u>								
		County L South	ine Road			Airdale Westb					e Road oound		
O( ( T)	1 6			<b>-</b>	-			·	1 6			<b>T</b>	1.7.
Start Time	Left	Right	Peds A	pp. Total	Thru	Right		App. Total	Left	Thru	Peds A	pp. Total	Int. Total
04:00 PM	1	33	1	35	66	2	0	68	38	53	1	92	195
04:15 PM	0	34	1	35	69	1	0	70	40	54	1	95	200
04:30 PM	3	25	4	32	86	3	0	89	37	74	0	111	232
04:45 PM	6	27	1	34	91	3	1	95	31	42	0	73	202
Total	10	119	7	136	312	9	1	322	146	223	2	371	829
05:00 PM	2	33	7	42	84	2	0	86	36	51	0	87	215
05:15 PM	4	26	4	34	77	5	1	83	47	61	0	108	225
05:30 PM	5	31	5	41	87	6	0	93	43	48	0	91	225
05:45 PM	1	26	3	30	90	3	0	93	40	51	0	91	214
Total	12	116	19	147	338	16	1	355	166	211	0	377	879
Grand Total	22	235	26	283	650	25	2	677	312	434	2	748	1708
Apprch %	7.8	83	9.2		96	3.7	0.3		41.7	58	0.3		
Total %	1.3	13.8	1.5	16.6	38.1	1.5	0.1	39.6	18.3	25.4	0.1	43.8	
cars	22	234	26	282	644	25	2	671	310	430	2	742	1695
% cars	100	99.6	100	99.6	99.1	100	100	99.1	99.4	99.1	100	99.2	99.2
HV	0	1	0	1	6	0	0	6	2	4	0	6	13
% HV	0	0.4	0	0.4	0.9	0	0	0.9	0.6	0.9	0	0.8	0.8

		unty Line Ro Southbound		=	Airdale Road Westbound		= :	irdale Roa Eastbound		
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From	m 05:00 PM to	o 05:45 PM	- Peak 1 of 1							
Peak Hour for Entire Inte	ersection Beg	ins at 05:00	PM							
05:00 PM	2	33	35	84	2	86	36	51	87	208
05:15 PM	4	26	30	77	5	82	47	61	108	220
05:30 PM	5	31	36	87	6	93	43	48	91	220
05:45 PM	1	26	27	90	3	93	40	51	91	211
Total Volume	12	116	128	338	16	354	166	211	377	859
% App. Total	9.4	90.6		95.5	4.5		44	56		
PHF	.600	.879	.889	.939	.667	.952	.883	.865	.873	.976
cars	12	116	128	337	16	353	165	210	375	856
% cars	100	100	100	99.7	100	99.7	99.4	99.5	99.5	99.7
HV	0	0	0	1	0	1	1	1	2	3
% HV	0	0	0	0.3	0	0.3	0.6	0.5	0.5	0.3

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County Line & Airdale Roads

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					Gro	oups Prin	tea- HV						
		County Li	ine Road	l k		Airdal	e Road			Airdale	e Road		
		South	oound			Westl	oound			Eastb	ound		
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
04:00 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
04:15 PM	0	0	0	0	0	0	0	0	1	1	0	2	2
04:30 PM	0	0	0	0	1	0	0	1	0	1	0	1	2
04:45 PM	0	0	0	0	2	0	0	2	0	1	0	1	3_
Total	0	1	0	1	5	0	0	5	1	3	0	4	10
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
05:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	1_
Total	0	0	0	0	1	0	0	1	1	1	0	2	3
Grand Total	0	1	0	1	6	0	0	6	2	4	0	6	13
Apprch %	0	100	0		100	0	0		33.3	66.7	0		
Total %	0	7.7	0	7.7	46.2	0	0	46.2	15.4	30.8	0	46.2	

		unty Line R Southboun			Airdale Roa Westbound			Airdale Roa Eastbound		
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
eak Hour Analysis Fror	m 05:00 PM t	to 05:45 PM	- Peak 1 of 1		<u>-</u>	.,				
eak Hour for Entire Inte	ersection Beg	gins at 05:00	PM .							
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	1	0	1	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	1	1	1
05:45 PM	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	1	0	1	1	1	2	3
% App. Total	0	0		100	0		50	50		
PHF	.000	.000	.000	.250	.000	.250	.250	.250	.500	.750

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County Line & Roberts Roads

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									Jioupa	Fillite	u- cai	3 - 11V									i
		Coun	ty Lin	e Roa	d b		Rol	berts I	Road			Coun	ty Lin	e Road	t		Rol	oerts F	Road		
		So	uthbo	und			W	estbo	und			No	orthbo	und			Ea	astbou	ınd		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	3	160	20	3	186	0	4	5	2	11	0	124	6	0	130	7	6	6	0	19	346
04:15 PM	0	151	13	1	165	3	5	2	4	14	1	131	4	0	136	5	9	2	0	16	331
04:30 PM	1	145	12	2	160	2	5	0	2	9	0	119	6	0	125	10	8	1	1	20	314
04:45 PM	3	151	11	1	166	2	13	1	0	16	2	116	15	2	135	2	6	0	3	11	328
Total	7	607	56	7	677	7	27	8	8	50	3	490	31	2	526	24	29	9	4	66	1319
05:00 PM	3	147	16	2	168	1	8	4	0	13	0	111	4	0	115	9	4	1	1	15	311
05:15 PM	2	178	9	0	189	3	7	2	0	12	0	136	5	1	142	8	7	0	3	18	361
05:30 PM	3	178	18	0	199	0	8	2	1	11	4	117	10	0	131	8	6	0	2	16	357
05:45 PM	3	138	16	0	157	5	2	3	1	11	0	137	9	1	147	11	8	0	1	20	335
Total	11	641	59	2	713	9	25	11	2	47	4	501	28	2	535	36	25	1	7	69	1364
Grand Total	18	1248	115	9	1390	16	52	19	10	97	7	991	59	4	1061	60	54	10	11	135	2683
Apprch %	1.3	89.8	8.3	0.6		16.5	53.6	19.6	10.3		0.7	93.4	5.6	0.4		44.4	40	7.4	8.1		
Total %	0.7	46.5	4.3	0.3	51.8	0.6	1.9	0.7	0.4	3.6	0.3	36.9	2.2	0.1	39.5	2.2	2	0.4	0.4	5	
cars	18	1239	111	9	1377	16	52	19	10	97	7	973	58	4	1042	59	54	10	11	134	2650
% cars	100	99.3	96.5	100	99.1	100	100	100	100	100	100	98.2	98.3	100	98.2	98.3	100	100	100	99.3	98.8
HV	0	9	4	0	13	0	0	0	0	0	0	18	1	0	19	1	0	0	0	1	33
% HV	0	0.7	3.5	0	0.9	0	0	0	0	0	0	1.8	1.7	0	1.8	1.7	0	0	0	0.7	1.2

	С	ounty l					ts Road	ŀ	С	ounty I					ts Road	k	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron				Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	n Begins	at 05:00	PM												
05:00 PM	3	147	16	166	1	8	4	13	0	111	4	115	9	4	1	14	308
05:15 PM	2	178	9	189	3	7	2	12	0	136	5	141	8	7	0	15	357
05:30 PM	3	178	18	199	0	8	2	10	4	117	10	131	8	6	0	14	354
05:45 PM	3	138	16	157	5	2	3	10	0	137	9	146	11	8	0	19	332
Total Volume	11	641	59	711	9	25	11	45	4	501	28	533	36	25	1	62	1351
% App. Total	1.5	90.2	8.3		20	55.6	24.4		0.8	94	5.3		58.1	40.3	1.6		
PHF	.917	.900	.819	.893	.450	.781	.688	.865	.250	.914	.700	.913	.818	.781	.250	.816	.946
cars	11	640	56	707	9	25	11	45	4	495	28	527	35	25	1	61	1340
% cars	100	99.8	94.9	99.4	100	100	100	100	100	98.8	100	98.9	97.2	100	100	98.4	99.2
HV	0	1	3	4	0	0	0	0	0	6	0	6	1	0	0	1	11
% HV	0	0.2	5.1	0.6	0	0	0	0	0	1.2	0	1.1	2.8	0	0	1.6	0.8

105 Kenilworth Street Philadelphia, PA 19147

County Line & Roberts Roads

File Name: 15-CoLRobPM

Site Code : 00000000 Start Date : 11/13/2012

Page No : 1

		Cour	tv I in	e Roa	d		Ro	berts l		иро і і іі			ty Lin	e Road	4		Rο	berts l	Soad		]
			uthbo		u			estbo					rthbo		u			astboı			
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	2	1	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6
04:15 PM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
04:30 PM	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	5
04:45 PM	0	4	0	0	4	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	7
Total	0	8	1	0	9	0	0	0	0	0	0	12	1	0	13	0	0	0	0	0	22
05:00 PM	0	0	1	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
05:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	3
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
05:45 PM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	1	3	0	4	0	0	0	0	0	0	6	0	0	6	1	0	0	0	1	11
Grand Total	0	9	4	0	13	0	0	0	0	0	0	18	1	0	19	1	0	0	0	1	33
Apprch %	0	69.2	30.8	0		0	0	0	0		0	94.7	5.3	0		100	0	0	0		
Total %	0	27.3	12.1	0	39.4	0	0	0	0	0	0	54.5	3	0	57.6	3	0	0	0	3	

	С	ounty L	ine Ro			Robert	ts Road	t	С	ounty I	ine Ro	ad			ts Road	ł	
Start Time	Left			App. Total	Left	Thru	Right	App. Total	Left			App. Total	Left	Thru		App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 05:00	PM to 0	5:45 PM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	<b>Begins</b>	at 05:00	PM												
05:00 PM	0	0	1	1	0	0	0	0	0	2	0	2	0	0	0	0	3
05:15 PM	0	1	0	1	0	0	0	0	0	1	0	1	1	0	0	1	3
05:30 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
05:45 PM	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	1	3	4	0	0	0	0	0	6	0	6	1	0	0	1	11
% App. Total	0	25	75		0	0	0		0	100	0		100	0	0		
PHF	.000	.250	.375	.500	.000	.000	.000	.000	.000	.500	.000	.500	.250	.000	.000	.250	.917

105 Kenilworth Street Philadelphia, PA 19147

Ithan & Aldwyn Avenues

File Name : 16-IthAldPM Site Code : 00000000

Start Date : 11/15/2012

Page No : 1

										) I IIIIC	u oui.										
		lth	an Av	enue			Sou	ıth Caı	mpus			Ith	an Ave	enue			Ald	l nywb	_ane		
		So	uthbo	und			W	estbo	und			No	rthbo	und			E	astbou	und		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	6	65	3	34	108	4	0	5	2	11	18	32	3	1	54	4	2	3	0	9	182
04:15 PM	7	60	1	13	81	1	2	4	6	13	6	23	1	4	34	3	0	9	0	12	140
04:30 PM	7	60	3	15	85	1	0	8	6	15	11	26	2	2	41	2	0	5	0	7	148
04:45 PM	13	62	3	16	94	1	1	10	3	15	8	23	0	1	32	1	0	3	0	4	145
Total	33	247	10	78	368	7	3	27	17	54	43	104	6	8	161	10	2	20	0	32	615
05:00 PM	8	71	2	31	112	3	1	9	5	18	9	34	0	0	43	0	0	2	0	2	175
05:15 PM	18	74	4	71	167	1	0	5	3	9	14	35	3	0	52	1	0	3	0	4	232
05:30 PM	17	71	7	30	125	2	1	10	1	14	6	28	0	0	34	1	0	3	2	6	179
05:45 PM	8	51	8	23	90	2	1	13	0	16	5	33	2	0	40	2	0	5	0	7	153
Total	51	267	21	155	494	8	3	37	9	57	34	130	5	0	169	4	0	13	2	19	739
Grand Total	84	514	31	233	862	15	6	64	26	111	77	234	11	8	330	14	2	33	2	51	1354
Apprch %	9.7	59.6	3.6	27		13.5	5.4	57.7	23.4		23.3	70.9	3.3	2.4		27.5	3.9	64.7	3.9		
Total %	6.2	38	2.3	17.2	63.7	1.1	0.4	4.7	1.9	8.2	5.7	17.3	0.8	0.6	24.4	1	0.1	2.4	0.1	3.8	
cars	79	508	31	233	851	15	6	59	26	106	71	230	11	8	320	14	2	31	2	49	1326
% cars	94	98.8	100	100	98.7	100	100	92.2	100	95.5	92.2	98.3	100	100	97	100	100	93.9	100	96.1	97.9
HV	5	6	0	0	11	0	0	5	0	5	6	4	0	0	10	0	0	2	0	2	28
% HV	6	1.2	0	0	1.3	0	0	7.8	0	4.5	7.8	1.7	0	0	3	0	0	6.1	0	3.9	2.1

			Avenue bound			South	Campu bound	s			Avenue			•	n Lane	•	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 05:00	PM to 0	5:45 PM -	Peak 1	of 1	_				_				_		
Peak Hour for E	ntire Inte	rsection	n Begins	at 05:00	PM												
05:00 PM	8	71	2	81	3	1	9	13	9	34	0	43	0	0	2	2	139
05:15 PM	18	74	4	96	1	0	5	6	14	35	3	52	1	0	3	4	158
05:30 PM	17	71	7	95	2	1	10	13	6	28	0	34	1	0	3	4	146
05:45 PM	8	51	8	67	2	1	13	16	5	33	2	40	2	0	5	7	130
Total Volume	51	267	21	339	8	3	37	48	34	130	5	169	4	0	13	17	573
% App. Total	15	78.8	6.2		16.7	6.2	77.1		20.1	76.9	3		23.5	0	76.5		
PHF	.708	.902	.656	.883	.667	.750	.712	.750	.607	.929	.417	.813	.500	.000	.650	.607	.907
cars	49	265	21	335	8	3	35	46	33	128	5	166	4	0	13	17	564
% cars	96.1	99.3	100	98.8	100	100	94.6	95.8	97.1	98.5	100	98.2	100	0	100	100	98.4
HV	2	2	0	4	0	0	2	2	1	2	0	3	0	0	0	0	9
% HV	3.9	0.7	0	1.2	0	0	5.4	4.2	2.9	1.5	0	1.8	0	0	0	0	1.6

105 Kenilworth Street Philadelphia, PA 19147

Ithan & Aldwyn Avenues

File Name: 16-IthAldPM

Site Code : 00000000 Start Date : 11/15/2012

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		lth	an Av	anua			Soi	th Ca		иро і ііі			an Av	anua			ΔΙα	l nywb	ane		]
			outhbo					estbo	•				orthbo					astbo			
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	2	0	0	2	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	6
04:15 PM	2	1	0	0	3	0	0	1	0	1	1	2	0	0	3	0	0	0	0	0	7
04:30 PM	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	2	0	2	4
04:45 PM	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
Total	3	4	0	0	7	0	0	3	0	3	5	2	0	0	7	0	0	2	0	2	19
05:00 PM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2
05:30 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
05:45 PM	0	1	0	0	1	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	3_
Total	2	2	0	0	4	0	0	2	0	2	1	2	0	0	3	0	0	0	0	0	9
<b>Grand Total</b>	5	6	0	0	11	0	0	5	0	5	6	4	0	0	10	0	0	2	0	2	28
Apprch %	45.5	54.5	0	0		0	0	100	0		60	40	0	0		0	0	100	0		
Total %	17.9	21.4	0	0	39.3	0	0	17.9	0	17.9	21.4	14.3	0	0	35.7	0	0	7.1	0	7.1	

			Avenue			South		s			Avenue				n Lane	•	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	า 05:00	PM to 0	5:45 PM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	Begins	at 05:00	PM												
05:00 PM	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0	2
05:30 PM	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
05:45 PM	0	1	0	1	0	0	1	1	0	1	0	1	0	0	0	0	3
Total Volume	2	2	0	4	0	0	2	2	1	2	0	3	0	0	0	0	9
% App. Total	50	50	0		0	0	100		33.3	66.7	0		0	0	0		
PHF	.500	.500	.000	.500	.000	.000	.500	.500	.250	.500	.000	.750	.000	.000	.000	.000	.750

105 Kenilworth Street Philadelphia, PA 19147

Lancaster Avenue & Spring Mill/Sproul Rd & Kenilworth Rd/Aldwyn Ln

File Name : 01-30SproulEve Site Code : 00000000

Start Date : 12/11/2012

Page No : 1

																		Gr	ou	os I	<u>Prin</u>	ted	- ca	ırs	<u>- Н</u>	<u> </u>																	
			ı	Roa	ring Id oui		ill	L				Avo		ıe	ı	A Nor		yn ves			d		_		oul thb				L	an l			Av oun		ne		Ken Sou						
Start Time	Lt oL an c	Lt o Al d					App. Tota	Lt o Al d	Lt o Sp r					App. Tota	Lt o Sp	Lt oL an c					App. Tota	Lt oL an c	Lt o Ke n					App. Tota	Lt o Ke n	Lt o S Mil					App. Tota	Lt o S Mil	Lt oL an c					App. Tota	Int. Tota
06:00 PM	3	2	69	29	0	2	105	0	5	17 6	0	19	0	200	1	13	0	4	0	0	18	48	0	20	10	0	0	78	1	43	26 0	16	64	0	384	1	1	1	0	2	2	7	792
06:15 PM	8	7	41	41	0	2	99	1	4	19	0	9	0	206	7	9	1	2	0	0	19	41	0	31	9	3	0	84	0	54	32 3	21	55	0	453	0	0	0	0	2	2	4	865
06:30 PM	8	7	35	52	0	0	102	1	1	18	0	7	0	190	4	5	0	0	0	0	9	34	0	30	13	4	0	81	1	51	26 4	12	72	0	400	0	1	0	0	2	0	3	785
06:45 PM	5	3	35	52	0	2	97	0	1	16 8	1	2	0	172	0	6	0	0	2	0	8	30	0	15	9	0	0	54	2	59	29 5	18	47	0	421	0	0	0	1	1	2	4	756
Tota I	24	19	18	17 4	0	6	403	2	11	71 7	1	37	0	768	12	33	1	6	2	0	54	15	0	96	41	7	0	297	4	20 7	11 42	67	23 8	0	1658	1	2	1	1	7	6	18	3198
07:00 PM	3	0	24	32	0	0	59	0	10	16 9	0	8	0	187	0	10	0	4	5	0	19	37	1	13	4	0	0	55	1	43	16 7	9	30	0	250	0	0	0	1	3	0	4	574
07:15 PM	1	0	17	35	0	0	53	0	5	17	0	0	0	175	0	6	0	4	2	0	12	32	0	16	4	1	0	53	3	48	16	7	29	0	247	0	0	0	0	2	0	2	542
07:30 PM	5	2	27	34	0	0	68	0	8	18	0	17	0	207	0	4	0	0	0	0	4	21	0	6	4	0	0	31	2	28	13 4	7	20	0	191	0	0	0	0	1	0	1	502
07:45 PM	4	0	14	33	0	2	53	0	5	18 8	0	7	1	201	0	3	0	0	1	0	4	21	0	8	2	1	0	32	1	30	12	14	36	0	201	1	0	0	0	2	2	5	496
Tota I	13	2	82	13 4	0	2	233	0	28	70 9	0	32	1	770	0	23	0	8	8	0	39	11	1	43	14	2	0	171	7	14 9	58 1	37	11 5	0	889	1	0	0	1	8	2	12	2114
Grand Total	37	21	26 2	30 8	0	8	636	2	39	14 26	1	69	1	1538	12	56	1	14	10	0	93	26 4	1	9	55	9	0	468	11	35 6	17 23	10	35 3	0	2547	2	2	1	2	15	8	30	5312
Apprch %	5.8	3.3	41.	48. 4	0	1.3		0.1	2.5	92. 7	0.1	4.5	0.1		12. 9	60. 2	1.1	15. 1	10. 8	0		56. 4	0.2	29. 7	11.	1.9	0		0.4	14	67. 6	4.1	13. 9	0		6.7	6.7	3.3	6.7	50	26. 7		
Total %	0.7	0.4	4.9	5.8	0	0.2	12	0	0.7	26. 8	0	1.3	0	29	0.2	1.1	0	0.3	0.2	0	1.8	5	0	2.6	1	0.2	0	8.8	0.2	6.7	32.	2	6.6	0	47.9	0	0	0	0	0.3	0.2	0.6	
cars	36	21	25 9	29 9	0	8	623	2	39	14 03	1	65	0	1510	12	53	1	14	9	0	8 9	2	1	8				465	11	35 3	17 11	10 4	34 6	0	2525	2	2	1	2	15	8	3 0	5242
% cars	97. 3	10 0	98. 9	97. 1	0	10 0	98	10	10 0	98. 4	10 0	94. 2	0	98.2	10 0	94. 6	10 0	10 0	90	0	95.7	2	0	3	0	0		99.4	10	2	99. 3	10 0	98	0	99.1	10 0	10 0	10 0	10	10 0	10	100	98.7
HV	1	0	3	9	0	0	13	0	0	23	0	4		28		3	0	0			4		0		0	0		3	ĺ	3		0	7	0	22	0	0	0	0	0	0	0	70
% HV	2.7	0	1.1	2.9	0	0	2	0	0	1.6	0	5.8	0	1.8	0	5.4	0	0	10	0	4.3	0.8	0	0.7	0	0	0	0.6	0	0.8	0.7	0	2	0	0.9	0	0	0	0	0	0	0	1.3

	N		Ro	oring ad bou	_	ill	Li		aste /est			ue	N	Ald Nort	•	n La estb						l Ro bou			L		aste astl		ven nd	ue	l .				Roa		
Start Time	L to Lan C	L to Ald	T to Spr	Lan c	R to Ken	App. Total	L to Ald	L to Spr	T to Lan	R to Ken	R to S M ill	App. Total	L to Spr	L to Lan c	T to Ken	R to S M ill	R to Lan	App.	L to Lan C	L to Ken	T to S M ill	R to Lan c	R to Ald	App.	L to Ken	L to S M ill	T to Lan	R to Ald	R to Spr	App. Total	L to S M ill	L to Lan c	T to Ald	R to Spr	R to Lan	App. Total	Int. Total
Peak Ho			,										1 of	1																							
Peak Ho		or E	ntire	e Inte	erse	ection	р Ве	gins	at (	06:0	0 PI	νI																									1
06:00 PM	3	2	69	29	0	103	0	5	176	0	19	200	1	13	0	4	0	18	48	0	20	10	0	78	1	43	260	16	64	384	1	1	1	0	2	5	788
06:15 PM	8	7	41	41	0	97	1	4	192	0	9	206	7	9	1	2	0	19	41	0	31	9	3	84	0	54	323	21	55	453	0	0	0	0	2	2	861
06:30 PM	8	7	35	52	0	102	1	1	181	0	7	190	4	5	0	0	0	9	34	0	30	13	4	81	1	51	264	12	72	400	0	1	0	0	2	3	785
06:45 PM	5	_3_	35	52	0	95	0	1_	168	_1_	2	172	0	6	0	0	2	8	30	0	15	9	0	54	2	59	295	18	47	421	0	0	0	1	_1_	2	752
Total Volume	24	19	180	174	0	397	2	11	717	1	37	768	12	33	1	6	2	54	153	0	96	41	7	297	4	207	114	67	238	1658	1	2	1	1	7	12	3186
% App. Total	6	4.8	45.3	43.8	0		0.3	1.4	93.4	0.1	4.8		22.2	61.1	1.9	11.1	3.7		51.5	0	32.3	13.8	2.4		0.2	12.5	68.9	4	14.4		8.3	16.7	8.3	8.3	58.3		
PHF	.750	.679	.652	.837	.000	.964	.500	.550	.934	.250	.487	.932	.429	.635	.250	.375	.250	.711	.797	.000	.774	.788	.438	.884	.500	.877	.884	.798	.826	.915	.250	.500	.250	.250	.875	.600	.925
cars	23	19	179	171	0	392	2	11	703	1	34	751	12	33	1	6	2	54	152	0	95	41	7	295	4	206	113	67	231	1640	1	2	1	1	7	12	3144
% cars	95.8	100	99.4	98.3	0	98.7	100	100	98.0	100	91.9	97.8	100	100	100	100	100	100	99.3	0	99.0	100	100	99.3	100	99.5	99.1	100	97.1	98.9	100	100	100	100	100	100	98.7
HV	1	0	1	3	0	5	0	0	14	0	3	17	0	0	0	0	0	0	1	0	1	0	0	2	0	1	10	0	7	18	0	0	0	0	0	0	42
% HV	4.2		0.6	1.7		1.3			2.0		8.1	2.2							0.7		1.0			0.7		0.5	0.9		2.9	1.1							1.3

105 Kenilworth Street Philadelphia, PA 19147

Lancaster Avenue & Spring Mill/Sproul Rd & Kenilworth Rd/Aldwyn Ln

File Name: 01-30SproulEve Site Code: 00000000 Start Date: 12/11/2012

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Start Time	Lt oL an	Lt o Al d					App. Tota	Lt o Al d	Lt o Sp r					App. Tota	Lt o Sp r	Lt oL an					App. Tota	Lt oL an	L t o Ke n					App. Tota	L t o Ke n	Lt o S Mil					App. Tota	Lt o S Mil	Lt oL an					App. Tota	Int. Tota
06:00 PM	0	0	1	1	0	0	2	0	0	7	0	1	0	8	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2	0	5	0	7	0	0	0	0	0	0	0	18
06:15 PM	1	0	0	0	0	0	1	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	0	0	7
06:30 PM	0	0	0	0	0	0	0	0	0	2	0	1	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	1	0	2	0	4	0	0	0	0	0	0	0	8
Tota	0			2	_0_	0		0		4			0	_4_	0	_0_	0	0	0_	0_	0	0	_0_	0	0	_0_	_0_		0	_0_	_3_	_0_		0	3	0	0	0	_0_	0	_0_	0	9_
	1	0	1	3	0	0	5	0	0	14	0	3	0	17	0	0	0	0	0	0	0	1	0	1	0	0	0	2	0	1	10	0	7	0	18	0	0	0	0	0	0	0	42
07:00 PM	0	0	1	0	0	0	1	0	0	3	0	1	0	4	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
07:15 PM	0	0	0	1	0	0	1	0	0	2	0	0	0	2	0	2	0	0	0	0	2	1	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	7
07:30 PM	0	0	1	5	0	0	6	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	12
07:45 PM	0	0	0	0	_0_	0	0	0	0	0	0	0	1	_1_	0	1	0	0	0	0	1	0	0	0	0	_0_	0_	0	0	1	_0_	_0_	_0_	0	1_	0	0	0	0	0	0_	0	3_
Tota I	0	0	2	6	0	0	8	0	0	9	0	1	1	11	0	3	0	0	1	0	4	1	0	0	0	0	0	1	0	2	2	0	0	0	4	0	0	0	0	0	0	0	28
Grand Total	1	0	3	9	0	0	13	0	0	23	0	4	1	28	0	3	0	0	1	0	4	2	0	1	0	0	0	3	0	3	12	0	7	0	22	0	0	0	0	0	0	0	70
Apprch %	7.7	0	23. 1	69. 2	0	0		0	0	82. 1	0	14. 3	3.6		0	75	0	0	25	0		66. 7	0	33. 3	0	0	0		0	13. 6	54. 5	0	31. 8	0		0	0	0	0	0	0		
Total %	1.4	0	4.3	12. 9	0	0	18.6	0	0	32. 9	0	5.7	1.4	40	0	4.3	0	0	1.4	0	5.7	2.9	0	1.4	0	0	0	4.3	0	4.3	17. 1	0	10	0	31.4	0	0	0	0	0	0	0	

	N	Lto			ıe	N		-		ane oun			•	rou orthi				La			er A	ven nd	ue					Roa									
Start Time	L to Lan c									R to	R to S M ill	App.	L to Spr	L to Lan	T to Ken	R to S M	R to Lan	App.	L to Lan	L to Ken	T to S M ill	R to Lan	R to Ald	App.	L to Ken	L to S M ill	T to Lan	R to Ald	R to Spr	App. Total	L to S M ill	L to Lan	T to	R to Spr	R to Lan	App. Total	Int. Total
													1 of	1																							
06:00 PM	0	0	1	1	0	2	0	0	7	0	1	8	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0	5	7	0	0	0	0	0	0	18
06:15 PM	1	0	0	0	0	1	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	7
06:30 PM	0	0	0	0	0	0	0	0	2	0	1	3	0	0	0	0	0	0	0	0	1	0	0	1	0	1	1	0	2	4	0	0	0	0	0	0	8
06:45 PM	0	0	0	2	0	2	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	9
Total Volume	1	0	1	3	0	5	0	0	14	0	3	17	0	0	0	0	0	0	1	0	1	0	0	2	0	1	10	0	7	18	0	0	0	0	0	0	42
% App. Total	20	0	20	60	0		0	0	82.4	0	17.6		0	0	0	0	0		50	0	50	0	0		0	5.6	55.6	0	38.9		0	0	0	0	0		
DUE																																					

105 Kenilworth Street Philadelphia, PA 19147

Lancaster & Ithan Avenues

File Name: 02-30IthanEve

Site Code : 00000000 Start Date : 12/11/2012

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EB Peds = diag peds NE-SW WB Peds = diag peds NW-SE

									<u> </u>	roups	Printe	u- cai	<u> 5 - п</u>	<u> </u>									
		ltha	an Av	enue			La	ncaste	er Ave	enue			ltha	an Ave	enue			La	ncast	er Ave	enue		
		So	uthbo	und				West	boun	d			No	rthbo	und				East	bound	t		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NW-SE Peds	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NE-SW Peds	Peds	App. Total	Int. Total
06:00 PM	15	51	12	10	88	44	164	19	82	94	403	7	24	9	0	40	34	178	52	35	76	375	906
06:15 PM	11	44	12	37	104	62	144	14	78	151	449	14	26	10	4	54	27	176	49	47	92	391	998
06:30 PM	4	32	10	39	85	65	164	26	172	236	663	16	26	6	0	48	37	170	43	137	71	458	1254
06:45 PM	7	52	17	45	121	49	135	15	118	332	649	18	74	21	5	118	29	147	32	128	24	360	1248
Total	37	179	51	131	398	220	607	74	450	813	2164	55	150	46	9	260	127	671	176	347	263	1584	4406
07:00 PM	5	29	5	42	81	34	126	14	68	175	417	21	51	14	0	86	17	153	28	99	49	346	930
07:15 PM	4	13	12	15	44	29	152	9	76	98	364	32	37	24	0	93	23	133	18	38	57	269	770
07:10 PM	15	28	10	8	61	41	104	9	64	56	274	26	26	18	2	72	14	101	14	6	50	185	592
07:45 PM	5	28	10	0	43	21	106	13	85	93	318	18	16	18	0	52	6	115	6	2	43	172	585
Total	29	98	37	65	229	125	488	45	293	422	1373	97	130	74	2	303	60	502	66	145	199	972	2877
					•											•							
Grand Total	66	277	88	196	627	345	1095	119	743	1235	3537	152	280	120	11	563	187	1173	242	492	462	2556	7283
Apprch %	10.5	44.2	14	31.3		9.8	31	3.4	21	34.9		27	49.7	21.3	2		7.3	45.9	9.5	19.2	18.1		
Total %	0.9	3.8	1.2	2.7	8.6	4.7	15	1.6	10.2	17	48.6	2.1	3.8	1.6	0.2	7.7	2.6	16.1	3.3	6.8	6.3	35.1	
cars	65	273	85	196	619	345	1073	116	743	1235	3512	152	274	120	11	557	181	1164	241	492	462	2540	7228
% cars	98.5	98.6	96.6	100	98.7	100	98	97.5	100	100	99.3	100	97.9	100	100	98.9	96.8	99.2	99.6	100	100	99.4	99.2
HV	1	4	3	0	8	0	22	3	0	0	25	0	6	0	0	6	6	9	1	0	0	16	55
% HV	1.5	1.4	3.4	0	1.3	0	2	2.5	0	0	0.7	0	2.1	0	0	1.1	3.2	8.0	0.4	0	0	0.6	0.8

		lthan .	Avenue		L	ancast	er Aver	nue		Ithan	Avenue	,	L	ancast	er Aver	nue	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Anal	ysis Fror	n 06:00	PM to 0	7:45 PM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	ersection	n Begins	at 06:00	PM												
06:00 PM	15	51	12	78	44	164	19	227	7	24	9	40	34	178	52	264	609
06:15 PM	11	44	12	67	62	144	14	220	14	26	10	50	27	176	49	252	589
06:30 PM	4	32	10	46	65	164	26	255	16	26	6	48	37	170	43	250	599
06:45 PM	7	52	17	76	49	135	15	199	18	74	21	113	29	147	32	208	596
Total Volume	37	179	51	267	220	607	74	901	55	150	46	251	127	671	176	974	2393
% App. Total	13.9	67	19.1		24.4	67.4	8.2		21.9	59.8	18.3		13	68.9	18.1		
PHF	.617	.861	.750	.856	.846	.925	.712	.883	.764	.507	.548	.555	.858	.942	.846	.922	.982
cars	36	177	48	261	220	593	71	884	55	146	46	247	122	666	176	964	2356
% cars	97.3	98.9	94.1	97.8	100	97.7	95.9	98.1	100	97.3	100	98.4	96.1	99.3	100	99.0	98.5
HV	1	2	3	6	0	14	3	17	0	4	0	4	5	5	0	10	37
% HV	2.7	1.1	5.9	2.2	0	2.3	4.1	1.9	0	2.7	0	1.6	3.9	0.7	0	1.0	1.5

105 Kenilworth Street Philadelphia, PA 19147

Lancaster & Ithan Avenues

File Name: 02-30IthanEve

Site Code : 00000000 Start Date : 12/11/2012

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EB Peds = diag peds NE-SW WB Peds = diag peds NW-SE

		Itha	an Av	enue			Lar	ncaste	er Ave		ups Pri		Itha	an Ave	enue			La	ncast	er Ave	nue		]
		So	uthbo	und				West	boun	d			No	rthbo	und					bound			
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NW-SE Peds	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NE-SW Peds	Peds	App. Total	Int. Total
06:00 PM	0	1	1	0	2	0	6	1	0	0	7	0	1	0	0	1	2	0	0	0	0	2	12
06:15 PM	1	1	1	0	3	0	2	2	0	0	4	0	0	0	0	0	1	3	0	0	0	4	11
06:30 PM	0	0	1	0	1	0	2	0	0	0	2	0	0	0	0	0	1	0	0	0	0	1	4
06:45 PM	0	0	0	0	0	0	4	0	0	0	4	0	3	0	0	3	1	2	0	0	0	3	10
Total	1	2	3	0	6	0	14	3	0	0	17	0	4	0	0	4	5	5	0	0	0	10	37
07:00 PM	0	1	0	0	1	0	2	0	0	0	2	0	0	0	0	0	1	1	0	0	0	2	5
07:15 PM	0	0	0	0	0	0	2	0	0	0	2	0	1	0	0	1	0	2	0	0	0	2	5
07:30 PM	0	1	0	0	1	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	5
07:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	1	0	0	2	3
Total	0	2	0	0	2	0	8	0	0	0	8	0	2	0	0	2	1	4	1	0	0	6	18
Grand Total	1	4	3	0	8	0	22	3	0	0	25	0	6	0	0	6	6	9	1	0	0	16	55
Apprch %	12.5	50	37.5	0		0	88	12	0	0		0	100	0	0		37.5	56.2	6.2	0	0		
Total %	1.8	7.3	5.5	0	14.5	0	40	5.5	0	0	45.5	0	10.9	0	0	10.9	10.9	16.4	1.8	0	0	29.1	

		Ithan A	Avenue	)	L	ancast	er Aver	nue		lthan .	Avenue		L	ancast	er Aver	nue	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 06:00	PM to 0	06:45 PM -	Peak 1	of 1	_				_				_		
Peak Hour for E	ntire Inte	rsection	Begins	at 06:00	PM												
06:00 PM	0	1	1	2	0	6	1	7	0	1	0	1	2	0	0	2	12
06:15 PM	1	1	1	3	0	2	2	4	0	0	0	0	1	3	0	4	11
06:30 PM	0	0	1	1	0	2	0	2	0	0	0	0	1	0	0	1	4
06:45 PM	0	0	0	0	0	4	0	4	0	3	0	3	1	2	0	3	10
Total Volume	1	2	3	6	0	14	3	17	0	4	0	4	5	5	0	10	37
% App. Total	16.7	33.3	50		0	82.4	17.6		0	100	0		50	50	0		
PHF	.250	.500	.750	.500	.000	.583	.375	.607	.000	.333	.000	.333	.625	.417	.000	.625	.771

105 Kenilworth Street Philadelphia, PA 19147

Sproul & Conestoga Roads

File Name : 05-sprconeve Site Code : 00000000

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		-	roul R outhbo					estoga estbo	Road und				roul R					estoga astbou	Road und		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 PM	17	61	17	1	96	6	74	10	0	90	35	37	7	0	79	24	172	44	0	240	505
06:15 PM	21	42	25	0	88	5	106	7	0	118	21	44	12	0	77	28	150	39	0	217	500
06:30 PM	29	40	18	0	87	9	72	10	0	91	22	32	8	0	62	27	150	60	0	237	477
06:45 PM	16	43	18	0	77	7	66	10	0	83	25	31	3	0	59	26	94	32	0	152	371
Total	83	186	78	1	348	27	318	37	0	382	103	144	30	0	277	105	566	175	0	846	1853
07:00 PM	9	31	15	0	55	8	75	14	0	97	21	22	4	0	47	17	82	42	0	141	340
07:15 PM	8	22	10	0	40	4	79	5	0	88	27	29	4	0	60	8	71	37	0	116	304
07:30 PM	6	29	7	0	42	3	60	3	0	66	14	18	7	0	39	11	47	31	0	89	236
07:45 PM	10	28	10	0	48	3	69	2	0	74	18	10	1_	0	29	10	43	28	0	81	232
Total	33	110	42	0	185	18	283	24	0	325	80	79	16	0	175	46	243	138	0	427	1112
Grand Total	116	296	120	1	533	45	601	61	0	707	183	223	46	0	452	151	809	313	0	1273	2965
Apprch %	21.8	55.5	22.5	0.2		6.4	85	8.6	0		40.5	49.3	10.2	0		11.9	63.6	24.6	0		
Total %	3.9	10	4	0	18	1.5	20.3	2.1	0	23.8	6.2	7.5	1.6	0	15.2	5.1	27.3	10.6	0	42.9	
cars	116	295	119	1	531	43	597	61	0	701	183	221	45	0	449	151	809	312	0	1272	2953
% cars	100	99.7	99.2	100	99.6	95.6	99.3	100	0	99.2	100	99.1	97.8	0	99.3	100	100	99.7	0	99.9	99.6
HV	0	1	1	0	2	2	4	0	0	6	0	2	1	0	3	0	0	1	0	1	12
% HV	0	0.3	0.8	0	0.4	4.4	0.7	0	0	8.0	0	0.9	2.2	0	0.7	0	0	0.3	0	0.1	0.4

			I Road		(		oga Roa bound	ad			ul Road bound		(		oga Roa bound	ad	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Anal			PM to 0	7:45 PM -		of 1	-				_				_		_
Peak Hour for E	ntire Inte	rsection	n Begins	at 06:00	PM												
06:00 PM	17	61	17	95	6	74	10	90	35	37	7	79	24	172	44	240	504
06:15 PM	21	42	25	88	5	106	7	118	21	44	12	77	28	150	39	217	500
06:30 PM	29	40	18	87	9	72	10	91	22	32	8	62	27	150	60	237	477
06:45 PM	16	43	18	77	7	66	10	83	25	31	3	59	26	94	32	152	371
Total Volume	83	186	78	347	27	318	37	382	103	144	30	277	105	566	175	846	1852
% App. Total	23.9	53.6	22.5		7.1	83.2	9.7		37.2	52	10.8		12.4	66.9	20.7		
PHF	.716	.762	.780	.913	.750	.750	.925	.809	.736	.818	.625	.877	.938	.823	.729	.881	.919
cars	83	185	78	346	25	314	37	376	103	143	30	276	105	566	174	845	1843
% cars	100	99.5	100	99.7	92.6	98.7	100	98.4	100	99.3	100	99.6	100	100	99.4	99.9	99.5
HV	0	1	0	1	2	4	0	6	0	1	0	1	0	0	1	1	9
% HV	0	0.5	0	0.3	7.4	1.3	0	1.6	0	0.7	0	0.4	0	0	0.6	0.1	0.5

105 Kenilworth Street Philadelphia, PA 19147

Sproul & Conestoga Roads

File Name : 05-sprconeve Site Code : 00000000

Site Code : 00000000 Start Date : 12/11/2012

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			roul Routhbo					estoga estbo	Road	l			roul R orthbo					estoga astbol	Road		
a															ı						
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	2
06:15 PM	0	0	0	0	0	1	2	0	0	3	0	1	0	0	1	0	0	0	0	0	4
06:30 PM	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
06:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	1	2	4	0	0	6	0	1	0	0	1	0	0	1	0	1	9
07:00 PM	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
07:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
07:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	1	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	3
Grand Total	٥	1	1	0	2	2	1	0	٥	6	٥	2	1	0	3	0	٥	1	٥	1	12
Apprch %	0	50	50	0	2	33.3	66.7	0	0	U	0	66.7	33.3	0	3	0	0	100	0	'	12
Total %	0	8.3	8.3	0	16.7	16.7	33.3	0	0	50	0	16.7	8.3	0	25	0	0	8.3	0	8.3	
10lal %	U	0.3	0.3	U	10.7	10.7	33.3	U	U	50	U	10.7	0.3	U	25	U	U	0.3	U	0.3	I

	Sproul Road Southbound				Conestoga Road Westbound				Sproul Road Northbound				Conestoga Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	Peak Hour Analysis From 06:00 PM to 06:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 06:00 PM																	
06:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	2
06:15 PM	0	0	0	0	1	2	0	3	0	1	0	1	0	0	0	0	4
06:30 PM	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	2
06:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1_
Total Volume	0	1	0	1	2	4	0	6	0	1	0	1	0	0	1	1	9
% App. Total	0	100	0		33.3	66.7	0		0	100	0		0	0	100		
PHF	.000	.250	.000	.250	.500	.500	.000	.500	.000	.250	.000	.250	.000	.000	.250	.250	.563

105 Kenilworth Street Philadelphia, PA 19147

Conestoga & Spring Mill Roads

File Name : 06-ConSpMEve Site Code : 00000000 Start Date : 12/11/2012

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**Groups Printed- cars - HV** 

					Cioup	73 I IIIILEU						_	
		Spring N				Conesto		i k		Conesto	oga Road	l	
		South	oound			Westl	oound			Eastb	oound		
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
06:00 PM	2	3	0	5	91	0	0	91	0	200	0	200	296
06:15 PM	2	1	0	3	120	0	0	120	0	187	0	187	310
06:30 PM	1	1	0	2	87	2	0	89	0	186	0	186	277
06:45 PM	1_	0	0	1	83	0	0	83	1	112	0	113	197
Total	6	5	0	11	381	2	0	383	1	685	0	686	1080
07:00 PM	1	1	0	2	100	2	0	102	1	95	0	96	200
07:15 PM	0	1	0	1	88	0	0	88	2	80	0	82	171
07:30 PM	0	0	0	0	60	0	0	60	2	64	0	66	126
07:45 PM	2	0	0	2	79	0	0	79	0	51	0	51	132
Total	3	2	0	5	327	2	0	329	5	290	0	295	629
Grand Total	9	7	0	16	708	4	0	712	6	975	0	981	1709
Apprch %	56.2	43.8	0		99.4	0.6	0		0.6	99.4	0		
Total %	0.5	0.4	0	0.9	41.4	0.2	0	41.7	0.4	57.1	0	57.4	
cars	9	7	0	16	702	4	0	706	6	974	0	980	1702
% cars	100	100	0	100	99.2	100	0	99.2	100	99.9	0	99.9	99.6
HV	0	0	0	0	6	0	0	6	0	1	0	1	7
% HV	0	0	0	0	0.8	0	0	0.8	0	0.1	0	0.1	0.4

	•	oring Mill Ro Southbound		Co	onestoga Ro Westbound		Co	nestoga Ro Eastbound		
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From	m 06:00 PM t	to 07:45 PM	- Peak 1 of 1							
Peak Hour for Entire Inte	ersection Beg	gins at 06:00	PM							
06:00 PM	2	3	5	91	0	91	0	200	200	296
06:15 PM	2	1	3	120	0	120	0	187	187	310
06:30 PM	1	1	2	87	2	89	0	186	186	277
06:45 PM	1	0	1	83	0	83	1	112	113	197
Total Volume	6	5	11	381	2	383	1	685	686	1080
% App. Total	54.5	45.5		99.5	0.5		0.1	99.9		
PHF	.750	.417	.550	.794	.250	.798	.250	.856	.858	.871
cars	6	5	11	375	2	377	1	685	686	1074
% cars	100	100	100	98.4	100	98.4	100	100	100	99.4
HV	0	0	0	6	0	6	0	0	0	6
% HV	0	0	0	1.6	0	1.6	0	0	0	0.6

105 Kenilworth Street Philadelphia, PA 19147

Conestoga & Spring Mill Roads

File Name : 06-ConSpMEve Site Code : 00000000 Start Date : 12/11/2012

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**Groups Printed- HV** 

					Gr	oups Prin							
		Spring N	/lill Road	k		Conesto	oga Road	ŀ		Conesto	ga Roac	I	
		South	bound			West	bound			Eastb	ound		
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
06:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
06:15 PM	1 0	0	0	0	3	0	0	3	0	0	0	0	3
06:30 PM	1 0	0	0	0	1	0	0	1	0	0	0	0	1
06:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	1_
Tota	0	0	0	0	6	0	0	6	0	0	0	0	6
07:00 PM	1 0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 PM	1 0	0	0	0	0	0	0	0	0	1	0	1	1
07:30 PM	1 0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total	0	0	0	0	0	0	0	0	0	1	0	1	1
Grand Total	1 0	0	0	0	6	0	0	6	0	1	0	1	7
Apprch %	0	0	0		100	0	0		0	100	0		
 Total %	0	0	0	0	85.7	0	0	85.7	0	14.3	0	14.3	

	•	ring Mill Ro Southbound			nestoga Ro Westbound			nestoga Ro Eastbound		
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis Fror	n 06:00 PM to	06:45 PM -	- Peak 1 of 1							
Peak Hour for Entire Inte	ersection Beg	ins at 06:00	PM							
06:00 PM	0	0	0	1	0	1	0	0	0	1
06:15 PM	0	0	0	3	0	3	0	0	0	3
06:30 PM	0	0	0	1	0	1	0	0	0	1
06:45 PM	0	0	0	1	0	1	0	0	0	1
Total Volume	0	0	0	6	0	6	0	0	0	6
% App. Total	0	0		100	0		0	0		
PHF	.000	.000	.000	.500	.000	.500	.000	.000	.000	.500

105 Kenilworth Street Philadelphia, PA 19147

Conestoga Road & Ithan Avenue

File Name: 07-conitheve

Site Code : 00000000 Start Date : 12/11/2012

Page No : 1

**Groups Printed- cars - HV** 

			an Ave					estoga	Road			ltha	an Ave					_	Road		
		So	uthbo	und			W	<u>estbo</u> ı	und			No.	rthbo	und			E	<u>astbo</u> ı	und		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 PM	9	9	13	0	31	3	72	11	0	86	0	13	4	0	17	31	126	2	0	159	293
06:15 PM	2	7	14	0	23	2	97	17	0	116	1	25	1	0	27	38	126	1	0	165	331
06:30 PM	7	1	11	0	19	3	76	25	0	104	0	22	3	0	25	49	124	1	0	174	322
06:45 PM	6	3	17	0	26	3	61	16	0	80	1	15	0	0	16	28	79	0	0	107	229
Total	24	20	55	0	99	11	306	69	0	386	2	75	8	0	85	146	455	4	0	605	1175
07:00 PM	9	4	21	0	34	0	69	6	0	75	1	7	0	0	8	11	74	1	0	86	203
07:15 PM	12	12	17	0	41	1	57	11	0	69	0	6	2	0	8	10	49	0	0	59	177
07:30 PM	2	4	6	0	12	0	55	6	0	61	0	2	0	0	2	8	45	1	0	54	129
07:45 PM	5	1_	10_	0	16	0	55	3_	0	58	0	0	1_	0	1	7	31	0	0	38	113
Total	28	21	54	0	103	1	236	26	0	263	1	15	3	0	19	36	199	2	0	237	622
Grand Total	52	41	109	0	202	12	542	95	0	649	3	90	11	0	104	182	654	6	0	842	1797
Apprch %	25.7	20.3	54	0		1.8	83.5	14.6	0		2.9	86.5	10.6	0		21.6	77.7	0.7	0		
Total %	2.9	2.3	6.1	0	11.2	0.7	30.2	5.3	0	36.1	0.2	5	0.6	0	5.8	10.1	36.4	0.3	0	46.9	
cars	52	41	106	0	199	12	540	95	0	647	3	90	11	0	104	180	654	6	0	840	1790
% cars	100	100	97.2	0	98.5	100	99.6	100	0	99.7	100	100	100	0	100	98.9	100	100	0	99.8	99.6
HV	0	0	3	0	3	0	2	0	0	2	0	0	0	0	0	2	0	0	0	2	7
% HV	0	0	2.8	0	1.5	0	0.4	0	0	0.3	0	0	0	0	0	1.1	0	0	0	0.2	0.4

			Avenue bound		(	Conesto West	oga Roa bound	ad			Avenue bound		(	Conesto Eastl	oga Ro bound	ad	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fror	n 06:00	PM to 0	7:45 PM -	Peak 1	of 1	_				_				_		
Peak Hour for E	ntire Inte	ersection	Begins	at 06:00	PM												
06:00 PM	9	9	13	31	3	72	11	86	0	13	4	17	31	126	2	159	293
06:15 PM	2	7	14	23	2	97	17	116	1	25	1	27	38	126	1	165	331
06:30 PM	7	1	11	19	3	76	25	104	0	22	3	25	49	124	1	174	322
06:45 PM	6	3	17	26	3	61	16	80	1	15	0	16	28	79	0	107	229
Total Volume	24	20	55	99	11	306	69	386	2	75	8	85	146	455	4	605	1175
% App. Total	24.2	20.2	55.6		2.8	79.3	17.9		2.4	88.2	9.4		24.1	75.2	0.7		
PHF	.667	.556	.809	.798	.917	.789	.690	.832	.500	.750	.500	.787	.745	.903	.500	.869	.887
cars	24	20	52	96	11	304	69	384	2	75	8	85	145	455	4	604	1169
% cars	100	100	94.5	97.0	100	99.3	100	99.5	100	100	100	100	99.3	100	100	99.8	99.5
HV	0	0	3	3	0	2	0	2	0	0	0	0	1	0	0	1	6
% HV	0	0	5.5	3.0	0	0.7	0	0.5	0	0	0	0	0.7	0	0	0.2	0.5

105 Kenilworth Street Philadelphia, PA 19147

Conestoga Road & Ithan Avenue

File Name: 07-conitheve

Site Code : 00000000 Start Date : 12/11/2012

Page No : 1

**Groups Printed- HV** 

		lth	an Av	enue			Con	estoga	Road	l I			an Av	enue			Con	estoga	Road		
		Sc	outhbo	und				estbo				No	orthbo	und				astbou			
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
06:15 PM	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	3
06:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	3	0	3	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	6
07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
07:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Grand Total	0	0	3	0	3	0	2	0	0	2	0	0	0	0	0	2	0	0	0	2	7
Apprch %	0	0	100	0		0	100	0	0		0	0	0	0		100	0	0	0		
Total %	0	0	42.9	0	42.9	0	28.6	0	0	28.6	0	0	0	0	0	28.6	0	0	0	28.6	

		Ithan A	Avenue bound		C		ga Roa bound	ad			Avenue bound		(		oga Roa bound	ad	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 06:00	PM to 0	6:45 PM	Peak 1	of 1	_								-		
Peak Hour for E	ntire Inte	rsection	Begins	at 06:00	PM												
06:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1	2
06:15 PM	0	0	1	1	0	2	0	2	0	0	0	0	0	0	0	0	3
06:30 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total Volume	0	0	3	3	0	2	0	2	0	0	0	0	1	0	0	1	6
% App. Total	0	0	100		0	100	0		0	0	0		100	0	0		
PHF	.000	.000	.750	.750	.000	.250	.000	.250	.000	.000	.000	.000	.250	.000	.000	.250	.500

# **F. Tavani and Associates, Inc.** 105 Kenilworth Street

Philadelphia, PA 19147

Lancaster Avenue & Spring Mill/Sproul Rd & Kenilworth Rd/Aldwyn Ln Homecoming

File Name : 30SproulSat Site Code : 00000000

Start Date : 10/27/2012

																			Gr	ou	ps	Prin	ted	l- ca	ars	- H	٧																	ı
				Spi Roa thb	ad `	g M nd	ill	ı	La	nca We		er . tbo			ıe	Aldwyn Lane Northwestbound									•		Ro oui			L				Av oun		ue	1					Roa	- 1	
Start Time	Lt oL an c	Lt o Al d					App	0	Si						App. Tota	Lt o Sp r	Lt oL an c					App. Tota	Lt oL an c	Lt o Ke n					App. Tota	L t o Ke n	Lt o S Mil					App. Tota	Lt o S Mil	Lt oL an c					App. Tota	Int. Tota
12:00 PM	10	0	28	42	0	0	80	0	4	<b>1</b> 1	7 9	0	8	0	191	1	10	0	0	3	0	14	44	0	31	1	0	0	76	1	52	23 0	21	51	0	355	0	1	0	1	3	0	5	721
12:15 PM	5	0	24	54	0	0	83	0	1	1 2	4	0	16	0	221	0	13	0	1	0	0	14	46	1	25	8	1	0	81	0	60	20 7	19	30	0	316	0	0	0	1	1	0	2	717
12:30 PM	14	0	20	52	0	0	86	0	2	2 1	7	0	5	0	181	2	5	0	1	0	0	8	51	0	26	5	2	0	84	0	66	18	11	35	0	300	0	0	0	0	4	0	4	663
12:45 PM	11	0	18	40	0	11	80	0	2	2 1	5	0	9	0	166	1	13	0	2	1	3	20	54	0	16	4	0	0	74	1	64	23 9	14	38	0	356	0	0	0	1	1	0	2	698
Tota I	40	0	90	18	0	11	329	0	ę	9 7	1 2	0	38	0	759	4	41	0	4	4	3	56	19 5	1	98	18	3	0	315	2	24	86 4	65	15 4	0	1327	0	1	0	3	9	0	13	2799
01:00 PM	11	0	24	50	0	2	87	0	7	7 <sup>1</sup>	8	0	9	0	198	0	6	0	2	0	0	8	32	0	23	7	0	0	62	1	53	17	10	37	0	278	0	0	0	0	4	0	4	637
01:15 PM	17	0	20	41	0	6	84	0	2	2 1	6	0	7	0	171	0	11	0	2	0	0	13	37	0	21	8	5	0	71	2	45	20 3	13	32	0	295	0	0	0	1	4	0	5	639
01:30 PM	15	0	15	66	0	0	96	0	4	1 <sup>2</sup>	6	0	6	0	216	0	6	0	0	1	3	10	27	0	16	4	1	0	48	2	44	19 4	13	39	0	292	1	0	0	0	1	0	2	664
01:45 PM	15	0	21	60	0	2	98	0	2	2 1	7	0	7	0	182	0	5	0	2	1	0	8	29	0	18	5	1	0	53	3	56	19 1	11	27	0	288	0	0	0	1	1	0	2	631
Tota I	58	0	80	21 7	0	10	365	0	15	5	3	0	29	0	767	0	28	0	6	2	3	39	12 5	0	78	24	7	0	234	8	19 8	76 5	47	13 5	0	1153	1	0	0	2	10	0	13	2571
02:00 PM	27	0	24	59	0	5	115	0	7	7 ¹	7	0	9	0	193	0	10	0	0	0	0	10	33	0	23	2	1	0	59	2	43	15 9	19	31	0	254	0	0	0	0	3	0	3	634
02:15 PM	10	0	27	57	0	3	97	0	4	1 ¹	7	0	11	0	191	2	6	0	0	1	0	9	26	0	17	3	1	0	47	0	37	15	9	27	0	225	1	0	0	1	1	0	3	572
02:30 PM	7	0	23	73	0	0	103	0	3	3 ¹	7 9	0	7	0	189	0	10	0	0	0	0	10	30	0	16	3	0	0	49	3	45	17 0	11	34	0	263	0	1	0	0	5	0	6	620
02:45 PM	7	0	19	61	0	4	91	0	3	3 ¹	8	0	4	0	190	0	14	0	0	1	0	15	26	0	18	5	2	0	51	1	51	14	13	35	0	242	0	0	0	0	1	0	1	590
Tota I	51	0	93	25 0	0	12	406	0	17	7	1 5	0	31	0	763	2	40	0	0	2	0	44	11 5	0	74	13	4	0	206	6	17 6	62 3	52	12 7	0	984	1	1	0	1	10	0	13	2416
Grand Total	14	0	26 3	65 5	0	33	1100	0	4	1 5	:1 i0	0	98	0	2289	6	10	0	10	8	6	139	43 5	1	25 0	55	14	0	755	16	61	22 52	16 4	41 6	0	3464	2	2	0	6	29	0	39	7786
Approh %	13. 5	0	23. 9	59. 5	0	3		0	1.0	.8	3. 9	0	4.3	0		4.3	78. 4	0	7.2	5.8	4.3		57. 6	0.1	33. 1	7.3	1.9	0		0.5	17. 8	65	4.7	12	0		5.1	5.1	0	15. 4	74. 4	0		
Total %	1.9	0	3.4	8.4	0	0.4	14.1	0	0.	.5	7. 6	0	1.3	0	29.4	0.1	1.4	0	0.1	0.1	0.1	1.8	5.6	0	3.2	0.7	0.2	0	9.7	0.2	7.9	28. 9	2.1	5.3	0	44.5	0	0	0	0.1	0.4	0	0.5	
cars	14 5	0	25 7	64 3	0	33	1078	0	4	11 0	16	0	96	0	2243	6	10 9	0	10	7	6	138	42 6	1	24 3	51	14	0	735	16	61	22 23	16 4	40 9	0	3424	2	2	0	5	29	0	3 8	7656
% cars	97. 3	0	97. 7	98. 2	0	10	98	1		0			98		98	10	10	0	0	87. 5	0	99.3	97. 9	10 0	97. 2	92. 7	10	0	****	0	99. 4	98. 7	10 0	98.	0	98.8	0	10 0	0	83.	10	0	97.4	98.3
HV	4	0	6	12	0	-		-					2	0	46	0	0	0	0	1	0	1	9	0	7	4	0	0	20	0	4	29	0	7	-	40	0	0	0	1	0	0	1	130
% HV	2.7	0	2.3	1.8	0	0	1	0		0	2	0	2	0	2	0	0	0	0	5	0	0.7	2.1	0	2.8	7.3	0	0	2.6	0	0.6	1.3	0	1.7	0	1.2	0	0	0	7	0	0	2.6	1.7

105 Kenilworth Street Philadelphia, PA 19147

Lancaster Avenue & Spring Mill/Sproul Rd & Kenilworth Rd/Aldwyn Ln Homecoming

File Name: 30SproulSat

Site Code : 00000000 Start Date : 10/27/2012

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Start Time	L to Lan C	L to Ald	T to Spr	R to Lan	R to Ken	App. Total	L to Ald	L to Spr	T to Lan	R to Ken	R to S M	App. Total	L to Spr	L to Lan	T to Ken	R to S M	R to Lan	App. Total	L to Lan	L to Ken	T to S M ill	R to Lan	R to Ald	App. Total	L to Ken	L to S M ill	T to Lan	R to Ald	R to Spr	App. Total	L to S M	L to Lan C	T to Ald	R to Spr	R to Lan	App. Total	Int. Total
Peak Ho			,										1 of	1																							
Peak Ho	our t	or E	ntire	e Int	erse		i Be	gins	at 1	12:0	0 PI	VI													ı												
12:00 PM	10	0	28	42	0	80	0	4	179	0	8	191	1	10	0	0	3	14	44	0	31	1	0	76	1	52	230	21	51	355	0	1	0	1	3	5	721
12:15 PM	5	0	24	54	0	83	0	1	204	0	16	221	0	13	0	1	0	14	46	1	25	8	1	81	0	60	207	19	30	316	0	0	0	1	1	2	717
12:30 PM	14	0	20	52	0	86	0	2	174	0	5	181	2	5	0	1	0	8	51	0	26	5	2	84	0	66	188	11	35	300	0	0	0	0	4	4	663
12:45 PM	11	0	18	40	0	69	0	2	155	0	9	166	1	13	0	2	1	17	54	0	16	4	0	74	1	64	239	14	38	356	0	0	0	1	1	2	684
Total Volume	40	0	90	188	0	318	0	9	712	0	38	759	4	41	0	4	4	53	195	1	98	18	3	315	2	242	864	65	154	1327	0	1	0	3	9	13	2785
% App. Total	12.6	0	28.3	59.1	0		0	1.2	93.8	0	5		7.5	77.4	0	7.5	7.5		61.9	0.3	31.1	5.7	1		0.2	18.2	65.1	4.9	11.6		0	7.7	0	23.1	69.2		
PHF	.714	.000	.804	.870	.000	.924	.000	.563	.873	.000	.594	.859	.500	.788	.000	.500	.333	.779	.903	.250	.790	.563	.375	.938	.500	.917	.904	.774	.755	.932	.000	.250	.000	.750	.563	.650	.966
cars	40	0	88	182	0	310	0	9	699	0	37	745	4	41	0	4	4	53	190	1	95	17	3	306	2	240	852	65	153	1312	0	1	0	2	9	12	2738
% cars	100	0	97.8	96.8	0	97.5	0	100	98.2	0	97.4	98.2	100	100	0	100	100	100	97.4	100	96.9	94.4	100	97.1	100	99.2	98.6	100	99.4	98.9	0	100	0	66.7	100	92.3	98.3
HV	0	0	2	6	0	8	0	0	13	0	1	14	0	0	0	0	0	0	5	0	3	1	0	9	0	2	12	0	1	15	0	0	0	1	0	1	47
% HV	0	0	2.2	3.2		2.5			1.8		2.6	1.8							2.6		3.1	5.6		2.9		0.8	1.4		0.6	1.1				33.3	0	7.7	1.7

105 Kenilworth Street Philadelphia, PA 19147

Lancaster Avenue & Spring Mill/Sproul Rd & Kenilworth Rd/Aldwyn Ln Homecoming

File Name : 30SproulSat Site Code : 00000000

Site Code : 00000000 Start Date : 10/27/2012

Grou	ps Printed-	Н٧

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			rth Sou	Roa	ıd		II	L				Av our	eni nd	ue				•	La		d				oul thb				L		cas Eas				ue						loa		
Start Time	Lt oL an c	Lt o Al d					App. Tota	Lt o Al d	Lt o Sp					App. Tota	Lt o Sp r	Lt oL an c					App. Tota	Lt oL an	Lt o Ke n					App. Tota	L t o Ke n	Lt o S Mil					App. Tota	Lt o S Mil	Lt oL an					App. Tota	Int. Tota
12:00 PM	0	0	1	2	0	0	3	0	0	4	0	0	0	4	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	2	3	0	0	0	5 2	0 0	0	0	0	0	0	0	14 10
12:15 PM 12:30 PM	0	0	1	2	0	0	3	0	0	3	0	0	0	3	0	0	0	0	0	0	0	2	0	2	1	0	0	5	0	0	2	0	0	0	2	0	0	0	0	0	0	0	13
Tota	0	0	2	6	0	0	8	0	0	13	0	1	0	<u>3</u> 14	0	0	0	0	0	0	0	5	0	3	1	0	0	9	0	2	12	0	1	0	6 15	0	0	0	1	0	0	1	47
01:00 PM 01:15 PM	0 0	0	0	2 0 2	0 0	0 0 0	2 0 3	0 0	0 0 0	6 3 1	0 0 0	0 0 0	0 0 0	6 3 1	0 0	0 0 0	0 0 0	0 0 0	0 0 1	0 0 0	0 0 1	1 1 0	0 0 0	0 3 0	0	0 0 0	0 0 0	1 5 1	0 0	1 0	3 2 4	0 0 0	1 1 0	0 0 0	5 3 5	0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	l
01:30 PM 01:45 PM	Ó	0	2	1	0	0	3	0	0	5	0	0	0	5	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
Tota I	1	0	2	5	0	0	8	0	0	15	0	0	0	15	0	0	0	0	1	0	1	2	0	4	2	0	0	8	0	2	9	0	2	0	13	0	0	0	0	0	0	0	45
02:00 PM 02:15 PM	2	0	0	0	0	0	2 1	0	0	3	0	1	0	4 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	4 1	0	0	0	0	0	0	0	10 6
02:30 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	7	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	4	0	2	0	6	0	0	0	0	0	0	0	15 7
Tota	3	0	2	1	0	0	6	0	0	16	0	1	0	17	0	0	0	0	0	0	0	2	0	0	1	0	0	3	0	0	8	0	4	0	12	0	0	0	0	0	0	0	38
Grand Total	4	0	6	12	0	0	22	0	0	44	0	2	0	46	0	0	0	0	1	0	1	9	0	7	4	0	0	20	0	4	29	0	7	0	40	0	0	0	1	0	0	1	130
Apprch %	18.	0	27. 3	54. 5	0	0		0	0	95. 7	0	4.3	0		0	0	0	0	10 0	0		45	0	35	20	0	0		0	10	72. 5	0	17. 5	0		0	0	0	10 0	0	0		
Total %	3.1	0	4.6	9.2	0	0	16.9	0	0	33. 8	0	1.5	0	35.4	0	0	0	0	0.8	0	8.0	6.9	0	5.4	3.1	0	0	15.4	0	3.1	22. 3	0	5.4	0	30.8	0	0	0	0.8	0	0	0.8	

	N			ad	g Mi ınd	II	L			er Av	venu nd	ie	N		-	n La estb				•	rou orth				La			er Av Dour		ue					Roa oun		
Start Time	L to Lan	L to Ald	T to Spr	R to Lan	R to Ken	App.	L to Ald	L to Spr	T to Lan	R to Ken	R to S M	App. Total	L to Spr	L to Lan	T to Ken	R to S M	R to Lan	App.	L to Lan	L to Ken	T to S M ill	R to Lan	R to	App.	L to Ken	L to S M ill	T to Lan	R to	R to Spr	App. Total	L to S M	L to Lan	T to Ald	R to Spr	R to Lan	App.	Int Total
Peak Ho													1 of	1																							
12:00 PM	0	0	1	2	0	3	0	0	4	0	0	4	0	0	0	0	0	0	2	0	0	0	0	2	0	2	3	0	0	5	0	0	0	0	0	0	14
12:15 PM	0	0	0	1	0	1	0	0	3	0	1	4	0	0	0	0	0	0	1	0	1	0	0	2	0	0	1	0	1	2	0	0	0	1	0	1	10
12:30 PM	0	0	1	2	0	3	0	0	3	0	0	3	0	0	0	0	0	0	2	0	2	1	0	5	0	0	2	0	0	2	0	0	0	0	0	0	13
12:45 PM	0	0	0	1	0	1	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	10
Total Volume	0	0	2	6	0	8	0	0	13	0	1	14	0	0	0	0	0	0	5	0	3	1	0	9	0	2	12	0	1	15	0	0	0	1	0	1	47
% App. Total			25	75	0		0	0	00.0	0	7 1								55.6	0	33.3	44.4	0		0	13.3	80	0	6.7					100			1

105 Kenilworth Street Philadelphia, PA 19147

Ithan and 30 Homecoming EB Peds = diag peds NE-SW WB Peds = diag peds NW-SE File Name: 30IthanSAT Site Code: 00111111 Start Date: 10/27/2012

									(	Groups	Printe	d- cars	s - HV										,
			an Ave				La	acaste						an Ave				La	acaste				
		Sc	outhbo	und			i	West	bound	<u></u>			No	orthbo	und				East	bound			
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NW-SE Peds	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NE-SW Peds	Peds	App. Total	Int. Total
12:00 PM	9	15	14	29	67	33	139	12	82	28	294	8	15	5	6	34	20	134	29	24	110	317	712
12:15 PM	18	29	18	37	102	23	173	16	93	44	349	16	19	13	19	67	23	132	43	4	139	341	859
12:30 PM	10	24	3	21	58	33	197	21	125	56	432	8	23	9	7	47	23	180	38	5	173	419	956
12:45 PM	12	29	18	16	75	37	192	13	202	32	476	15	19	14	6	54	29	187	56	39	143	454	1059
Total	49	97	53	103	302	126	701	62	502	160	1551	47	76	41	38	202	95	633	166	72	565	1531	3586
01:00 PM	4	31	22	35	92	32	140	7	189	45	413	5	22	12	11	50	16	166	28	31	134	375	930
01:15 PM	11	43	16	42	112	43	213	18	174	40	488	5	25	6	2	38	16	183	40	10	126	375	1013
01:30 PM	0	0	16	105	121	39	202	15	196	52	504	8	24	8	12	52	20	171	46	6	124	367	1044
01:45 PM	7	28	15	167	217	34	190	12	218	64	518	11	22	10	22	65	24	158	51	1	122	356	1156
Total	22	102	69	349	542	148	745	52	777	201	1923	29	93	36	47	205	76	678	165	48	506	1473	4143
02:00 PM	9	29	14	48	100	47	178	15	261	85	586	15	7	8	30	60	16	162	23	4	108	313	1059
02:15 PM	13	16	13	71	113	28	193	16	299	54	590	6	22	14	13	55	22	151	41	41	108	363	1121
02:30 PM	0	0	14	106	120	29	196	13	272	95	605	15	23	16	11	65	20	158	39	42	113	372	1162
02:45 PM	9	19	15	140	183	30	200	9	245	136	620	23	24	17	9	73	18	165	37	42	117	379	1255
Total	31	64	56	365	516	134	767	53	1077	370	2401	59	76	55	63	253	76	636	140	129	446	1427	4597
Grand Total	102	263	178	817	1360	408	2213	167	2356	731	5875	135	245	132	148	660	247	1947	471	249	1517	4431	12326
Apprch %	7.5	19.3	13.1	60.1		6.9	37.7	2.8	40.1	12.4		20.5	37.1	20	22.4		5.6	43.9	10.6	5.6	34.2		
Total %	0.8	2.1	1.4	6.6	11	3.3	18	1.4	19.1	5.9	47.7	1.1	2	1.1	1.2	5.4	2	15.8	3.8	2	12.3	35.9	
cars	93	263	173	817	1346	407	2167	163	2356	731	5824	133	245	131	148	657	241	1925	471	249	1517	4403	12230
% cars	91.2	100	97.2	100	99	99.8	97.9	97.6	100	100	99.1	98.5	100	99.2	100	99.5	97.6	98.9	100	100	100	99.4	99.2
HV	9	0	5	0	14	1	46	4	0	0	51	2	0	1	0	3	6	22	0	0	0	28	96
% HV	8.8	0	2.8	0	1	0.2	2.1	2.4	0	0	0.9	1.5	0	0.8	0	0.5	2.4	1.1	0	0	0	0.6	0.8

		141								141					_		
			Avenue				r Avenu	е			Avenue				r Avenu	ie	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fror	n 12:00	PM to 12	2:45 PM -	Peak 1	of 1	_				_				_		
Peak Hour for E	ntire Inte	rsection	Begins	at 12:00	PM												
12:00 PM	9	15	14	38	33	139	12	184	8	15	5	28	20	134	29	183	433
12:15 PM	18	29	18	65	23	173	16	212	16	19	13	48	23	132	43	198	523
12:30 PM	10	24	3	37	33	197	21	251	8	23	9	40	23	180	38	241	569
12:45 PM	12	29	18	59	37	192	13	242	15	19	14	48	29	187	56	272	621
Total Volume	49	97	53	199	126	701	62	889	47	76	41	164	95	633	166	894	2146
% App. Total	24.6	48.7	26.6		14.2	78.9	7		28.7	46.3	25		10.6	70.8	18.6		
PHF	.681	.836	.736	.765	.851	.890	.738	.885	.734	.826	.732	.854	.819	.846	.741	.822	.864
cars	41	97	50	188	125	689	58	872	46	76	40	162	92	621	166	879	2101
% cars	83.7	100	94.3	94.5	99.2	98.3	93.5	98.1	97.9	100	97.6	98.8	96.8	98.1	100	98.3	97.9
HV	8	0	3	11	1	12	4	17	1	0	1	2	3	12	0	15	45
% H\/	16.3	Ω	5.7	5.5	0.8	17	6.5	1 9	21	Ο	24	12	32	19	Ο	17	21

105 Kenilworth Street Philadelphia, PA 19147

Ithan and 30 Homecoming EB Peds = diag peds NE-SW WB Peds = diag peds NW-SE File Name: 30lthanSAT Site Code: 00111111

Start Date : 10/27/2012

										Gro	ups Pri	nted-	HV										
		Itha	an Ave	enue			La	acaste	r Aver	nue	•		Ith	an Ave	enue			La	acaste	r Avei	nue		
		Sc	uthbo	und				West	bound	1			No	orthbo	und				East	bound	l		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NW-SE Peds	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	NE-SW Peds	Peds	App. Total	Int. Total
12:00 PM	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	1	2	0	0	0	3	5
12:15 PM	7	0	0	0	7	0	3	0	0	0	3	1	0	1	0	2	1	2	0	0	0	3	15
12:30 PM	1	0	0	0	1	1	5	4	0	0	10	0	0	0	0	0	0	2	0	0	0	2	13
12:45 PM	0	0	3	0	3	0	2	0	0	0	2	0	0	0	0	0	1	6	0	0	0	7	12
Total	8	0	3	0	11	1	12	4	0	0	17	1	0	1	0	2	3	12	0	0	0	15	45
01:00 PM	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	0	3	0	0	0	3	7
01:15 PM	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	1	1	0	0	0	2	5
01:30 PM	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	0	1	0	0	0	1	5
01:45 PM	1	0	0	0	1	0	5	0	0	0	5	1	0	0	0	1	0	0	0	0	0	0	7
Total	1	0	0	0	1	0	16	0	0	0	16	1	0	0	0	1	1	5	0	0	0	6	24
02:00 PM	0	0	1	0	1	0	2	0	0	0	2	0	0	0	0	0	1	5	0	0	0	6	9
02:15 PM	0	0	1	0	1	0	7	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	8
02:30 PM	0	0	0	0	0	0	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	5
02:45 PM	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	1	0	0	0	0	1	5
Total	0	0	2	0	2	0	18	0	0	0	18	0	0	0	0	0	2	5	0	0	0	7	27
Grand Total	9	0	5	0	14	1	46	4	0	0	51	2	0	1	0	3	6	22	0	0	0	28	96
Apprch %	64.3	0	35.7	0		2	90.2	7.8	0	0		66.7	0	33.3	0		21.4	78.6	0	0	0		1
Total %	9.4	0	5.2	0	14.6	1	47.9	4.2	0	0	53.1	2.1	0	1	0	3.1	6.2	22.9	0	0	0	29.2	ĺ

		Ithan A	Avenue			Lacaste	r Avenu	ie		Ithan /	Avenue			Lacaste	r Avenu	е	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left			App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 12:00	PM to 1	2:45 PM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	Begins	at 12:00	PM												
12:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	1	2	0	3	5
12:15 PM	7	0	0	7	0	3	0	3	1	0	1	2	1	2	0	3	15
12:30 PM	1	0	0	1	1	5	4	10	0	0	0	0	0	2	0	2	13
12:45 PM	0	0	3	3	0	2	0	2	0	0	0	0	1	6	0	7	12
Total Volume	8	0	3	11	1	12	4	17	1	0	1	2	3	12	0	15	45
% App. Total	72.7	0	27.3		5.9	70.6	23.5		50	0	50		20	80	0		
PHF	.286	.000	.250	.393	.250	.600	.250	.425	.250	.000	.250	.250	.750	.500	.000	.536	.750

105 Kenilworth Street Philadelphia, PA 19147

Sproul & Conestoga Roads Homecoming

File Name: SprConSat Site Code: 00000000 Start Date: 10/27/2012

Page No : 1

**Groups Printed- cars - HV** 

							_			FIIIILE	u cai.										1
		Sp	roul R	load			Cond	estoga	a Road			Sp	roul R	oad			Cond	estoga	Road		
		So	uthbo	und			W	estbo	und			No	orthbo	und			E	astbou	und		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
12:00 PM	15	37	18	0	70	8	85	13	0	106	23	33	6	1	63	22	58	33	0	113	352
12:15 PM	13	29	20	1	63	2	82	18	0	102	32	40	10	0	82	31	82	34	0	147	394
12:30 PM	11	23	15	0	49	0	81	12	0	93	32	31	12	0	75	34	99	34	0	167	384
12:45 PM	12	28	13	0	53	3	107	13	0	123	33	41	5	0	79	21	81	41	0	143	398
Total	51	117	66	1	235	13	355	56	0	424	120	145	33	1	299	108	320	142	0	570	1528
01:00 PM	11	27	15	3	56	3	100	8	0	111	27	31	8	0	66	17	74	41	1	133	366
01:15 PM	8	29	19	1	57	6	86	2	0	94	33	29	7	0	69	25	102	33	0	160	380
01:30 PM	8	30	6	0	44	7	88	11	0	106	26	27	9	0	62	14	94	41	1	150	362
01:45 PM	10	27	10	0	47	3	101	14	0	118	38	35	2	0	75	15	101	46	0	162	402
Total	37	113	50	4	204	19	375	35	0	429	124	122	26	0	272	71	371	161	2	605	1510
02:00 PM	12	28	17	0	57	4	75	14	0	93	32	31	4	1	68	25	76	40	0	141	359
02:15 PM	9	31	17	0	57	4	95	9	0	108	34	42	10	0	86	14	84	35	1	134	385
02:30 PM	14	31	17	0	62	4	64	14	0	82	29	19	5	1	54	14	85	43	0	142	340
02:45 PM	9	37	14	0	60	7	74	13	0	94	21	33	4	0	58	19	103	44	1	167	379
Total	44	127	65	0	236	19	308	50	0	377	116	125	23	2	266	72	348	162	2	584	1463
<b>Grand Total</b>	132	357	181	5	675	51	1038	141	0	1230	360	392	82	3	837	251	1039	465	4	1759	4501
Apprch %	19.6	52.9	26.8	0.7		4.1	84.4	11.5	0		43	46.8	9.8	0.4		14.3	59.1	26.4	0.2		
Total %	2.9	7.9	4	0.1	15	1.1	23.1	3.1	0	27.3	8	8.7	1.8	0.1	18.6	5.6	23.1	10.3	0.1	39.1	
cars	125	349	179	5	658	51	1031	133	0	1215	358	386	82	3	829	241	1030	463	4	1738	4440
% cars	94.7	97.8	98.9	100	97.5	100	99.3	94.3	0	98.8	99.4	98.5	100	100	99	96	99.1	99.6	100	98.8	98.6
HV	7	8	2	0	17	0	7	8	0	15	2	6	0	0	8	10	9	2	0	21	61
% HV	5.3	2.2	1.1	0	2.5	0	0.7	5.7	0	1.2	0.6	1.5	0	0	1	4	0.9	0.4	0	1.2	1.4

		•	l Road bound		(	Conesto	ga Roa bound	ad		•	ul Road bound		(		oga Ro bound	ad	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fror	n 12:00	PM to 1	2:45 PM -	Peak 1	of 1	_				_				<u>-</u>		
Peak Hour for E	ntire Inte	rsection	Begins	at 12:00	PM												
12:00 PM	15	37	18	70	8	85	13	106	23	33	6	62	22	58	33	113	351
12:15 PM	13	29	20	62	2	82	18	102	32	40	10	82	31	82	34	147	393
12:30 PM	11	23	15	49	0	81	12	93	32	31	12	75	34	99	34	167	384
12:45 PM	12	28	13	53	3	107	13	123	33	41	5	79	21	81	41	143	398
Total Volume	51	117	66	234	13	355	56	424	120	145	33	298	108	320	142	570	1526
% App. Total	21.8	50	28.2		3.1	83.7	13.2		40.3	48.7	11.1		18.9	56.1	24.9		
PHF	.850	.791	.825	.836	.406	.829	.778	.862	.909	.884	.688	.909	.794	.808	.866	.853	.959
cars	49	115	65	229	13	353	52	418	119	142	33	294	104	317	141	562	1503
% cars	96.1	98.3	98.5	97.9	100	99.4	92.9	98.6	99.2	97.9	100	98.7	96.3	99.1	99.3	98.6	98.5
HV	2	2	1	5	0	2	4	6	1	3	0	4	4	3	1	8	23
% HV	3.9	1.7	1.5	2.1	0	0.6	7.1	1.4	0.8	2.1	0	1.3	3.7	0.9	0.7	1.4	1.5

# **F. Tavani and Associates, Inc.** 105 Kenilworth Street

Philadelphia, PA 19147

Sproul & Conestoga Roads Homecoming

File Name : SprConSat Site Code : 00000000 Start Date : 10/27/2012

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**Groups Printed- HV** 

		Sp	roul R	oad			Cone	estoga	Road	ирэттп			roul R	oad			Cone	estoga	Road		
		So	uthbo	und			W	estbo	und			No	rthbo	und			Ea	astbou	ınd		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
12:00 PM	0	1	1	0	2	0	1	2	0	3	0	0	0	0	0	1	0	1	0	2	7
12:15 PM	0	1	0	0	1	0	0	2	0	2	1	2	0	0	3	0	3	0	0	3	9
12:30 PM	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	3	0	0	0	3	6
12:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	2	2	1	0	5	0	2	4	0	6	1	3	0	0	4	4	3	1	0	8	23
			_	_	. 1	_	_		_	. 1	_		_	_	_ 1		_	_	_	. 1	
01:00 PM	0	1	0	0	1	0	0	1	0	1	0	1	0	0	1	0	1	0	0	1	4
01:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	3	1	0	0	4	6
01:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	2
01:45 PM	1	2	0	0_	3	0	1_	1_	0	2	1_	1_	0	0_	2	0	0_	0	0	0	7
Total	1	4	0	0	5	0	2	2	0	4	1	3	0	0	4	4	2	0	0	6	19
00 00 014		•	•	_	ا م		•			ا م		_					•		•		۱ ۵
02:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	3
02:15 PM	0	2	0	0	2	0	1	1	0	2	0	0	0	0	0	0	2	0	0	2	6
02:30 PM	1	0	1	0	2	0	2	1	0	3	0	0	0	0	0	1	2	0	0	3	8
02:45 PM	2	0	0_	0_	2	0	0	0	0_	0	0_	0	0_	0_	0	0	0_	0	0_	0	2
Total	4	2	1	0	7	0	3	2	0	5	0	0	0	0	0	2	4	1	0	7	19
		_	_	_	1	_	_	_	_		_	_	_	_	- 1		_	_	_		٠
Grand Total	7	8	2	0	17	0	7	8	0	15	2	_6	0	0	8	10	9	2	0	21	61
Apprch %	41.2	47.1	11.8	0		0	46.7	53.3	0		25	75	0	0		47.6	42.9	9.5	0		
Total %	11.5	13.1	3.3	0	27.9	0	11.5	13.1	0	24.6	3.3	9.8	0	0	13.1	16.4	14.8	3.3	0	34.4	

		•	I Road bound		(		oga Roa bound	ad		•	ıl Road bound		(		oga Roa bound	ad	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	ysis Fron	n 12:00	PM to 1	2:45 PM -	Peak 1	of 1											
Peak Hour for E	ntire Inte	rsection	Begins	at 12:00	PM												
12:00 PM	0	1	1	2	0	1	2	3	0	0	0	0	1	0	1	2	7
12:15 PM	0	1	0	1	0	0	2	2	1	2	0	3	0	3	0	3	9
12:30 PM	2	0	0	2	0	0	0	0	0	1	0	1	3	0	0	3	6
12:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1_
Total Volume	2	2	1	5	0	2	4	6	1	3	0	4	4	3	1	8	23
% App. Total	40	40	20		0	33.3	66.7		25	75	0		50	37.5	12.5		
PHF	.250	.500	.250	.625	.000	.500	.500	.500	.250	.375	.000	.333	.333	.250	.250	.667	.639

105 Kenilworth Street Philadelphia, PA 19147

Spring Mill & Conestoga Roads Homecoming

File Name : ConSpMSat Site Code : 00000000

Start Date : 10/27/2012

Page No : 1

**Groups Printed- cars - HV** 

					Group	s Filliteu-		,				1	
			Mill Road			Conesto				Conesto	ga Road		
			bound			Westb				Eastb	ound		
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds A	App. Total	Left	Thru	Peds	App. Total	Int. Total
12:00 PM	1	1	0	2	105	1	0	106	3	85	0	88	196
12:15 PM	1	3	0	4	100	3	0	103	0	110	0	110	217
12:30 PM	4	2	0	6	88	1	0	89	3	113	0	116	211
12:45 PM	5	5	0	10	120	0	0	120	0	94	0	94	224
Total	11	11	0	22	413	5	0	418	6	402	0	408	848
01:00 PM	1	9	0	10	104	0	0	104	1	86	0	87	201
01:15 PM	1	5	0	6	91	1	0	92	1	112	0	113	211
01:30 PM	0	3	0	3	103	1	0	104	3	109	0	112	219
01:45 PM	0	6	0	6	105	0	0	105	1_	107	0	108	219
Total	2	23	0	25	403	2	0	405	6	414	0	420	850
02:00 PM	1	2	0	3	97	0	0	97	5	89	0	94	194
02:15 PM	2	0	0	2	102	0	0	102	3	104	0	107	211
02:30 PM	1	0	0	1	78	1	0	79	3	103	0	106	186
02:45 PM	0	5	0	5	90	0	0	90	2	115	0	117	212
Total	4	7	0	11	367	1	0	368	13	411	0	424	803
1				1									
Grand Total	17	41	0	58	1183	8	0	1191	25	1227	0	1252	2501
Apprch %	29.3	70.7	0		99.3	0.7	0		2	98	0		
Total %	0.7	1.6	0	2.3	47.3	0.3	0	47.6	1	49.1	0	50.1	
cars	17	41	0	58	1180	8	0	1188	25	1224	0	1249	2495
% cars	100	100	0	100	99.7	100	0	99.7	100	99.8	0	99.8	99.8
HV	0	0	0	0	3	0	0	3	0	3	0	3	6
% HV	0	0	0	0	0.3	0	0	0.3	0	0.2	0	0.2	0.2

	•	ring Mill Ro			nestoga Ro			nestoga Ro		
	3	outhbound	1		Westbound			<u>Eastbound</u>		
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis Fro	m 12:00 PM to	12:45 PM	- Peak 1 of 1		<u>-</u>					
Peak Hour for Entire Inte	ersection Begi	ns at 12:00	PM							
12:00 PM	1	1	2	105	1	106	3	85	88	196
12:15 PM	1	3	4	100	3	103	0	110	110	217
12:30 PM	4	2	6	88	1	89	3	113	116	211
12:45 PM	5	5	10	120	0	120	0	94	94	224
Total Volume	11	11	22	413	5	418	6	402	408	848
% App. Total	50	50		98.8	1.2		1.5	98.5		
PHF	.550	.550	.550	.860	.417	.871	.500	.889	.879	.946
cars	11	11	22	411	5	416	6	399	405	843
% cars	100	100	100	99.5	100	99.5	100	99.3	99.3	99.4
HV	0	0	0	2	0	2	0	3	3	5
% HV	0	0	0	0.5	0	0.5	0	0.7	0.7	0.6

105 Kenilworth Street Philadelphia, PA 19147

Spring Mill & Conestoga Roads Homecoming

File Name : ConSpMSat Site Code : 00000000

Start Date : 10/27/2012

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**Groups Printed- HV** 

					0.0	ups i iiii							
		Spring M				Conesto				Conesto	ga Road	l	
		South	oound			Westk	ound			Eastb	ound		
Start Time	Left	Right	Peds /	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
12:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
12:15 PM	0	0	0	0	1	0	0	1	0	2	0	2	3
12:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	2	0	0	2	0	3	0	3	5
1									1				
01:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total	0	0	0	0	1	0	0	1	0	0	0	0	1
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0_
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	3	0	0	3	0	3	0	3	6
Apprch %	0	0	0		100	0	0		0	100	0		
Total %	0	0	0	0	50	0	0	50	0	50	0	50	

		oring Mill Ro Southbound		С	onestoga Ro Westbound		Co	onestoga Ro Eastbound	I				
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total			
Peak Hour Analysis From 12:00 PM to 12:45 PM - Peak 1 of 1													
Peak Hour for Entire Inte	ersection Beg	ins at 12:00	PM										
12:00 PM	0	0	0	1	0	1	0	0	0	1			
12:15 PM	0	0	0	1	0	1	0	2	2	3			
12:30 PM	0	0	0	0	0	0	0	1	1	1			
12:45 PM	0	0	0	0	0	0	0	0	0	0_			
Total Volume	0	0	0	2	0	2	0	3	3	5			
% App. Total	0	0		100	0		0	100					
PHF	.000	.000	.000	.500	.000	.500	.000	.375	.375	.417			

105 Kenilworth Street Philadelphia, PA 19147

Ithan & Conestoga Roads Homecoming

File Name : ConIthSat Site Code : 00000000 Start Date : 10/27/2012

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**Groups Printed- cars - HV** 

Groups Frinted- cars - nv													1								
		lth	an Ave	enue			Cond	estoga	a Road			lth	an Ave	enue			Cond	estoga	Road		1
		So	uthbo	und			W	estbo	und			No	orthbo	und			E	astbou	und		
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
12:00 PM	7	5	25	0	37	3	72	12	1	88	0	4	3	0	7	7	66	0	0	73	205
12:15 PM	3	2	13	0	18	1	71	8	1	81	2	11	1	0	14	18	77	0	2	97	210
12:30 PM	11	1	4	0	16	3	78	7	2	90	1	5	0	0	6	17	87	0	0	104	216
12:45 PM	1	2	10	1	14	10	80	9	2	101	0	6	1	0	7	12	74	0	1	87	209
Total	22	10	52	1	85	17	301	36	6	360	3	26	5	0	34	54	304	0	3	361	840
01:00 PM	4	3	13	0	20	1	87	7	0	95	0	5	0	0	5	10	73	0	0	83	203
01:15 PM	5	5	14	0	24	1	60	5	0	66	2	4	0	0	6	19	91	0	2	112	208
01:30 PM	6	4	14	1	25	0	81	8	1	90	1	4	1	0	6	17	85	0	0	102	223
01:45 PM	4	4	15	0	23	1	82	8	1	92	0	2	1	0	3	17	79	2	0	98	216
Total	19	16	56	1	92	3	310	28	2	343	3	15	2	0	20	63	328	2	2	395	850
02:00 PM	5	5	9	0	19	2	77	5	0	84	0	5	2	1	8	10	74	0	2	86	197
02:15 PM	8	3	13	0	24	3	81	3	0	87	1	2	0	0	3	24	66	0	0	90	204
02:30 PM	1	4	10	0	15	0	60	10	1	71	1	7	1	0	9	8	88	0	0	96	191
02:45 PM	7	1	20	0	28	0	62	7	1	70	2	3	0	1	6	9	80	1	0	90	194
Total	21	13	52	0	86	5	280	25	2	312	4	17	3	2	26	51	308	1	2	362	786
<b>Grand Total</b>	62	39	160	2	263	25	891	89	10	1015	10	58	10	2	80	168	940	3	7	1118	2476
Apprch %	23.6	14.8	60.8	8.0		2.5	87.8	8.8	1		12.5	72.5	12.5	2.5		15	84.1	0.3	0.6		
Total %	2.5	1.6	6.5	0.1	10.6	1	36	3.6	0.4	41	0.4	2.3	0.4	0.1	3.2	6.8	38	0.1	0.3	45.2	
cars	62	37	154	2	255	24	884	83	10	1001	10	58	10	2	80	164	928	3	7	1102	2438
% cars	100	94.9	96.2	100	97	96	99.2	93.3	100	98.6	100	100	100	100	100	97.6	98.7	100	100	98.6	98.5
HV	0	2	6	0	8	1	7	6	0	14	0	0	0	0	0	4	12	0	0	16	38
% HV	0	5.1	3.8	0	3	4	8.0	6.7	0	1.4	0	0	0	0	0	2.4	1.3	0	0	1.4	1.5

			Avenue bound		(	Conesto	ga Roa bound	ad			Avenue	•	(		oga Ro bound	ad	
Start Time	Left	Thru		App. Total	Left	Thru		App. Total	Left	Thru	Right	App. Total	Left	Thru		App. Total	Int. Total
Peak Hour Analy	Peak Hour Analysis From 12:00 PM to 12:45 PM - Peak 1 of 1																
Peak Hour for E	ntire Inte	ersection	<b>Begins</b>	at 12:00	PM												
12:00 PM	7	5	25	37	3	72	12	87	0	4	3	7	7	66	0	73	204
12:15 PM	3	2	13	18	1	71	8	80	2	11	1	14	18	77	0	95	207
12:30 PM	11	1	4	16	3	78	7	88	1	5	0	6	17	87	0	104	214
12:45 PM	1	2	10	13	10	80	9	99	0	6	1	7	12	74	0	86	205
Total Volume	22	10	52	84	17	301	36	354	3	26	5	34	54	304	0	358	830
% App. Total	26.2	11.9	61.9		4.8	85	10.2		8.8	76.5	14.7		15.1	84.9	0		
PHF	.500	.500	.520	.568	.425	.941	.750	.894	.375	.591	.417	.607	.750	.874	.000	.861	.970
cars	22	8	51	81	16	299	35	350	3	26	5	34	52	300	0	352	817
% cars	100	80.0	98.1	96.4	94.1	99.3	97.2	98.9	100	100	100	100	96.3	98.7	0	98.3	98.4
HV	0	2	1	3	1	2	1	4	0	0	0	0	2	4	0	6	13
% HV	0	20.0	1.9	3.6	5.9	0.7	2.8	1.1	0	0	0	0	3.7	1.3	0	1.7	1.6

# **F. Tavani and Associates, Inc.** 105 Kenilworth Street

Philadelphia, PA 19147

Ithan & Conestoga Roads Homecoming

File Name: ConlthSat Site Code : 00000000

Start Date : 10/27/2012

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**Groups Printed- HV** 

		So	an Avo				W	estoga estbo				No	an Ave				E	estoga astbou			
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
12:00 PM	0	1	1	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3
12:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1	1	0	0	2	4
12:30 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	1	0	0	2	3
12:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	3
Total	0	2	1	0	3	1	2	1	0	4	0	0	0	0	0	2	4	0	0	6	13
01:00 PM	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
01:30 PM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
01:45 PM	0	0	0	0	0	0	1	2	0	3	0	0	0	0	0	0	1_	0	0	1	4
Total	0	0	2	0	2	0	2	3	0	5	0	0	0	0	0	0	3	0	0	3	10
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
02:15 PM	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	4
02:30 PM	0	0	2	0	2	0	1	2	0	3	0	0	0	0	0	1	2	0	0	3	8
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1_	0	0	2	2
Total	0	0	3	0	3	0	3	2	0	5	0	0	0	0	0	2	5	0	0	7	15
Grand Total	0	2	6	0	8	1	7	6	0	14	0	0	0	0	0	4	12	0	0	16	38
Apprch %	0	25	75	0		7.1	50	42.9	0		0	0	0	0		25	75	0	0		
Total %	0	5.3	15.8	0	21.1	2.6	18.4	15.8	0	36.8	0	0	0	0	0	10.5	31.6	0	0	42.1	

		Ithan A	Avenue	)	(	Conesto	oga Roa	ad		Ithan	Avenue	•	(	Conest	oga Ro	ad	
		South	bound			West	bound			North	bound			East	bound		
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analy	Peak Hour Analysis From 12:00 PM to 12:45 PM - Peak 1 of 1																
Peak Hour for E	ntire Inte	rsection	Begins	at 12:00	PM												
12:00 PM	0	1	1	2	0	0	1	1	0	0	0	0	0	0	0	0	3
12:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	1	1	0	2	4
12:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1	1	0	2	3
12:45 PM	0	1_	0	1	0	0	0	0	0	0	0	0	0	2	0	2	3_
Total Volume	0	2	1	3	1	2	1	4	0	0	0	0	2	4	0	6	13
% App. Total	0	66.7	33.3		25	50	25		0	0	0		33.3	66.7	0		
PHF	.000	.500	.250	.375	.250	.250	.250	.500	.000	.000	.000	.000	.500	.500	.000	.750	.813

## **AM PEAK HOUR**

	Unsignalized or				Initial	Unmet Demand		E	cessi	ve Unmet Demand
Intersection	Signalized?	Approach	C	ueue	s	Findings / Summary	C	Queue	s	Findings / Summary
	Signalized	WB	1	0	2		2	0	3	
Route 30 and Route 320	Signalized	ЕВ	0	2	0	А, В	1	4	1	А, В
Trouis so and result size	Signalized	NB	0	0	1	, ,, =	0	0	0	,, _
	Signalized	SB	0	1	0		2	1	0	
	Signalized	WB	0	0	0		0	2	0	
Route 30 and Ithan Avenue	Signalized	ЕВ	0	0	0	A, B, C	1	1	1	А, В
	Signalized	NB	0	0	0	., _, 0	1	3	0	.,
	Signalized	SB	0	0	0		1	0	2	
	Signalized	WB	0	0	0		1	0	1	
Route 320 and Conestoga Rd	Signalized	ЕВ	0	0	0	A, B, C	0	2	1	A, B, C
	Signalized	NB	1	0	0		3	1	0	

## AM PEAK HOUR

	Unsignalized or				Initial	Unmet Demand		E	cessiv	e Unmet Demand
Intersection	Signalized?	Approach	G	Queue	s	Findings / Summary	(	Queue	s	Findings / Summary
Roberts Rd and County Line Rd	Unsignalized	NB	0	0	0	A, D	0	0	0	A, D
Roberts Rd and County Line Rd	Unsignalized	SB	0	0	0	Λ, υ	0	0	0	Λ, υ
Airadala Pd and County Lina Pd	Unsignalized	ЕВ	0	0	0	Е	0	0	0	E
Airedale Rd and County Line Rd	Unsignalized	SB	0	0	0	C	5+	5+	5+	L

## **Purpose**

The purpose of this table is to summarize observations which were made in the first week of December 2012 subsequent to establishing the peak hours of the 'ordinary traffic conditions' scenario. The township engineer requested that traffic volume inputs in the level of service models reflect traffic demand as well as traffic served, so FTA prepared this table to summarize whether the actual counts reflect proper volume inputs for the model or if there is a significantly oversaturated condition in which traffic demands consistently are unmet. In addition a related but slightly different notion -- *initial* unmet demand (IUD) -- was also documented per page 18-14 of the HCM 2010 edition. IUD is documented in the first columns of the above table and as shown 3 observations of unserved vehicles ("queues"), if any at the beginning of the subject peak hour were documented and then a determination was made whether to include a non-zero value in the IUD field of the software. *Excessive* unmet demand was determined by revisiting the subject intersection during the peak 15-minute period of the peak hour and taking data samples relative to excessive, unserved vehicles ("queues"), if any. If over-saturation appeared sustained for an extended time, it was noted (per the HCM), as were any other anomalies.

Note that, in all cases, only intersections having one or more approaches which were noted as possibly having operational issues by data collectors (during the traffic counts) were actually visited and documented above. Finally, some conclusions are similar in multiple locations, so rather than write the same text repeatedly, a key was prepared (below) and letters were used as appropriate to summarize the respective condition(s) / finding(s) which were observed / determined.

## Summary Key

- A. Sustained, unserved traffic demands are not present and so no adjustments were made.
- B. LOS F ratings are a function of long cycle length and heavy demand but traffic is generally served in one given cycle (i.e., vehicles typically do not wait for 2nd cycle
- C. Peak demands appear to be random, cycle-by-cycle fluctuations which are to be ignored (per HCM2010 18-14).
- D. LOS F ratings at this unsignalized location are conservative as it appears the platooning / gap creating effects of adjacent signalized intersections are not reflected.
- E. Queues at this unsignalized intersection are a function of an immediately adjacent signalized intersection which has a metering effect on the subject intersection. Queues are therefore not a function of unserved demand / oversaturation but rather other geometric factors unrelated to the subject intersection.

## **PM PEAK HOUR**

	Unsignalized or				Initial	Unmet Demand		E	cessi	ve Unmet Demand
Intersection	Signalized?	Approach	C	Queue	es	Findings / Summary	C	Queue	s	Findings / Summary
	Signalized	WB	2	0	0		3	4	1	
Route 30 and Route 320	Signalized	ЕВ	0	2	1	А, В	2	0	3	А, В
	Signalized	NB	1	0	0	,	5	3	0	,
	Signalized	SB	0	2	2		2	3	1	
	Signalized	WB	0	0	0		0	1	2	
Route 30 and Ithan Avenue	Signalized	ЕВ	0	0	0	А, В	3	2	0	А, В
	Signalized	NB	0	0	0	,	3	0	4	,
	Signalized	SB	0	0	0		3	0	2	
	Signalized	WB	0	1	0		0	2	1	
Route 320 and Conestoga Rd	Signalized	ЕВ	0	0	0	A, B	2	0	4	A, B, C
	Signalized	SB	0	0	2		0	3	3	

## PM PEAK HOUR

	Unsignalized or				Initial	Unmet Demand		E	cessi	e Unmet Demand
Intersection	Signalized?	Approach	G	Queue	s	Findings / Summary	(	Queue	s	Findings / Summary
Roberts Rd and County Line Rd	Unsignalized	NB	0	0	0	A, D	0	0	0	A, D
Roberts Nu and County Line Nu	Unsignalized	SB	0	0	0	Α, υ	0	0	0	Λ, υ
Airodolo Pd and County Line Pd	Unsignalized	ЕВ	0	0	0	Е	0	0	0	E
Airedale Rd and County Line Rd	Unsignalized	SB	5+	5+	5+	E	5+	5+	5+	<u> </u>

## **Purpose**

The purpose of this table is to summarize observations which were made in the first week of December 2012 subsequent to establishing the peak hours of the 'ordinary traffic conditions' scenario. The township engineer requested that traffic volume inputs in the level of service models reflect traffic demand as well as traffic served, so FTA prepared this table to summarize whether the actual counts reflect proper volume inputs for the model or if there is a significantly oversaturated condition in which traffic demands consistently are unmet. In addition a related but slightly different notion -- *initial* unmet demand (IUD) -- was also documented per page 18-14 of the HCM 2010 edition. IUD is documented in the first columns of the above table and as shown 3 observations of unserved vehicles ("queues"), if any at the beginning of the subject peak hour were documented and then a determination was made whether to include a non-zero value in the IUD field of the software. *Excessive* unmet demand was determined by revisiting the subject intersection during the peak 15-minute period of the peak hour and taking data samples relative to excessive, unserved vehicles ("queues"), if any. If over-saturation appeared sustained for an extended time, it was noted (per the HCM), as were any other anomalies.

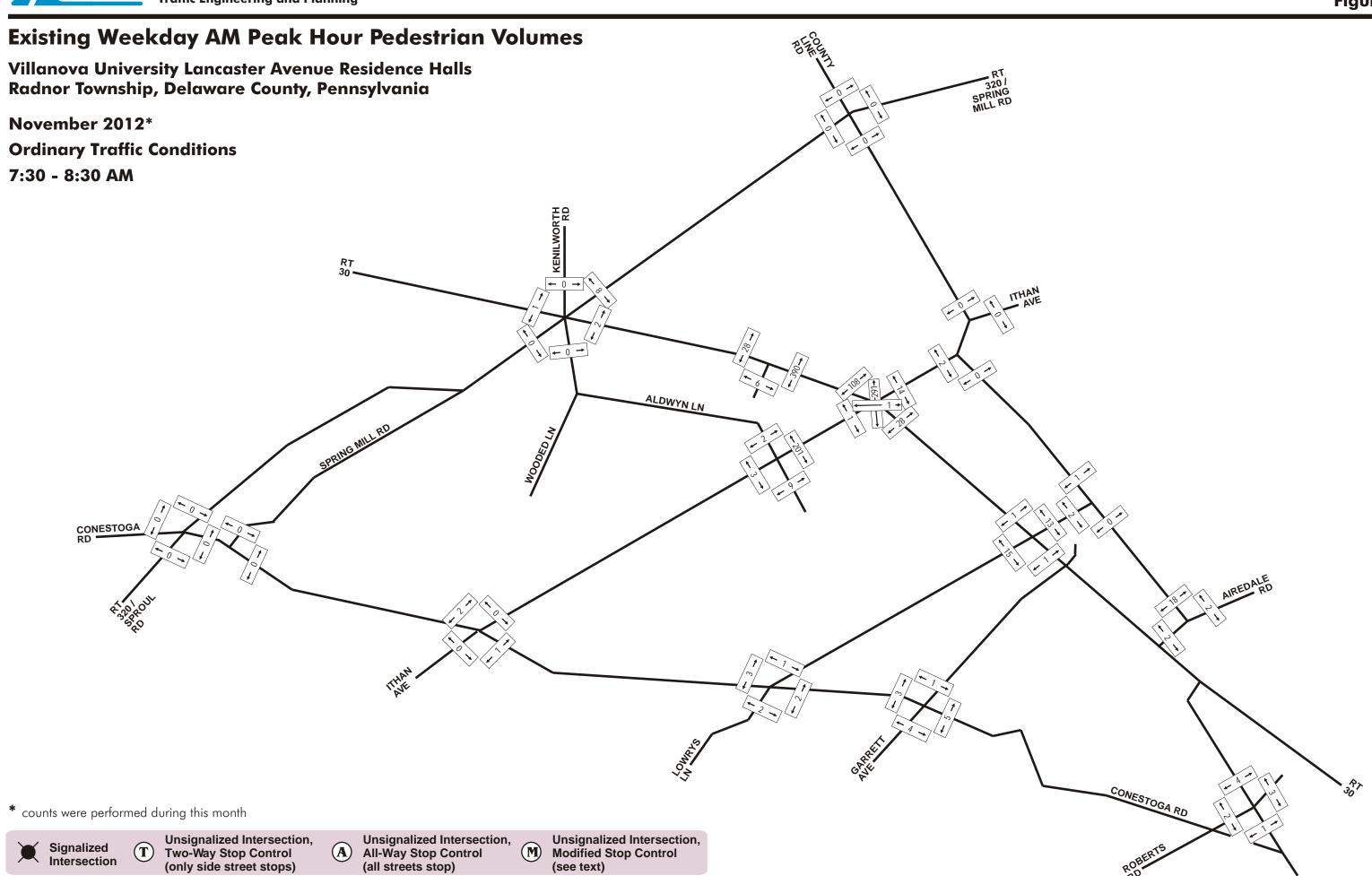
Note that, in all cases, only intersections having one or more approaches which were noted as possibly having operational issues by data collectors (during the traffic counts) were actually visited and documented above. Finally, some conclusions are similar in multiple locations, so rather than write the same text repeatedly, a key was prepared (below) and letters were used as appropriate to summarize the respective condition(s) / finding(s) which were observed / determined.

## **Summary Key**

- A. Sustained, unserved traffic demands are not present and so no adjustments were made.
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- C. Peak demands appear to be random, cycle-by-cycle fluctuations which are to be ignored (per HCM2010 18-14).
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- E. Queues at this unsignalized intersection are a function of an immediately adjacent signalized intersection which has a metering effect on the subject intersection. Queues are therefore not a function of unserved demand / oversaturation but rather other geometric factors unrelated to the subject intersection.

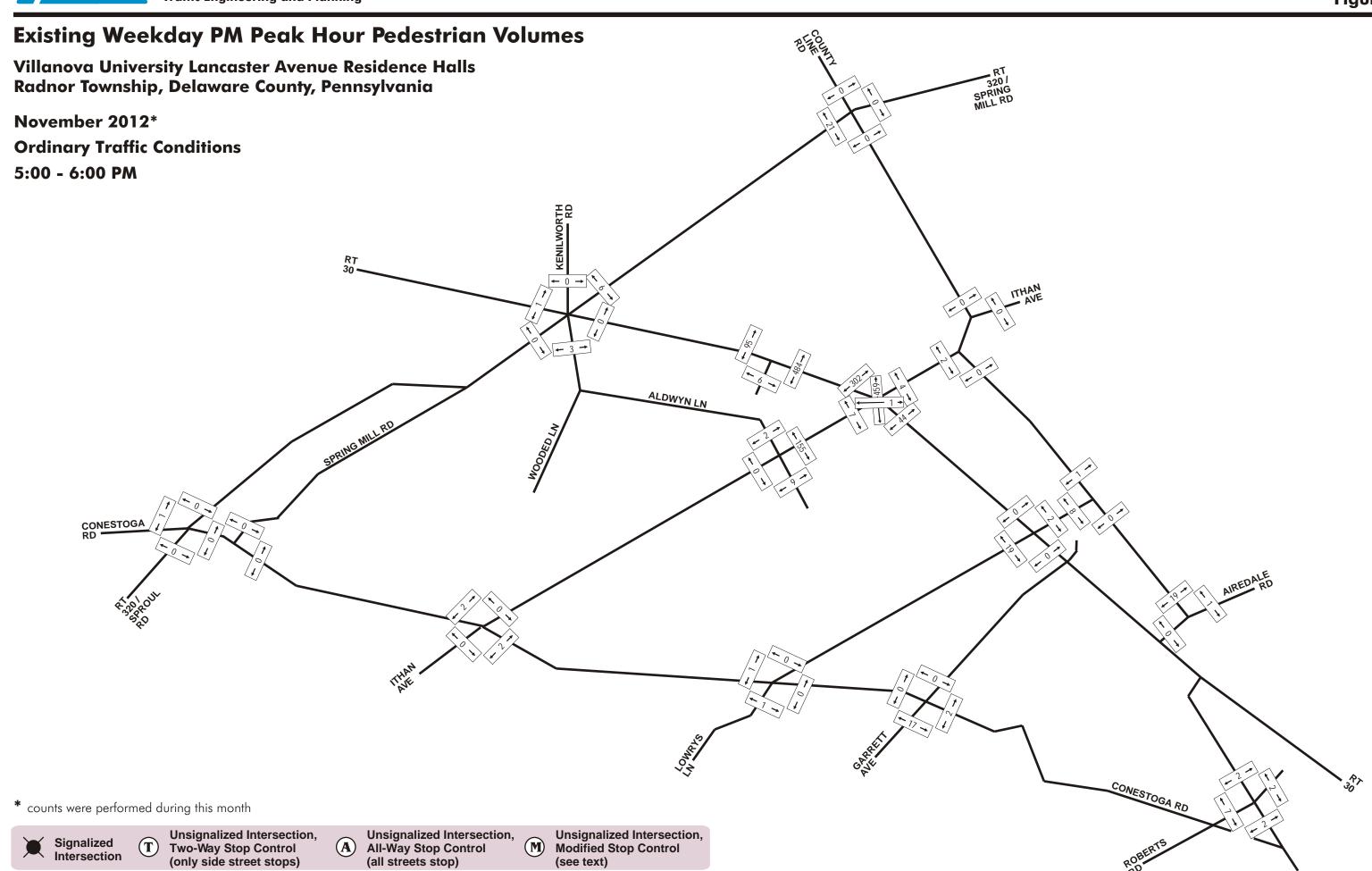
(only side street stops)

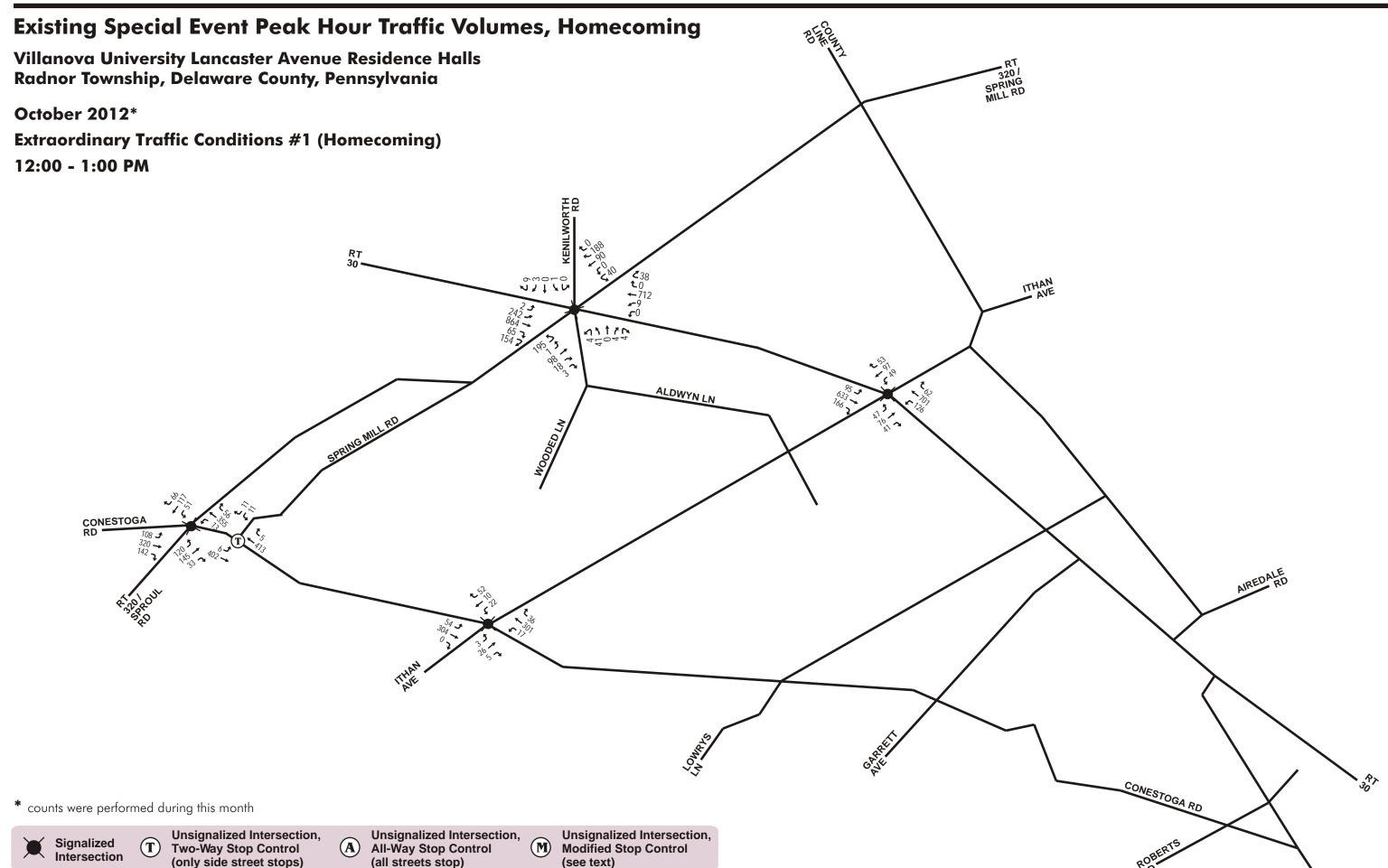


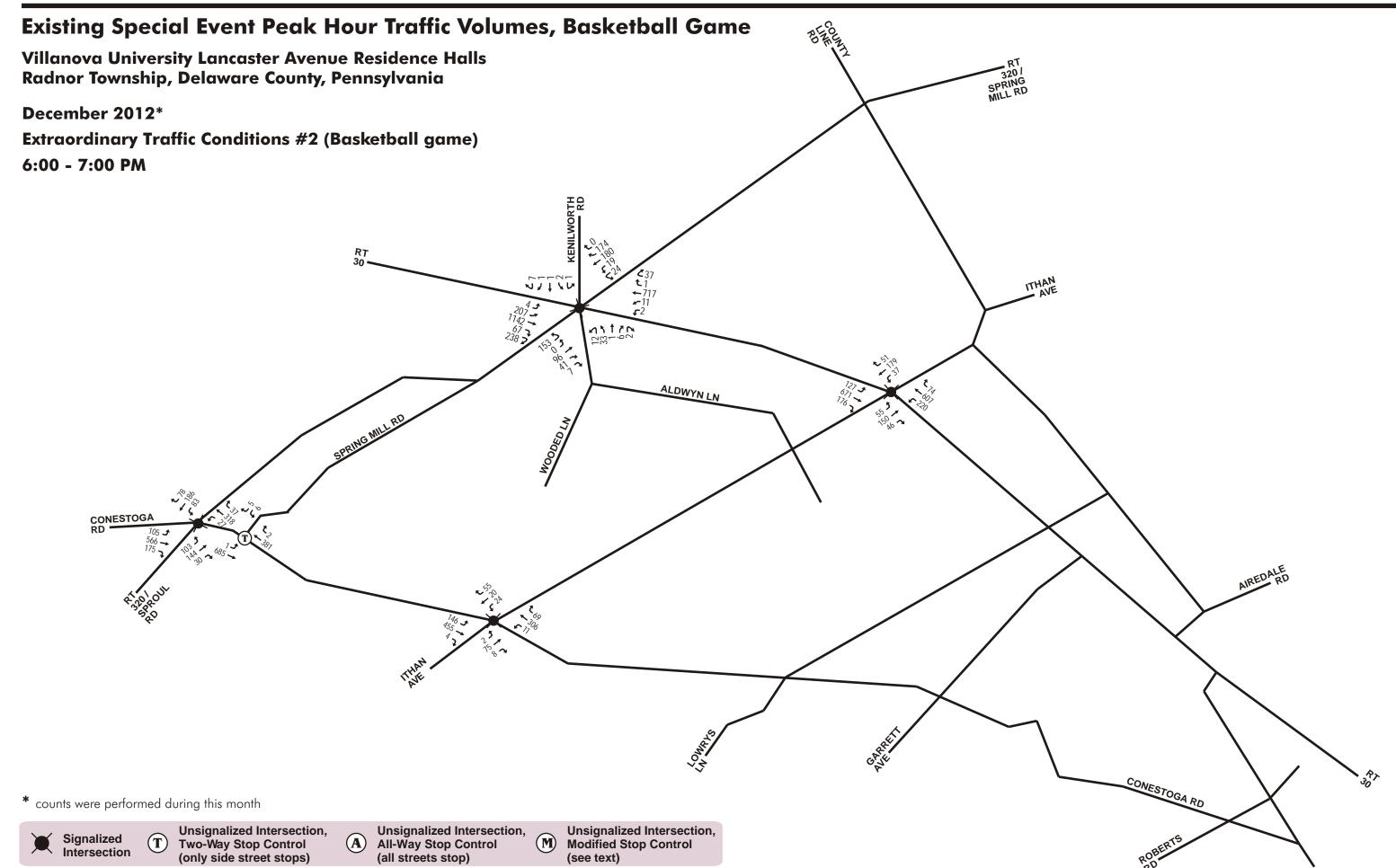


(see text)



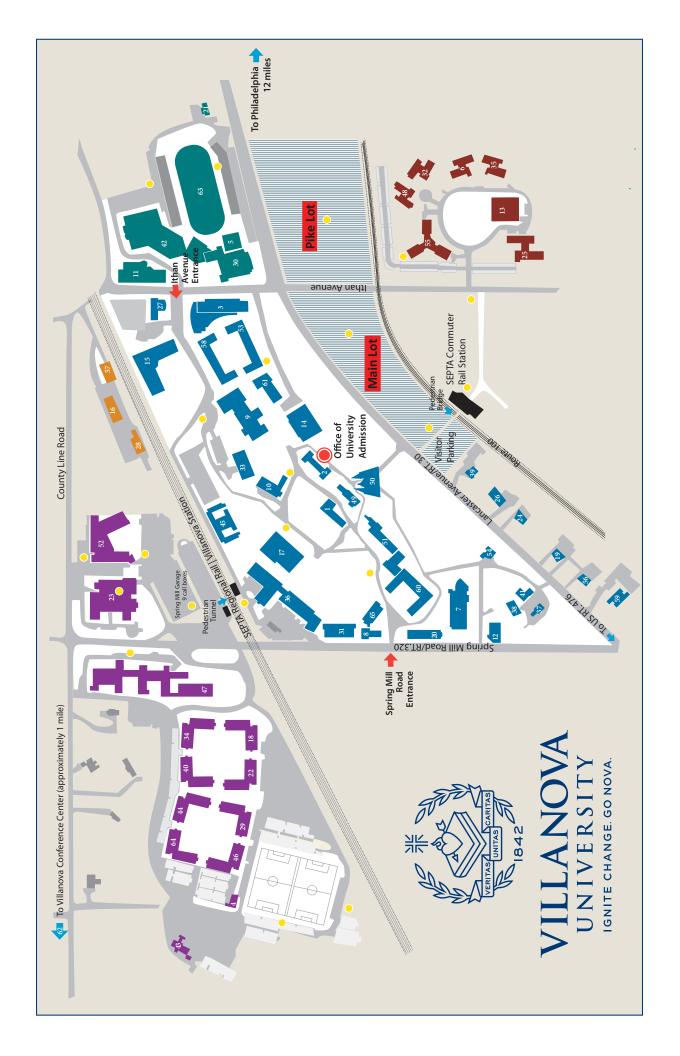






# **APPENDIX F**

Campus Key Map



# Residence hall, gymnasium for intramural athletics **ALUMNI HALL** O (1849)

ion, residence hall 2. AUSTIN HALL • O(1924)

# BARTLEY HALL • (1958)

Villanova School of Business, Office of the Dean, administrative offices, Applied Finance Laboratory, disserooms, dining facilities, Graduate Business Programs, Print Center, ATM

# **BURNS HALL** • (1978) Augustinian residence

**BUTLER ANNEX** (1968) Athletic facility

Library, University Communication: Creative Services, Learning Support Services (moving from Vasey Hall in January 2012), Writing Center, Marhematics

Center, Augustinian Institute, Augustinian Historical

FARLEY HALL • (2000) Residence hall, fitness center

Institute, dining facility

CAUGHLIN HALL • O (1989) Residence hall

# **ENGINEERING EDUCATION CEER: CENTER FOR**

administrative offices, laboratories, conference rooms, auditorium, dining facility AND RESEARCH • O (1997)
College of Engineering, Office of the Dean,

# **CHEMICAL ENGINEERING**

Chemical Engineering offices, classrooms, BUILDING (1947) laboratories

9. CONNELLY CENTER • (1980)
Auxiliary Services, Presidents' Lounge.
International Student Advisor, Office of Human
Services (students with disabilities), student lounges,
cinema, meeting rooms; information desk, cyber
lounge, daining facilities, convenience/video store,
Art Gallery, ATM

# 10. CORR HALL • ○ (1914)

Office for Mission and Ministry,
Office of the Vice President for Mission and
Ministry, Center for Faith and Learning, Center
for Peace and Justice Education, residence hall,
Greek Affairs, chapel

24. GERAGHTY HALL (1958)
Office of the Dean of Enrollment Management,
University Communication: Media Relations,
NHI: National Hispanic Institute

25. GOOD COUNSEL HALL () (1969)

Residence hall

University Communication: Constituent Publications, Marketing and University

**26. GRIFFIN HALL** (1964)

Advancement-Communication

Men's and women's basketball offices, men's and women's basketball practice facilities, Intramural/ Recreation Department, fitness center DAVIS CENTER • (2007)

# 12. DELUREY HALL O (1943)

Dining facilities, convenience store, ATM **13. DONAHUE HALL** • (1985)

# **14. DOUGHERTY HALL** • (1955)

Office of the Vice President for Student Life, Center for Multicultural Affairs, Office of the Dean of Students, Offices of Dining Services, Student Government office, Wildeard office, dining facilities, student organization offices, lounges, barber shop, bank, ATM

29. JACKSON HALL · O (2000)

# 30. JAKE NEVIN FIELD HOUSE • (1932) Athletic Department offices, Director of Athletics, basketball court, other athletic facilities administrative offices, faculty offices, Center for Nursing Research, Center for Global and Public Health, auditorium, lecture halls, seminar rooms, classrooms, Clinical Simulation Laboratories,

DRISCOLL HALL • ○ (2008) College of Nursing, Office of the Dean,

15.

31. JOHN BARRY HALL • (1947)

# **KATHARINE HALL** • O (1986) Residence hall

# **33. KENNEDY HALL** • (1968)

**BUILDING** • (1965) Facilities Management main office, staff, shops

**FACILITIES MANAGEMENT** 

chapel, reading room, dining facility

17. FALVEY MEMORIAL LIBRARY

University Shop, Office of Financial Assistance, Office of Residence Life, Busar's Office, Mail Services, College of Liben Arts and Sciences Office of Graduate Studies, Office of Arthrope, Office of Arthrop or Liveral Arts and Sciences ite Studies, Office of the Dean of Graduate Studies

# **34. KLEKOTKA HALL • ○** (1994) Residence hall

# **35. MCGUIRE HALL • ○** (1989) Residence hall

# 36. MENDEL SCIENCE CENTER • (1961) Classrooms, lecture halls, laboratories, administrative offices, student public computing

Office of Public Safety, parking office

**20. FEDIGAN HALL • ○** (1930) 19. FARRELL HALL • O (1960)

37. MIDDLETON HALL (1943) labs, observatory, greenhouse

# International Studies, Office of Research and Sponsored Projects

**21. GALBERRY HALL** (1940)
University Graphic Services, Conference Services

**22. GALLEN HALL • (2000)** 

Residence hall

23. GAREY HALL • (1958)

**38. MILITARY SCIENCES BUILDING** 

# (1949)

Army R.O.T.C. headquarters, classrooms

39. MORIARTY HALL O (1963) Residence hall

# **MOULDEN HALL • O** (1994)

Alumni Center, University Advancement:
Alumni Relations and Development, Department
of Communication, Career Services office,
Honors Program, IGBS: Institute for Global
Interdisciplinary Studies, Custodial Services,

# Residence hall

# **41. O'DWYER HALL** ○ (1941) Residence hall

Basketball stadium, indoor sports complex, athletic offices, locker rooms, swimming pool, 200-meter indoor track, ATM **42. PAVILION • (1985)** 

# PICOTTE HALL AT DUNDALE • ○ (1974) Office of University Advancement, Office of the Vice President for University Advancement

**RUDOLPH HALL · O** (1994)

# ST. AUGUSTINE CENTER FOR 45. 27. HEALTH SERVICES BUILDING • (2002)

Counseling Center, Center for Health and Wellness Education, Health Center, VEMS: Villanova Emergency Medical Service

College of Liberal Arts and Sciences, Office of the Dean, Catholic Relief Services, The Theology Institute, administrative offices, faculty offices, THE LIBERAL ARTS • O (1992) seminar rooms, dining facility

# ST. CLARE HALL • O (2000)

# ST. MARY HALL • O (1964)

Human Resources. Procurement, Payroll, Financial Affairs, Budget, OPIR. Office of Planning and Institutional Research, Graduate Poergrams in Human Resource Development, administrative offices, residence hall, dining facility, University Senate office, chapel, pool, gymnasitum, Music Activities, Art Conservatory, student mail

# **48. ST. MONICA HALL • ○** (1986)

Residence hall, Campus Ministry offices **49. ST. RITA HALL** ○ (1913)

# 50. ST. THOMAS OF VILLANOVA CHURCH • (1887) Parish church for local community and Villanova

University students

# **51. ST. THOMAS OF VILLANOVA MONASTERY** • (1901 & 1934)

Augustinian residence and care center, Augustinian Heritage Room, Augustinian Way of Life Center

# **52. SCHOOL OF LAW • (2009)**

Office of the Dean, administrative offices, classrooms, lounges, Law Library, Moot Court, dining facility, ATM

# 53. SHEEHAN HALL • ○ (1957)

54. SIMPSON HALL · ○ (1948) Residence hall

# Residence hall, fitness center, Office of 55. STANFORD HALL • O (1971) Continuing Studies

**56. STONE HALL** (1957)

# Office of Environmental Health and Safety

LABORATORY • (2005)
Structural member and load testing facility, 57. STRUCTURAL ENGINEERING environmental room, wet room, material

# 58. SULLIVAN HALL • O (1953) Residence hall

General computing and technology information, administrative offices for UNIT: University Information Technologies, Office of the Vice President for Technology and Chief Information Officer, CIT: Center for Instructional Technologies main office, Network and Communications, University Information Systems, faculty/staff training facility

60. TOLENTINE HALL • (1929)
Office of the University President, Offices
of the Vice President for Academic Affairs,
Vice President for Thiversity Communication,
Vice President for University Communication,
Vice President for University Communication,
Vice President and General Counsel, College
of Engineering offices; Registrar's Office; other
administrative offices, classrooms, Department
of Psychology (labs, offices), CIT. Center for
Instructional Technologies; video/ teleconference facility

# **61. VASEY HALL** • (1931)

VITAL. Villanova Institute for Teaching and Learning, Office of Patriane Studies, Summer Sessions Program. Theatre Department, theatre, offices, classrooms, TechZone Computer Support Center, Learning Support Services (moving to Paleys Library in January 2012).

# **62. VILLANOVA CONFERENCE CENTER** • (1998)

Hotel accommodations, meeting space, guest dining facility, special events catering, Office of Executive Programs, Executive M.B.A. Program,

# 63. VILLANOVA STADIUM • (1927) Stadium (playing field for varsity football, lacrosse, etc.), track, athletic weight room, Grounds Department

# **64. WELSH HALL •** ○ (1994) Residence hall

**65. WHITE HALL** • (1974)
Chemical Engineering offices, classrooms,

# **59. TECHNOLOGY SERVICES BUILDING**

# **APPENDIX G**

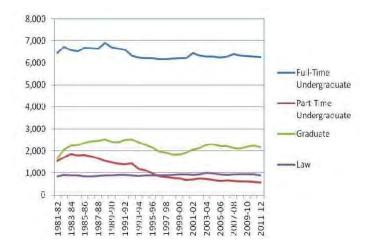
Trip Generation

# Trip Generation Notes

The project includes new on-campus residential space for existing students, new Villanova-centric retail, and other related elements including a parking garage, a pedestrian bridge, etc. The project is likely to result in a reduction in peak hour traffic since currently-commuting students will become campus-residing students. A number of parking spaces in the proposed Pike Garage will be occupied by the new campus-residing students and these parking spaces will not 'turn over' during peak periods in the same fashion as they do today. Even so, the applicant was asked to treat <u>all</u> parking spaces as having an activity (i.e., a weekday peak period turnover level) comparable to that which exists today. Thus, the trip generation rates of existing campus parking spaces becomes a focus of this study.

Details of trip generation for the project are provided on the next three pages. Note that the remainder of this text is based on a submittal entitled **Deliverable #2** which was shared with the township and PennDOT in 2013.

Trip generation at a university or college is principally a function of the student body. Student population at Villanova has remained consistent and flat for the last 20+ years as depicted in the following chart:



The project includes no net new instructional space and is principally aimed at addressing currently-unmet student desires, namely more on-campus housing for existing undergraduate upperclassmen (juniors and seniors). At present there are 1,779 of the 2,982 full-time undergraduate juniors and seniors living off campus<sup>1</sup> and so they currently commute to classes, often during weekday commuter peak periods. Thus, if the project is constructed, the majority of these commuters will be living on campus and as a result peak hour traffic both at site driveways *and* in the study area generally will be reduced as a result of the project.

<sup>&</sup>lt;sup>1</sup> Fall 2012 semester data.

It should be noted that students who once lived off-campus in rental housing will likely be replaced by new tenants. Those tenants may be students of other institutions or may not be students at all, but in any event it is unlikely that all the new tenants will be other Villanova students. Even if they are, they will probably be Villanova students who live more remotely, and thus the net impact to the study area and the campus will be the same (i.e., a reduction in traffic). Even so, there is no practical way to *remove* peak hour traffic associated with the currently-commuting undergraduate students from the existing counts at the intersections in the study area, and so for this reason future peak hour traffic estimates are doubly conservative – *not only are driveway volumes not adjusted (reduced) to reflect students who will be living on campus but also the intersections in the study area are also not adjusted (reduced) to reflect students who will be living on campus.* 

## SITE-DERIVED TRIP GENERATION

Traffic counts were not conducted at every driveway to every parking facility on the entire campus nor were students polled to determine mass transit usage, but some measure of site-specific trip generation can still be derived from collected data.

There are 1,783 parking spaces found on the Main Lot, the Pike Lot, and the Visitor's Lot (combined). These spaces represent 34.7% of total parking supply. Determining the traffic activity (i.e., entering and exiting traffic) of these parking lots and dividing by the parking supply factor (34.7%) will yield approximate campus-wide trip generation activity which can then be compared with the number of students currently attending Villanova (10,127) so that a trip generation rate per student can be derived. This rate can then be compared with ITE rates, as an added back-check.

## TRIP GENERATION TRAFFIC COUNTS

Turning Movement (manual) and Automatic Traffic Recorder (ATR) traffic counts were conducted at every driveway serving the Main and Pike Lots in Fall 2011. The trip generation activity gathered from the turning movement counts is summarized in Table 1:

Table 1 – Main Lot + Pike Lot + Visitor Lot Traffic Activity, All Driveways

Source/Date	A	M Peak Hou	r <sup>6</sup>	P	M Peak Hou	r <sup>7</sup>
Source/Date	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>
09/2011, TM counts	405	50	455	352	404	756

The potential use of this data as a building block for forecasting trip generation arising from the project is a critical element of study and so was validated a few different ways. The focus of the validation effort was placed on the four driveways along Ithan Avenue which, collectively, process the majority of traffic to and from the parking lots.

Table 2 summarizes the gathered traffic count data with the first row being a repeat of the trip generation numbers contained in Table 1 (but as a subset of just Ithan Avenue driveways). Note that an 8<sup>th</sup> column is introduced in Table 2, namely the sum of AM and PM peak hour total entering/exiting activity. It is this value which can be used as a metric to gauge the validity of the 2011 turning movement data. Note that additional turning movement counts were conducted in 2013 as well, as shown in the table below.

Table 2 – Main Lot + Pike Lot + Visitor Lot Traffic Activity, Ithan Avenue Driveways

Source/Date	Α	M Peak Hoւ	ır <sup>2</sup>	PN	/I Peak Hou	r <sup>3</sup>	AM + PM
Source/Date	<u>IN</u>	<u>OUT</u>	TOTAL	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>	<u>TOTAL</u>
09/2011, TM counts (Thursday)	299	7	306	210	236	446	752
02/2013, TM counts (Thursday)	307	13	320	211	220	431	751
10/2011, ATR counts (Thursday)	251	11	262	218	222	440	702
10/2011, ATR counts (Tuesday)	257	17	274	229	213	442	716

Review of the gathered data confirms that the 09/2011 turning movement traffic counts continues to be valid as the basis of trip generation for the project. Raw count data is provided in the appendix of this deliverable.

## VILLANOVA TRIP GENERATION vs PUBLISHED TRIP GENERATION

Similar to the parking demand exercise, the gathered traffic counts can be used to generate a University-specific trip generation rate. This rate can be compared with rates published by the Institute of Transportation Engineers (ITE) in its publication, <u>Trip Generation</u>. <u>Trip Generation</u> is a collection of empirical data which has been combined, reviewed, and statistically analyzed to generate parking rates to be used as a guide in planning new facilities. <u>Trip Generation</u> includes dozens of different land use categories including Land Use Code 550: University/College.

To generate a parking demand *rate*, traffic count data must be correlated with a variable. <u>Trip Generation</u> incorporates the use of two variables for University/College land uses, namely "students" and "employees". The student-based dataset is larger and appears to be the more appropriate variable.

As mentioned earlier, the current student population totals 10,127 students. AM peak hour traffic activity totals 455 trips and PM peak hour traffic totals 756 trips (see Table 1). Villanova-specific trip generation rates derived from school population and comparison with ITE's LUC 550 category rates follows in Table 3 and Table 4:

**Table 3: Trip Generation Rate Derivation** 

TIME PERIOD	TOTAL TRIPS	PARKING SUPPLY FACTOR APPLIED	DIVIDED BY <u>STUDENT BODY</u>
AM Peak Hour	455	1311	0.129
PM Peak Hour	756	2179	0.215

 $<sup>^{2}</sup>$  7:45-8:45 AM from 2011 turning movement counts (8:00 to 9:00 used for ATR data).

<sup>&</sup>lt;sup>3</sup> 5:00-6:00 PM from 2011 turning movement counts (same hour used for ATR data).

**Table 4: Trip Generation Rate Comparison** 

DATA COURSE	TRIP GENERATION RATE (PER STUDENT)				
DATA SOURCE	AM Peak Hour	PM Peak Hour	AM + PM Combined		
Villanova	0.129	0.215	0.344		
ITE	0.170	0.170	0.340		

Villanova-specific rates are reasonably well-correlated with ITE data. Note this exercise does not specifically address the influence of mass transit, though whatever patronage of mass transit currently exists is reflected in collected traffic count data. More importantly, this exercise was merely just that – an exercise – since the project does not include any new students and in fact is expected to result in a reduction of class day peak period traffic to and from the site since currently-commuting juniors and seniors will now be living in the new housing of the site. The project does, however, feature an increase in parking spaces and as previously mentioned and agreed, this study examines the potential traffic associated with that increase in parking spaces by applying site-specific trip generation rates (using parking spaces as a variable) to the proposed increase in parking supply (a total net increase of 19 spaces). The trip generation rates to be used are summarized in Tables 5 through 8:

**Table 5: Project Trip Generation Rate Derivation** 

TIME PERIOD	TOTAL TRIPS	PARKING SPACES <u>SERVED</u>	TRIP GENERATION RATE PER SPACE	
AM Peak Hour	455	1783	0.255	
PM Peak Hour	756	1783	0.424	

Table 6 – Trip Generation Directional Split Derivation

09/2011, TM counts	Į.	AM Peak Hour			PM Peak Hour	
	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>
Volumes	405	50	455	352	404	756
Percentages	89%	11%	100%	47%	53%	100%

**Table 7 – Project Trip Generation Rates** 

Trip Generation Rate (Trips per Parking Space)	P	AM Peak Hou	r	PM Peak Hour		
	<u> </u>	<u>OUT</u>	<u>TOTAL</u>	<u> </u>	<u>OUT</u>	<u>TOTAL</u>
	0.227	0.028	0.255	0.199	0.225	0.424

The project is parking-neutral and traffic impact of the project is principally a complex reassignment of taking current traffic at existing driveways/intersections and redistributing that activity based on proposed changes to various parking supplies and locations, effectively redirecting existing traffic to new driveway locations and affecting turning movement assignment at certain intersections as well.

The process in which "site traffic" assignment was carried out was as follows:

- 1) existing traffic presently found at driveways serving Main Lot and Pike Lot were removed from said driveways and all affected intersections in the study area;
- 2) reassigned traffic based on changes to parking supply at the SAC garage, the Pike Lot, the Main Lot, and the several small lots west of Church Walk were added to the study area; and
- 3) new retail traffic was added to study area.

For step 1) traffic at the Main Lot and Pike Lot was first removed from the driveways leading to those locations and was secondly removed from all affected intersections in the study area based on laws of proportionality for all corresponding feeder movements at each successive upstream intersection.

For step 2), new traffic which corresponds to increases in parking supply was introduced to the study area using the trip generation rates shown in Table 7 (peak hour trips per parking space) on the previous page. The entry/exit percentages along the cordon lines of the study area were based upon a detailed review of existing turning movement volumes at the current driveways serving Main Lot and Pike Lot. This is a revised approach which was prepared in response to the January 2015 Township Traffic Engineer review letter (principally comment #10). More details regarding the derivation of these percentages are shown in the next appendix.

For step 3), new retail traffic was derived from Scenario 1 as outlined in a letter to the Township Traffic Engineer dated 1 December 2014. The use of trip generation from Scenario 1 was requested by the Township Traffic Engineer in a review letter dated 28 January 2015. Copies of each letter are provided in **Appendix A**. A reprint of the trip generation table follows below:

SCENARIO 1: Convenience Mart (ITE LUC 852), Bistro (932), and Bookstore (868)

KSF	ITE LUC	AM PEAK HOUR		PM PEAK HOUR	
		IN	OUT	IN	OUT
5.29	Conv Mart	82	82	90	93
5.40	Bistro	36	29	35	24
9.75	Bookstore	6	6	80	74
	TOTAL	124	117	205	191
	25% NEW	31	29	51	48

The last row is new vehicular traffic assigned to the study area intersections and driveways. The difference between total traffic and the last row are trips attributable to captured (internal walking) trips by students, staff, visitors, etc. as previously endorsed by the Township Traffic Engineer.

New retail traffic was added to the study area using cordon line percentages as explained for step 2. Assignment to specific parking opportunities (WLA, Pike Garage, etc.) was based on these percentages as well logic and proximity of parking (e.g., western-side retail store fronts are more convenient to WLA parking opportunities while eastern-side retail store fronts are more convenient to Pike Garage). Note also the exact locations of stores have not been finalized and limited parking immediately south of LAH buildings is unlikely to be used by retail patrons as these spaces may have

low turnover, though retail trip distribution has been revised to reflect a comment by the Township Traffic Engineer.

Finally, some of the 25% New (vehicular) traffic is possibly passby traffic already existing on Route 30, but no such discount or credit was taken.

**Appendix H** provides added details about each of these three steps, including presentation of multiple trip assignment worksheets.

# **APPENDIX H**

Trip Distribution

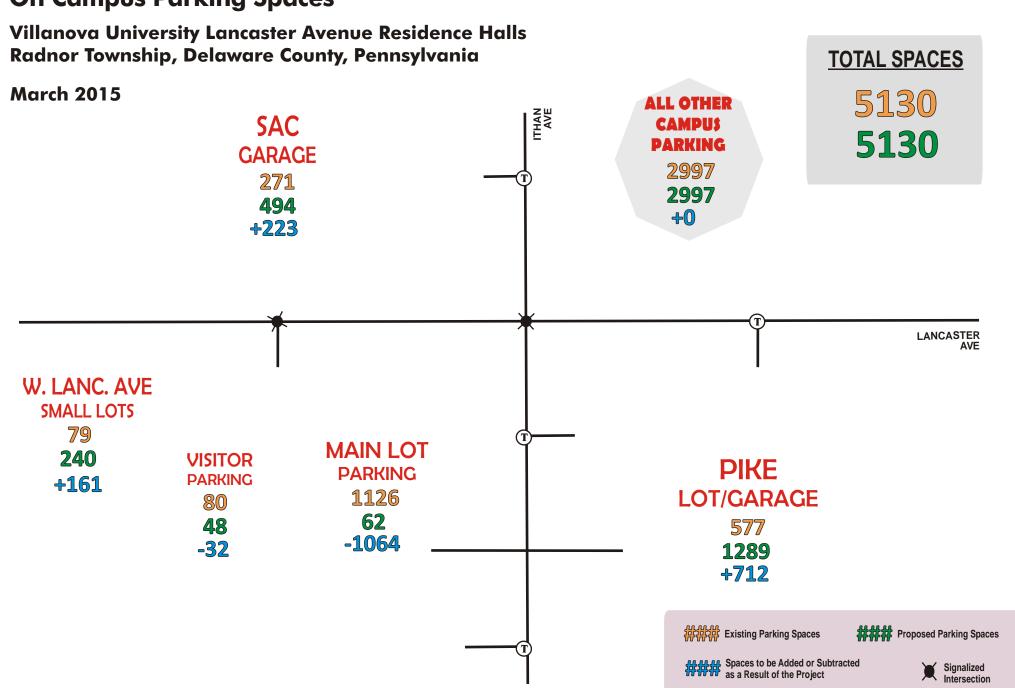
# Trip Distribution Notes

The main exercise of the study is to reassign turning movement traffic volumes to reflect parking supply location changes. After existing Main Lot and Pike Lot traffic is removed, new traffic is added, the mechanism of which was detailed at the end of the introductory text of the last appendix.

Turning movement volumes at subsequent downstream intersections are revised proportionately to the increase or decrease in parking spaces. Likewise, subsequent downstream/upstream 'feeder' turning movements are also modified proportionately, all of which is detailed in the remainder of this appendix.

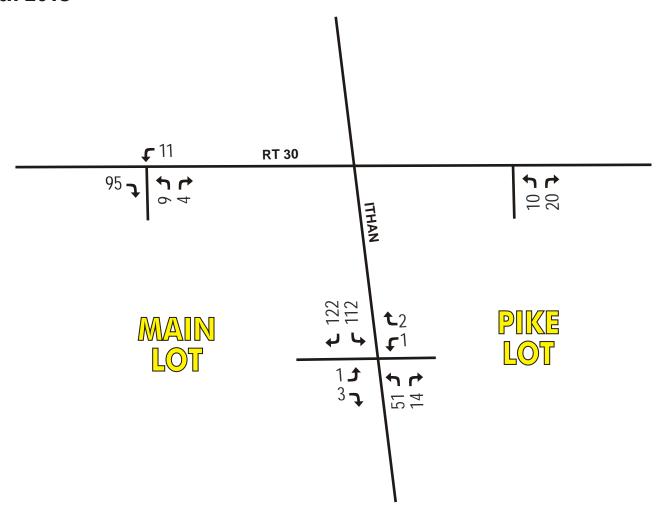
Site traffic was added to 2020 and 2025 *Base* (i.e., No Build) conditions to generate 2020 and 2025 *Projected* (i.e., Build) conditions. Note that *Base* conditions reflect background growth using rates which were developed by the Delaware Valley Regional Planning Commission (DVRPC) as recommended in a letter to PennDOT dated 26 April 2013 and included in **Appendix A**. Background growth spreadsheets are included at the end of this appendix.

# **On Campus Parking Spaces**



### 

#### March 2015

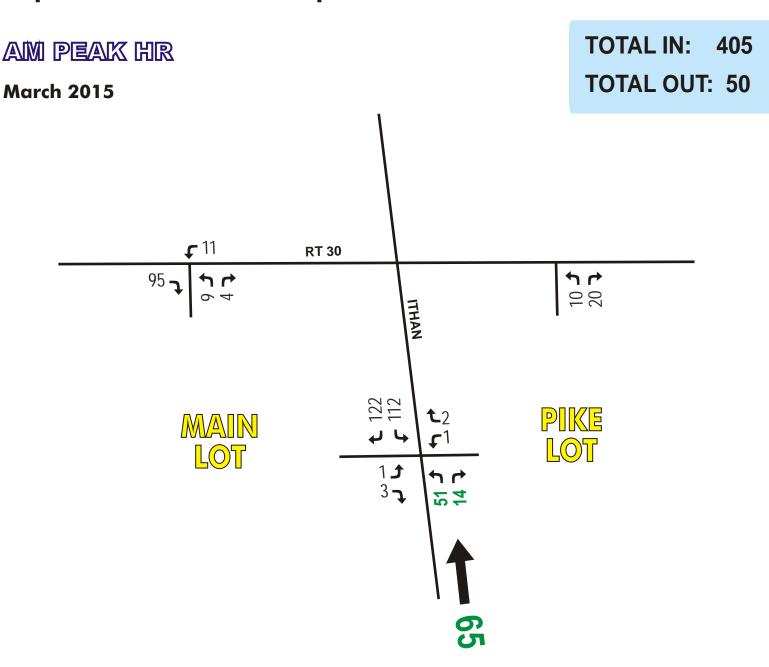


Existing turning movement patterns help predict future overall (N, S, E, W) distribution for future trips.

First, a total of all inbound and outbound trips into the two existing parking areas are determined. Next, total traffic entering and exiting the cordon line immediately surrounding these two areas are calculated.

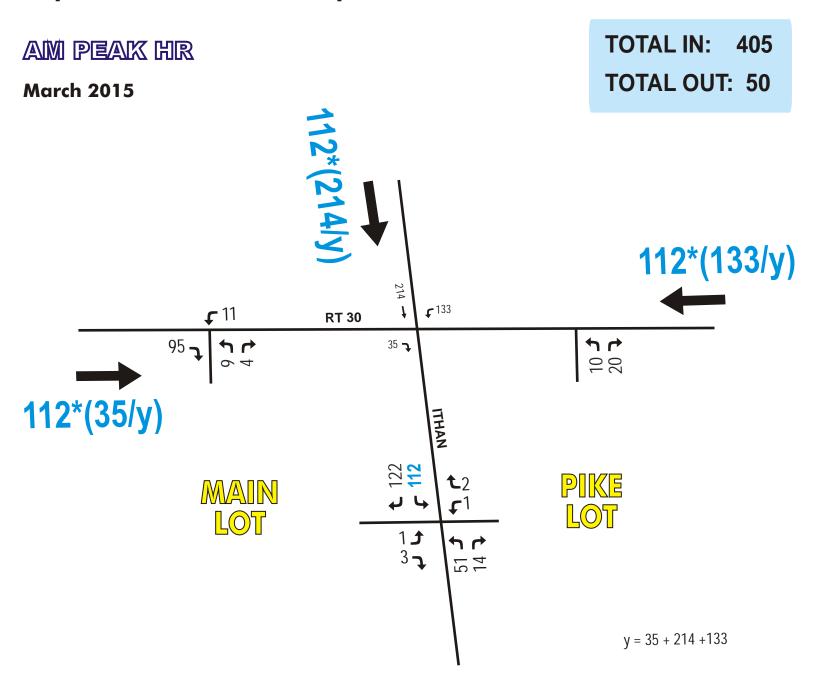
Some trips are straight forward, such as the entering and exiting trips shown on the next page...





Remaining turning movements are completed in the same fashion: using logic and ascribing proportionate likelihood (based on existing turning movement volumes during the AM peak hour at the intersection of Route 30 and Ithan) over multiple feeder legs, one combination of which is shown on the next page...





Remaining turning movements are shown on the next page...

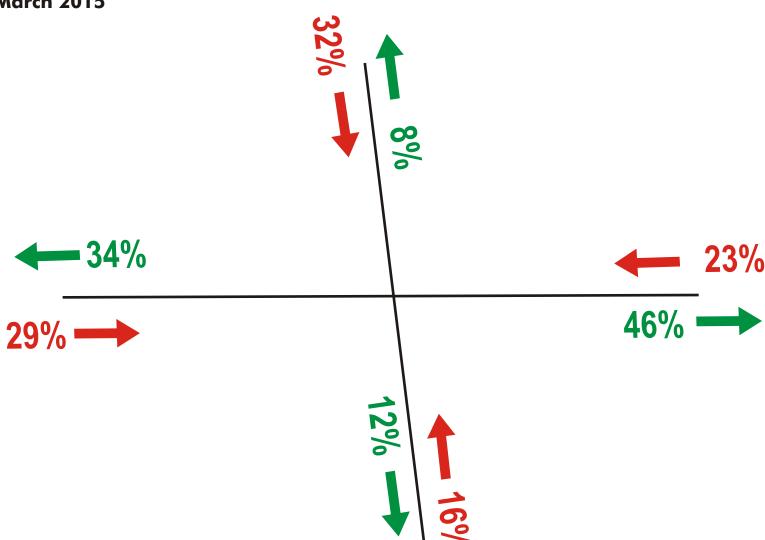


**TOTAL IN:** 405 AM PEAK HR **TOTAL OUT: 50** March 2015 **RT 30** LOT

..and finally .on the next page trips are converted to percentages by dividing by 405 or 50...

### 

#### March 2015



These percentages apply to existing AM peak hour activity.

Note that 55% of inbound trips come from the north on Ithan and the east on Rt 30. A minority of traffic (29%) arrives from the vicinity of the Blue Route. An even smaller minority (16%) arrives from the south on Ithan.

These results are only for the AM peak hour. The entire process must be repeated for PM peak hour activity. The final two pages of which are shown next.

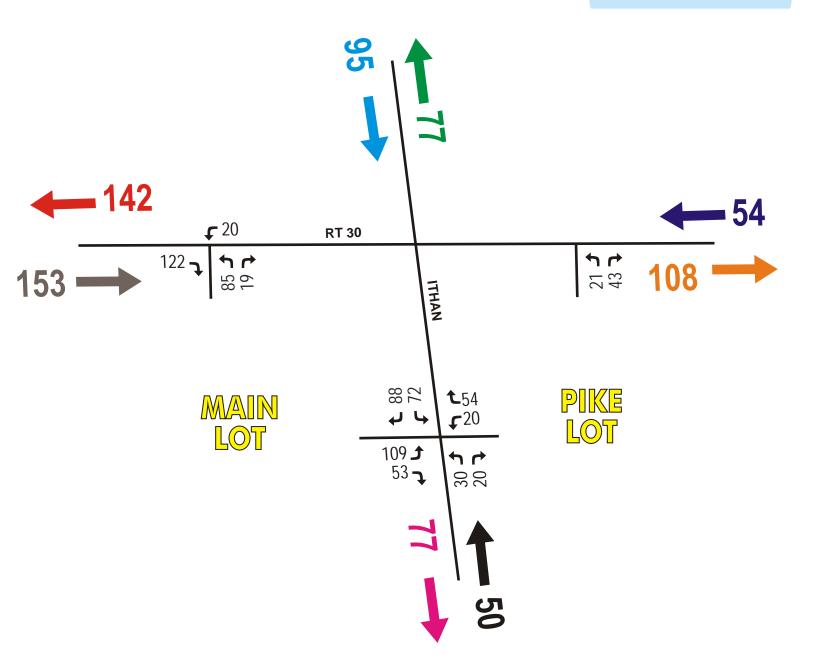


PM PEAK HR

March 2015

**TOTAL IN: 352** 

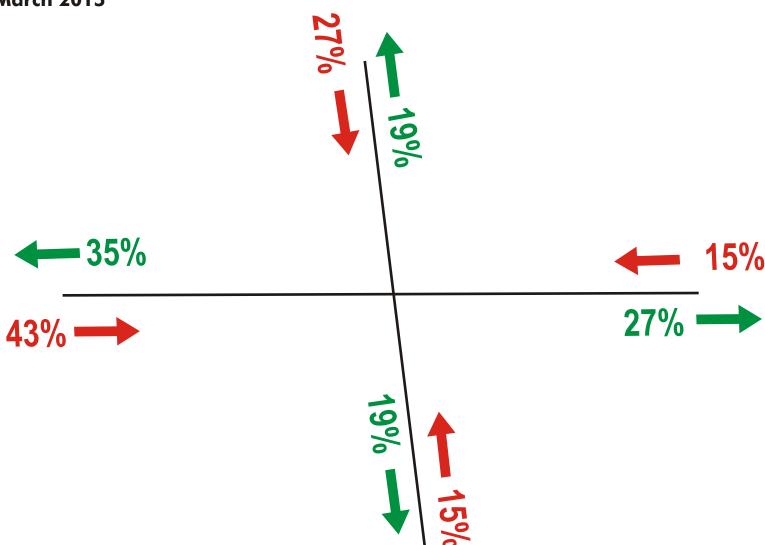
**TOTAL OUT: 404** 





### PM PEAK HR

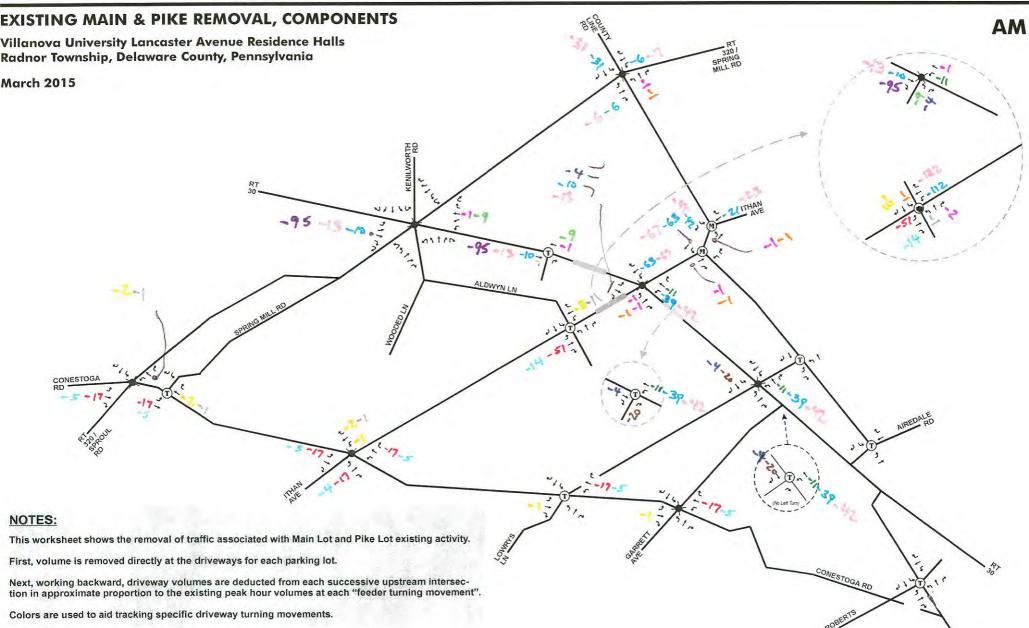
#### March 2015

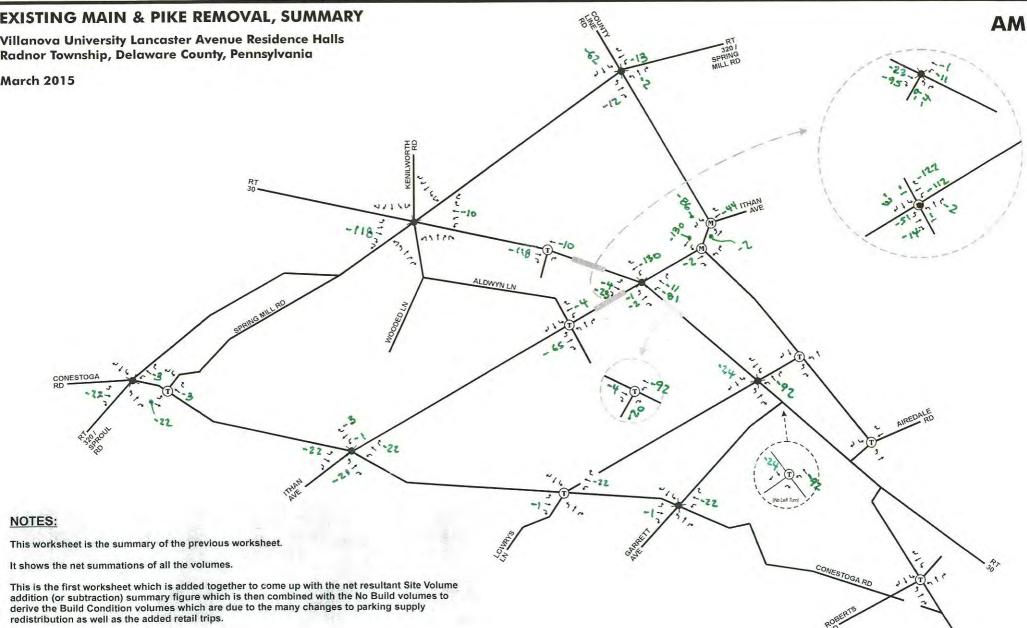


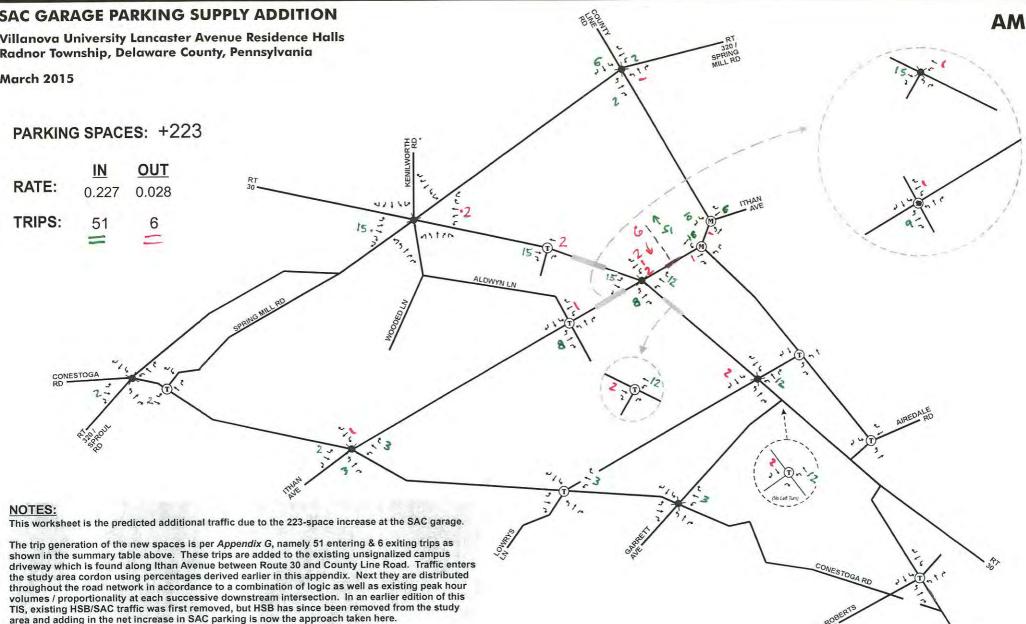
These percentages apply to existing PM peak hour activity.

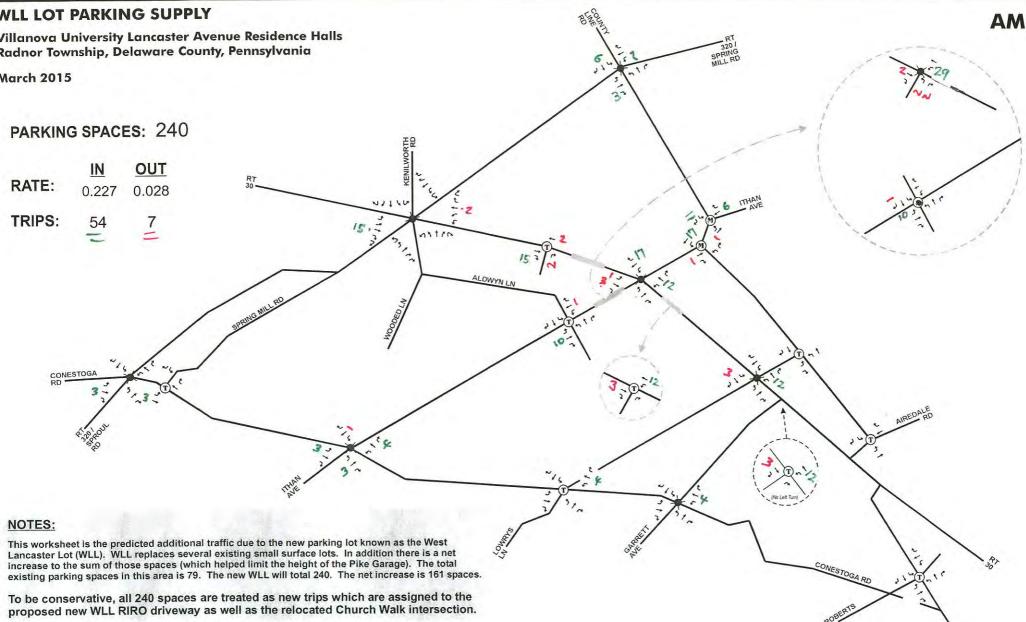
Note that 42% of inbound trips come from the north on Ithan and the east on Rt 30. 43% arrives from the vicinity of the Blue Route. An minority (15%) arrives from the south on Ithan.

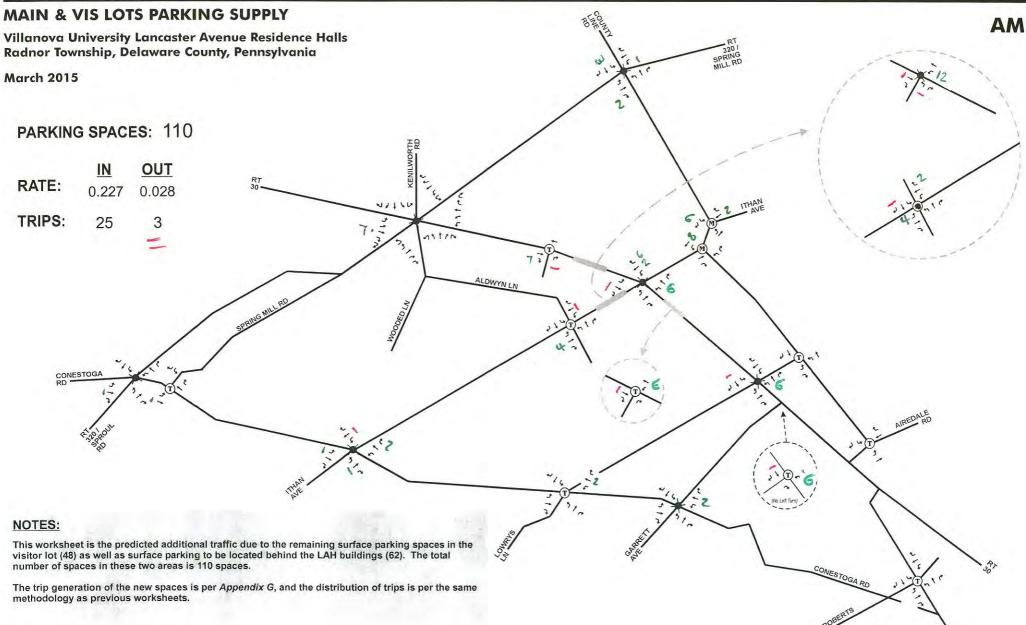
These percentages were used as starting points of the overall model for PM trips which were added to the study area on the WLL, SAC, PIKE, and VISITOR lots on the next several worksheets. The percentages used as starting points AM trips are shown in Figure AM-5.

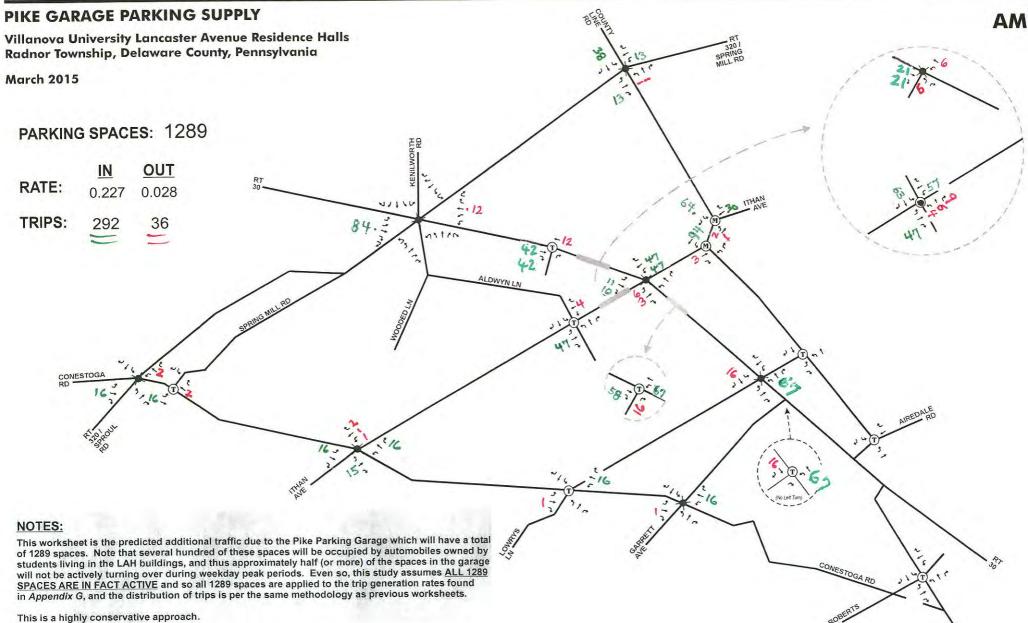


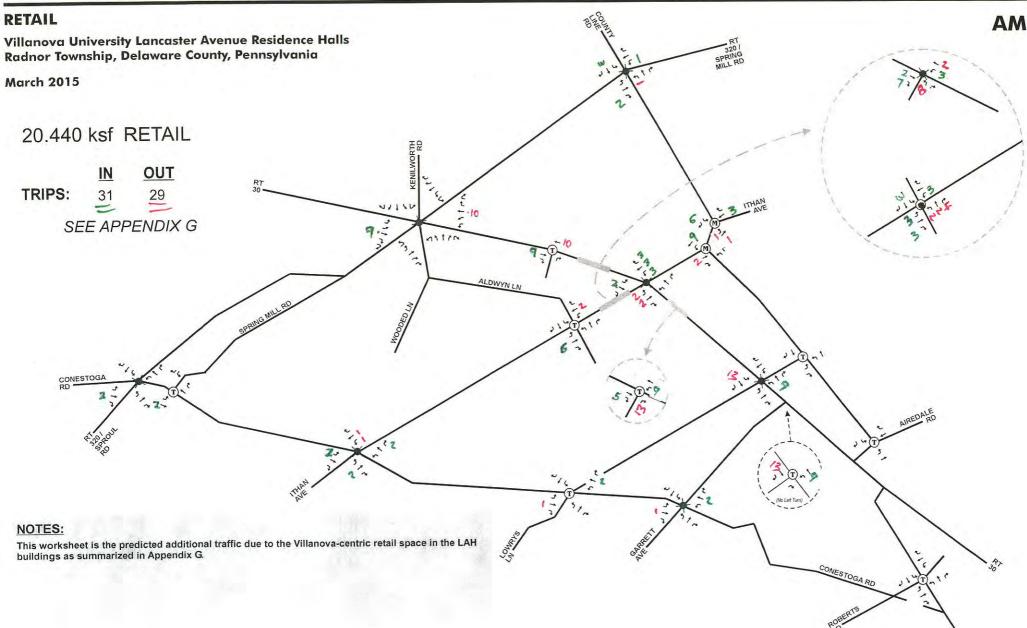


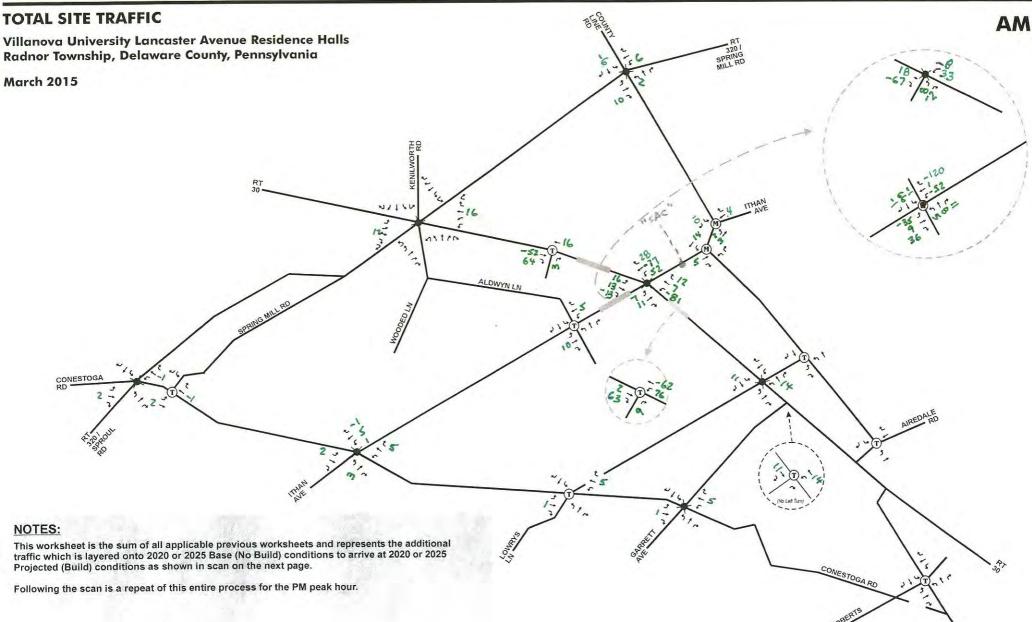


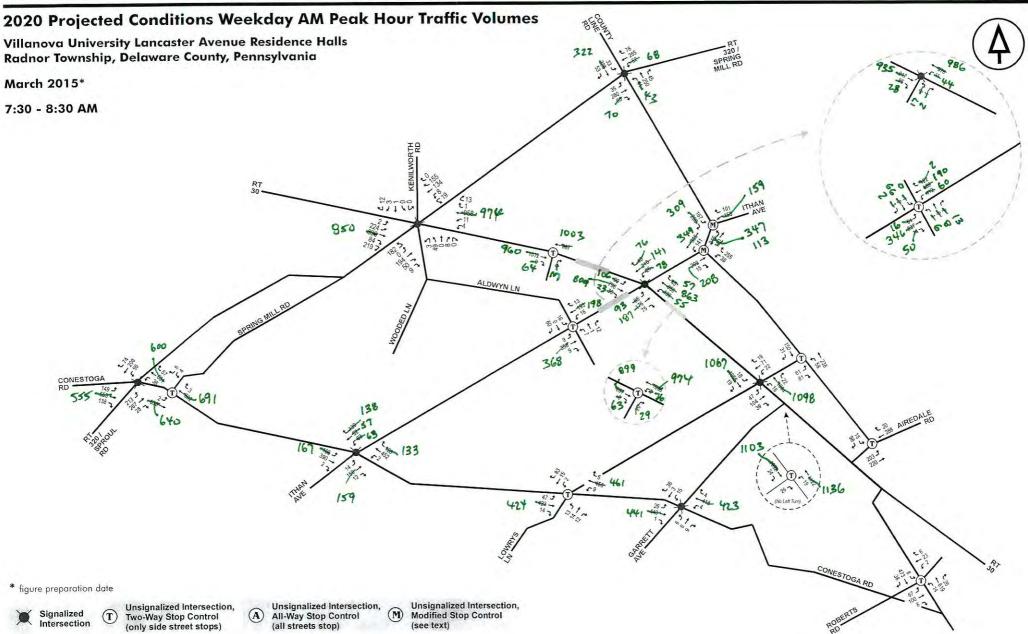


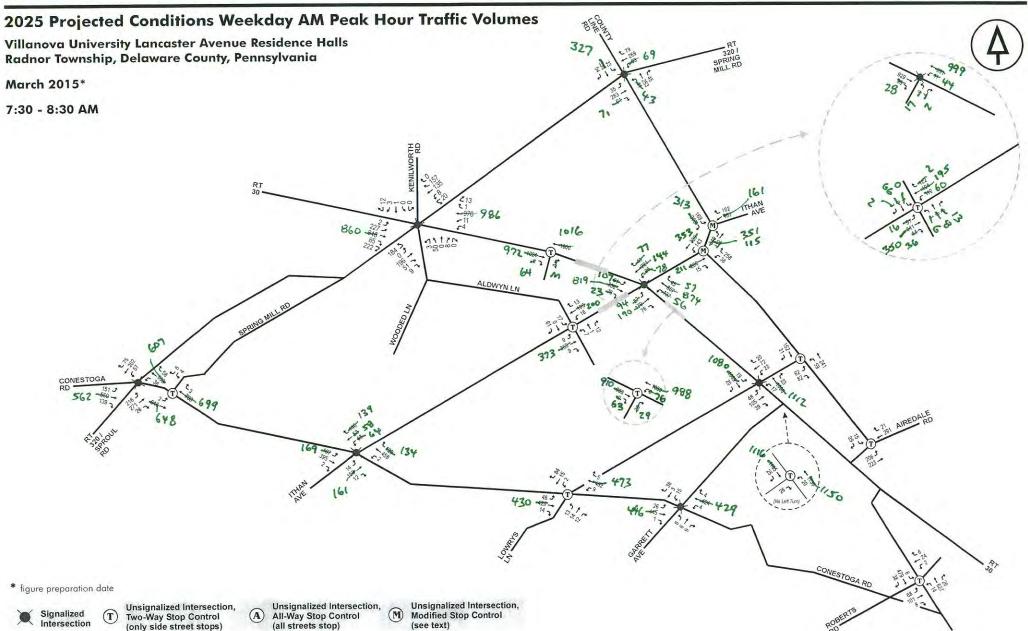


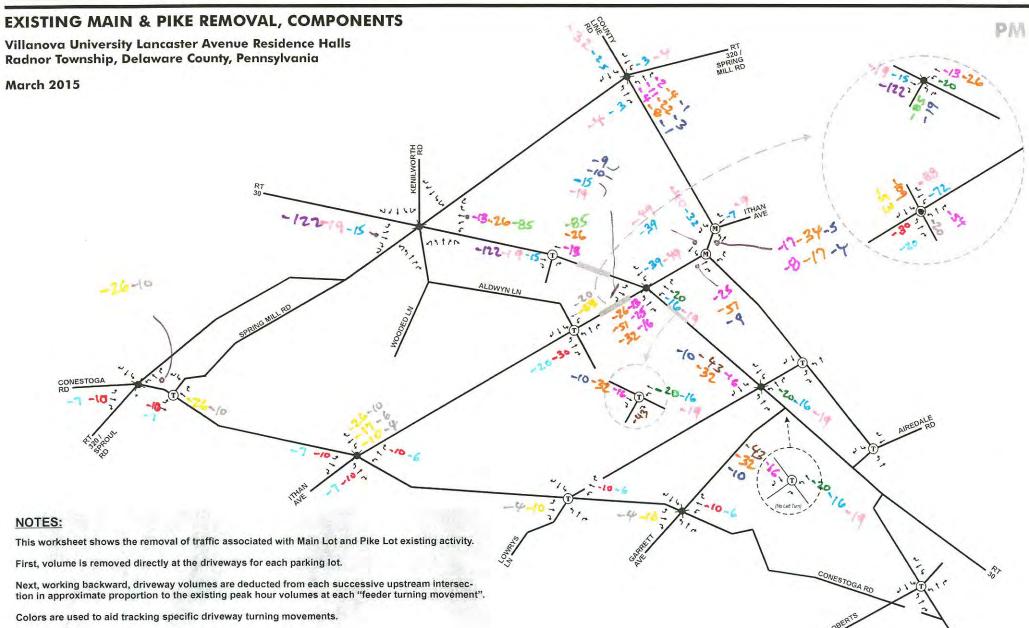


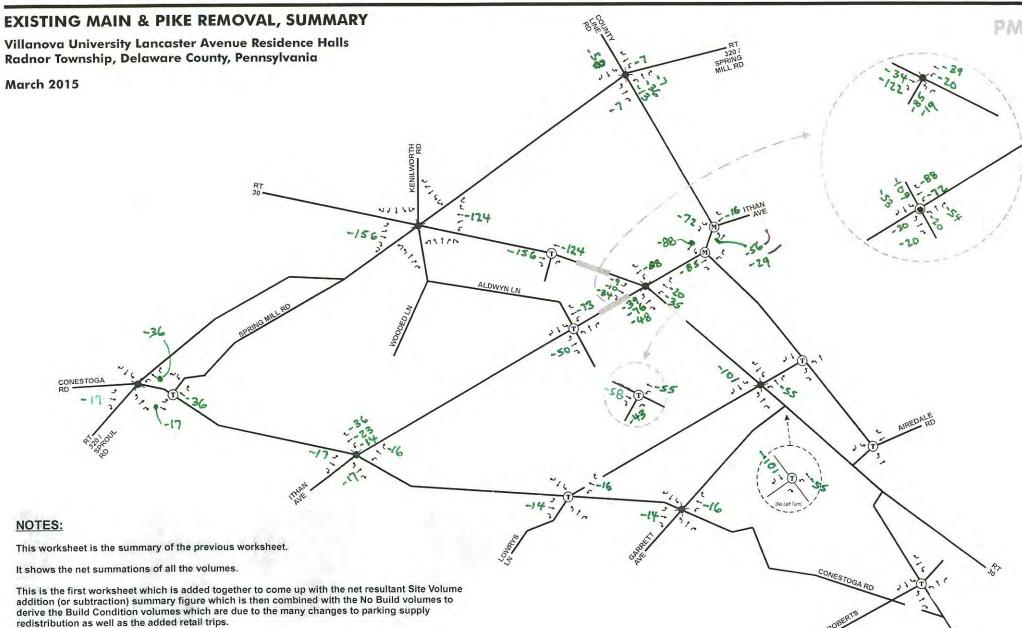


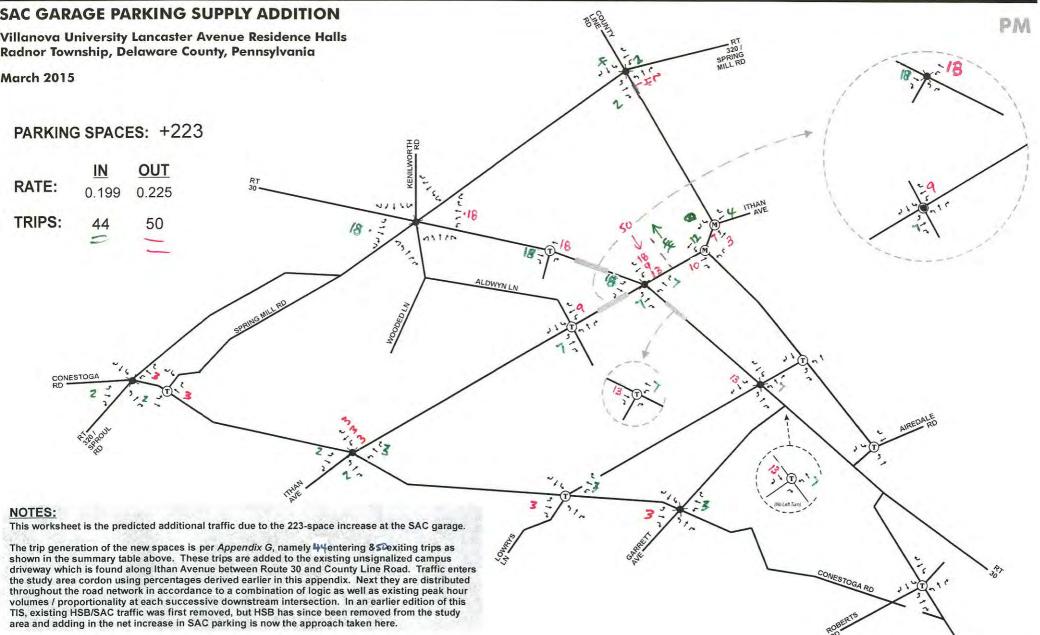


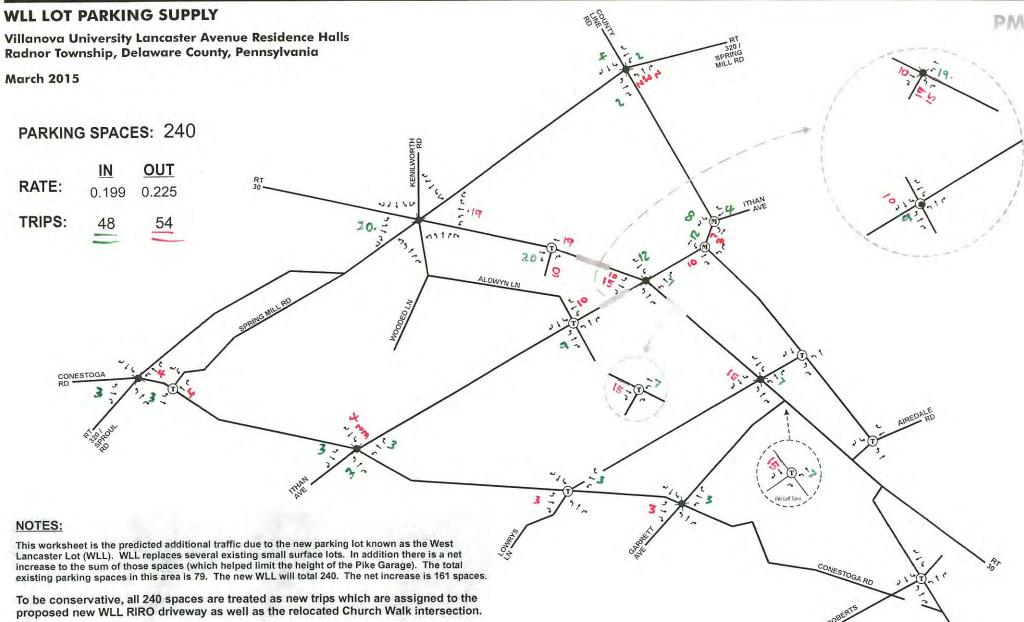


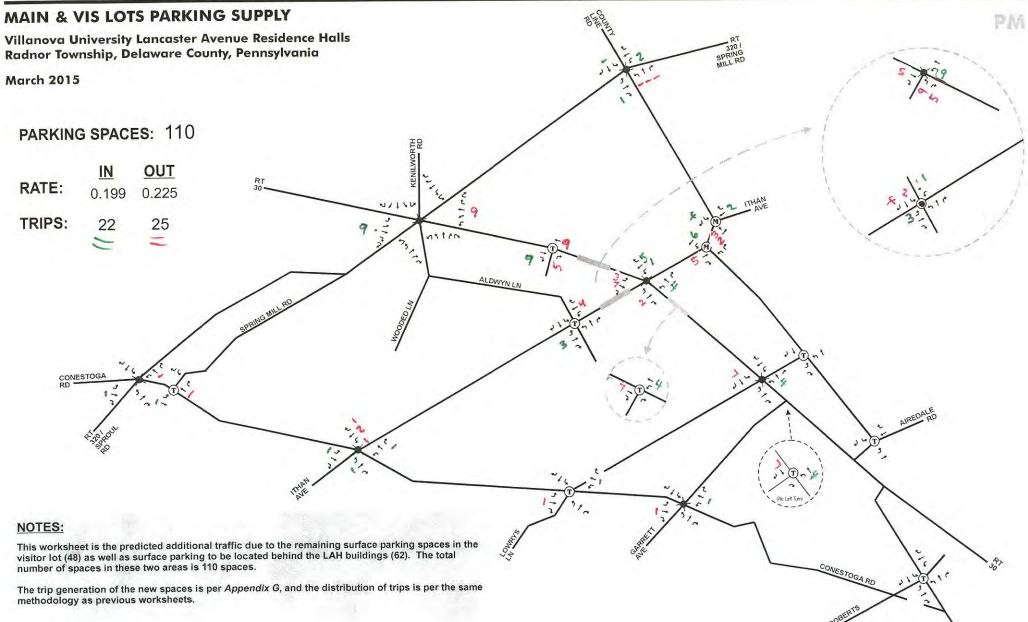


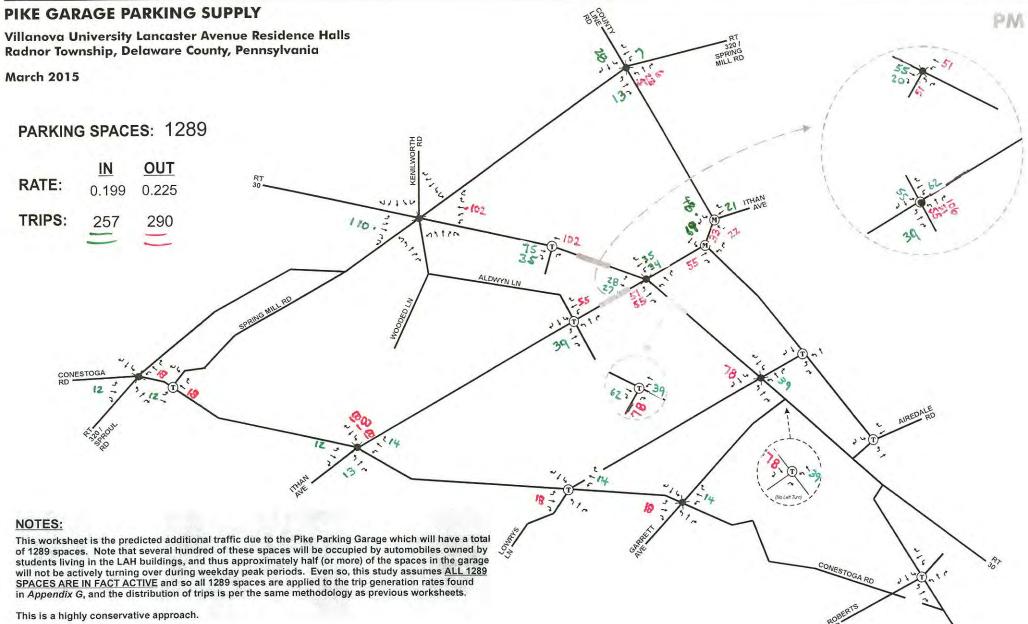






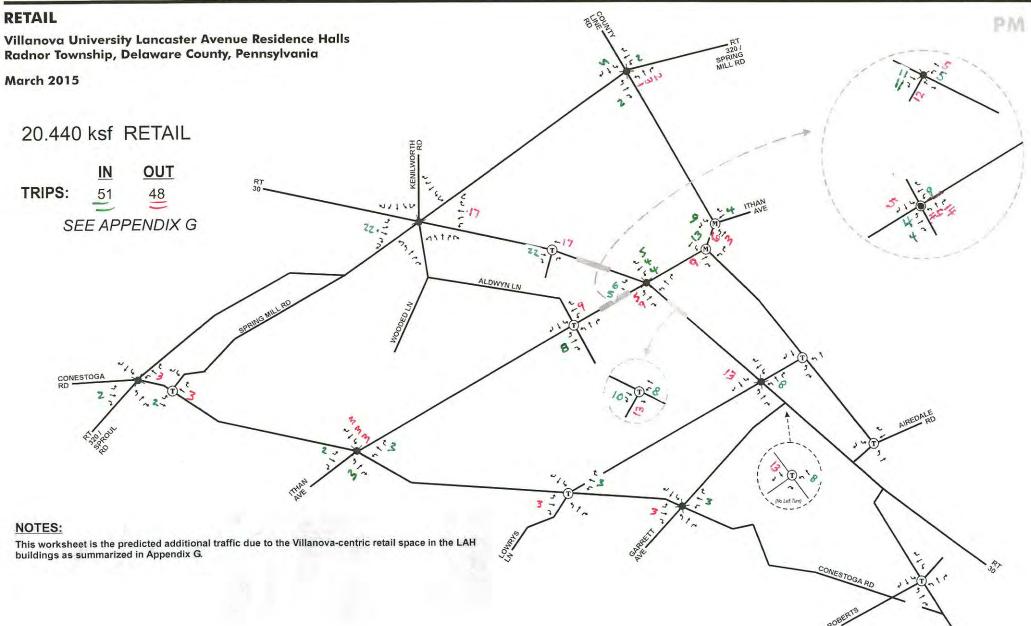


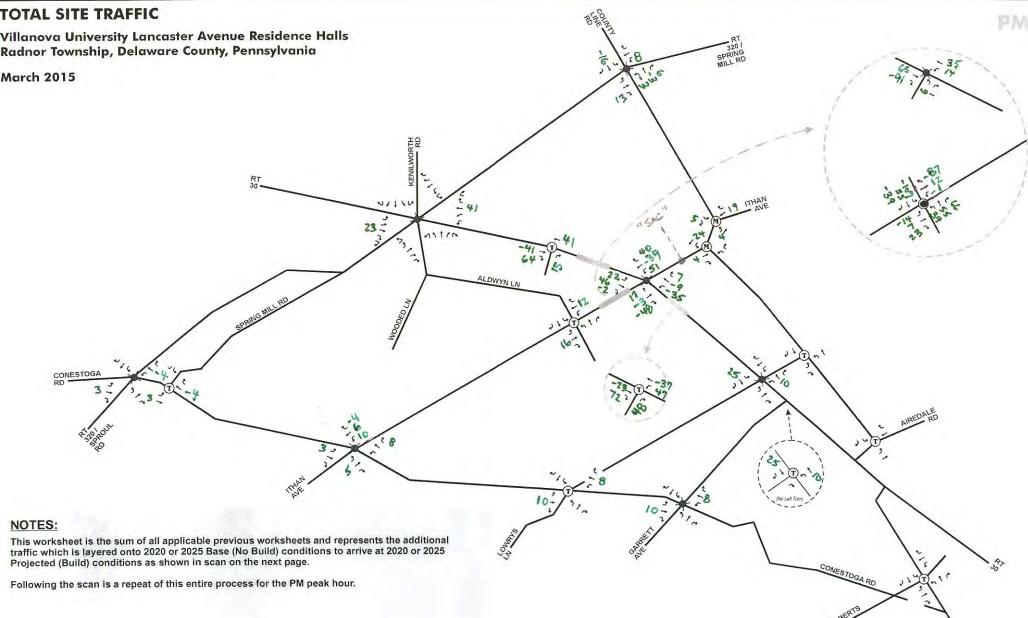


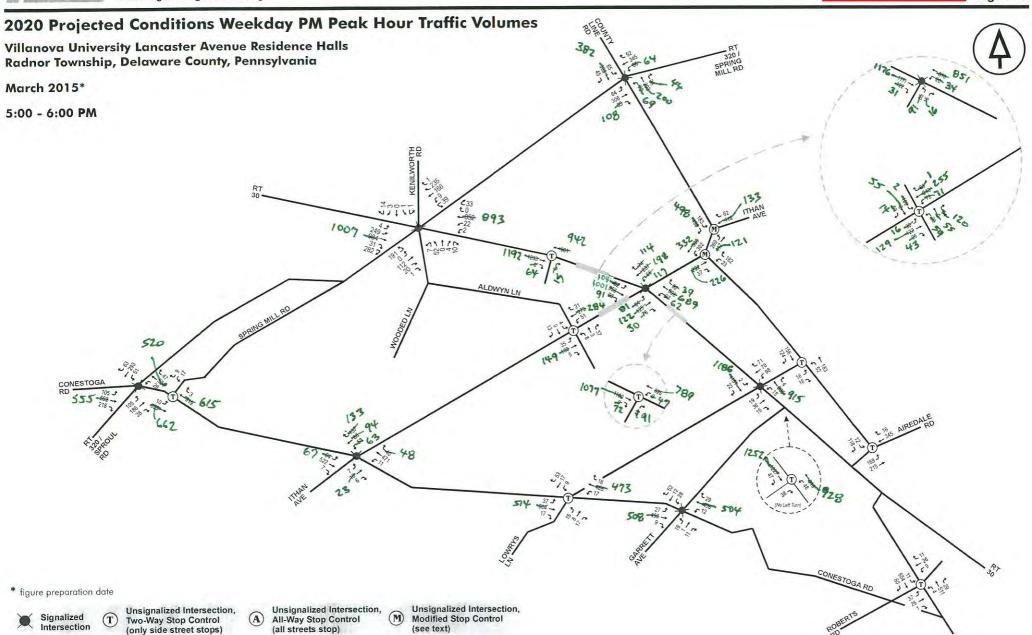


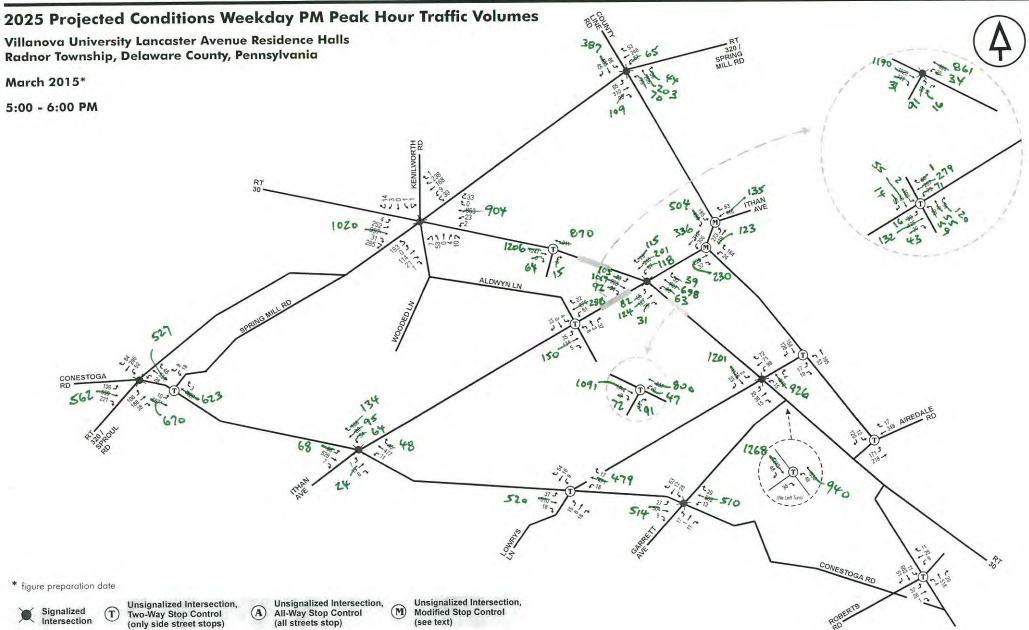
F. Tavani and Associates, Inc.

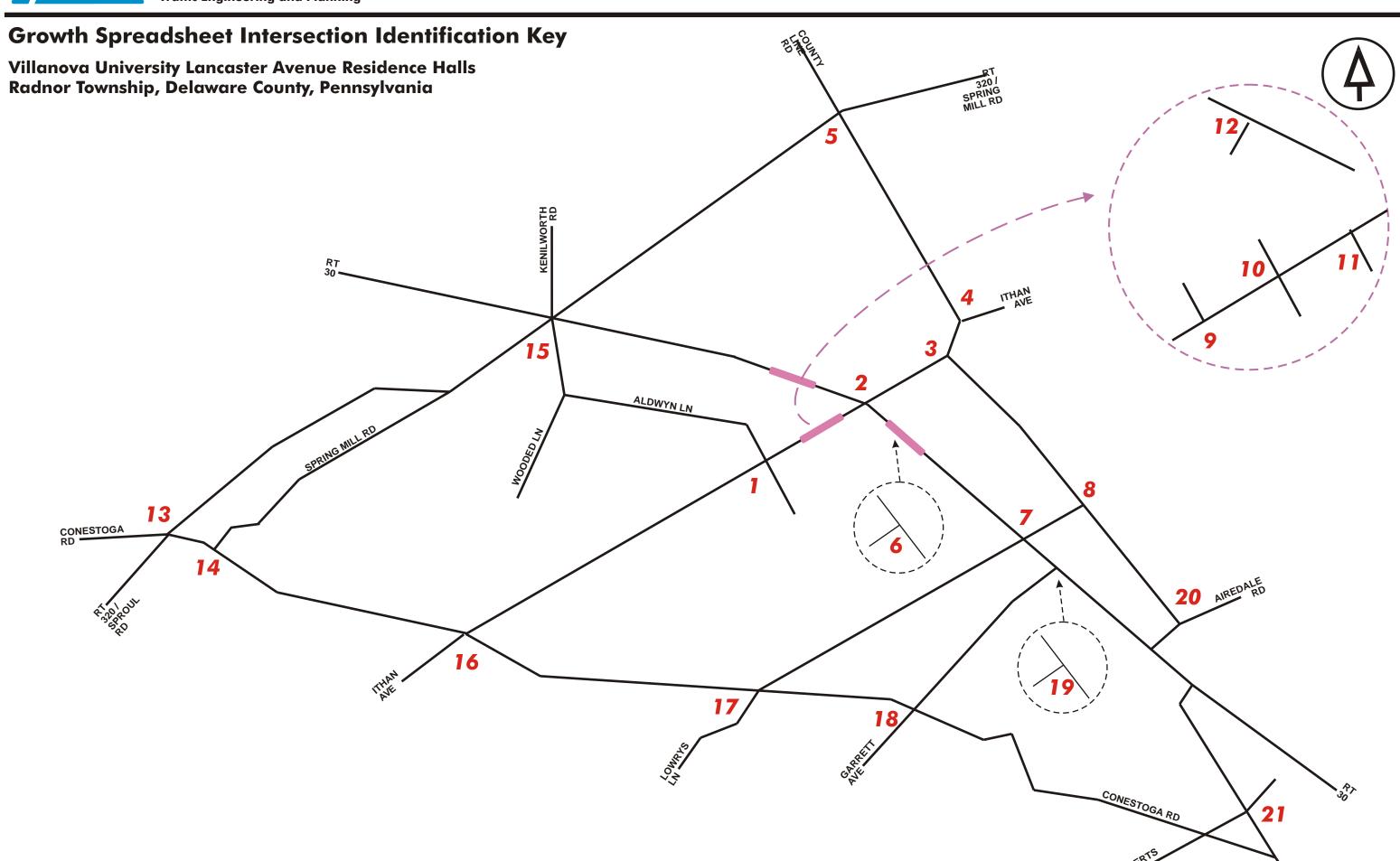
Traffic Engineering and Planning

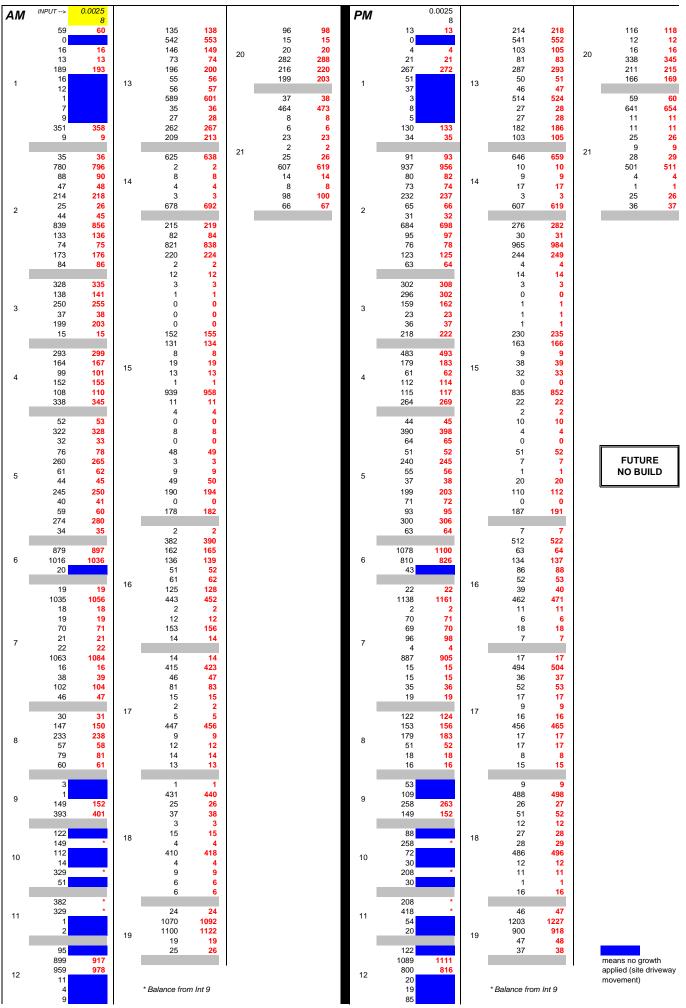


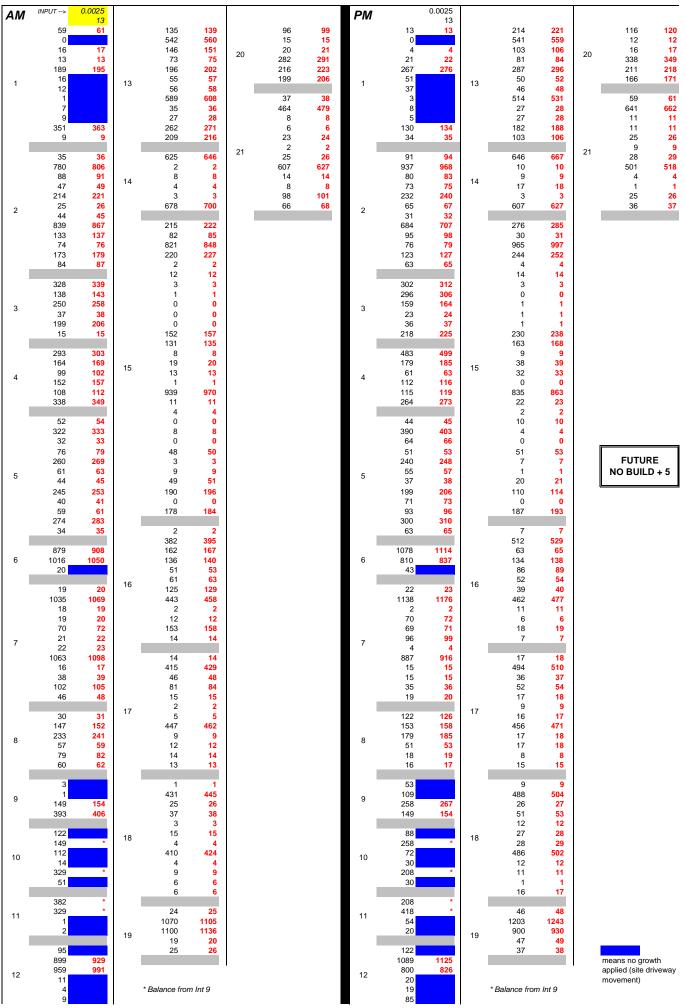












# **APPENDIX I**

Capacity Analyses

### Capacity Analysis Notes

The study area includes a large number of intersections.

Synchro files outputs on the following pages are arranged as follows:

- Existing,
- 2020 Base,
- 2020 Projected,
- 2025 Base, and
- 2025 Projected

AM peak hour worksheets are printed first followed by PM peak hour worksheets.

Note that some signalized intersections are not eligible for HCM 2010 analysis, specifically *Synchro* node numbers 7, 11, and 27. Percentile Delay methodology was instead utilized.

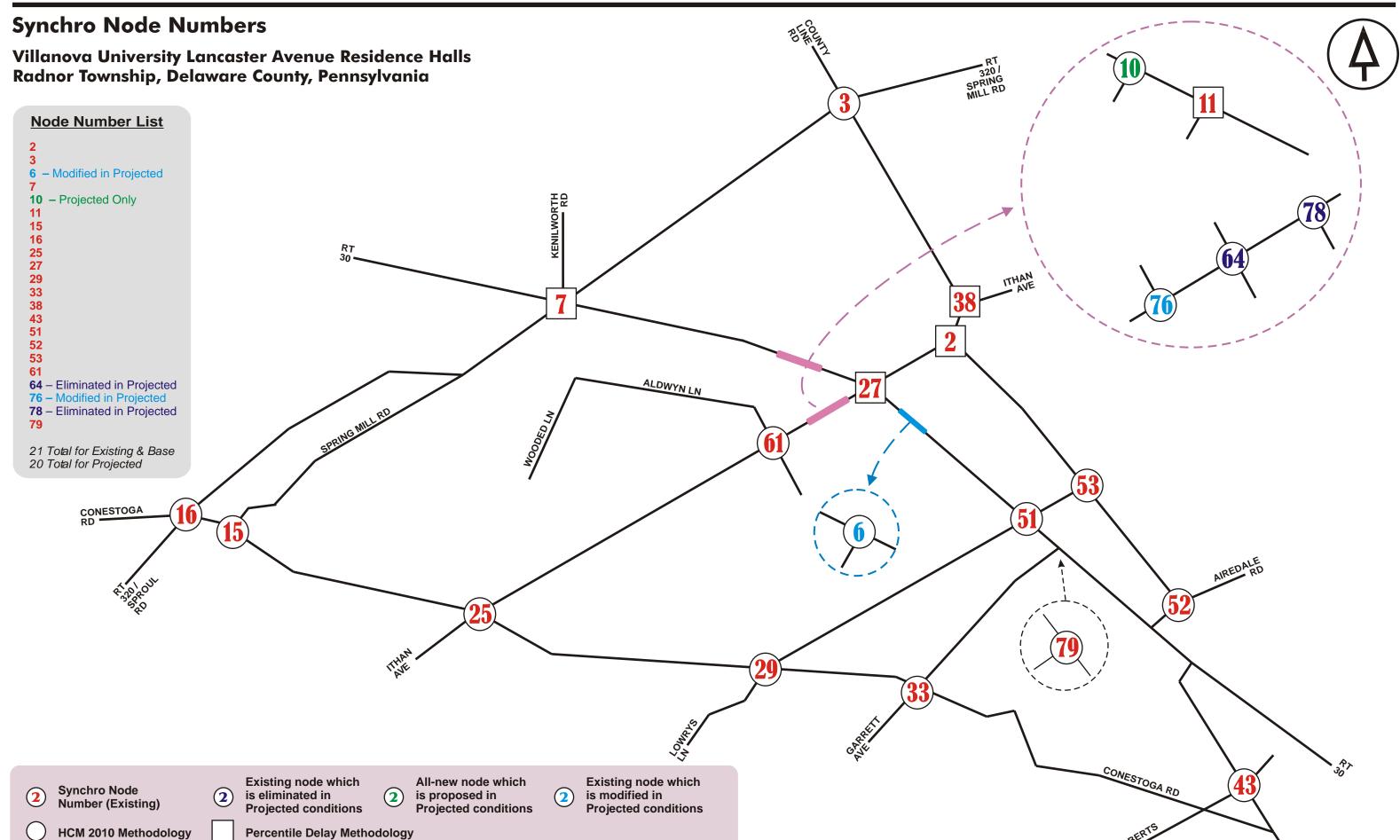
PennDOT concerns over pedestrian impacts regarding adding a new exclusive right-turn lane on the EB approach of Lancaster Avenue at the intersection of Lancaster Avenue and Ithan Avenue have been expressed and thus this alternative is not part of these worksheets.

Note that some <u>un</u>signalized intersections are also not eligible for HCM 2010 analysis, specifically *Synchro* node numbers 2 and 38. Percentile Delay methodology was instead utilized with overall delay assumed to be a midpoint of the LOS letter grade category determined in the results. Changes in delay estimates, if any, between scenarios were based in part on relative ICU ratio changes.

#### Other notes:

- Ped calls were observed at the intersection of Lancaster Avenue and Ithan Avenue (node 27) and found to be at least once per cycle (30/hr) but was increased by 50% in the analysis (45 calls) to account for potential added activity and provide a measure of conservativeness.
- Ped calls at the intersection of Lancaster Avenue and Ithan Avenue were kept constant in all five scenarios to add further conservativeness to the analysis. The likely outcome of the project will be to reduce ped activity at the intersection of Lancaster Avenue and Ithan Avenue which in turn should reduce ped calls, but this potential was ignored.

A Synchro Node Number diagram is provided on the next page.



Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/9/2015

						٠					-	-
ane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations		M.	*		¥C.		#3	<del>*</del>				
Volume (vph)	2	220	821	85	215	4	Ξ	939	<del>-</del>	13	က	48
deal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
ane Width (ft)	10	9	12	=	14	9	12	17	12	12	10	10
Storage Length (#)		300	0,2%	_			75	0/2-	c			
Storage Lengin (ii)		300		- c					0 0			0 0
aner I enoth (ft)		- 22		-			75		>			75
ane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	0.95	1.00	1.00
T.			0.986		0.850			0.998				
-It Protected		0.950					0.950					
Satd. Flow (prot)	0	1497	3058	0	1531	0	1645	3283	0	0	0	0
- It Permitted		0.101					0.258					
Satd. Flow (perm)	0	159	3058	0	1531	0	447	3283	0	0	0	0
Right Turn on Red					Yes					Yes		
Satd. Flow (RTOR)					161			_				
-ink Speed (mph)			32					32				
ink Distance (ft)			277					1609				
ravel Time (s)			11.2					31.3				
Peak Hour Factor	96:0	96:0	96:0	96.0	96:0	96:0	96:0	96.0	96.0	96.0	96.0	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
4dj. Flow (vph)	2	229	822	82	224	4	=	876	<del>-</del>	14	3	20
Shared Lane Traffic (%)												
ane Group Flow (vph)	0	231	940	0	224	0	15	993	0	0	0	0
Enter Blocked Intersection	8	S	8	2	2	2	2	2	8	S S	S	2
ane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Wedian Width(ft)			12					12				
ink Offset(ft)			0					0				
Crosswalk Width(ft)			9					10				
wo way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.06	1.18	1.18
'urning Speed (mph)	15	15		6	6	15	12		6	6	12	15
Number of Detectors	-	-	-		0		-	-			-	_
Detector Template	Left	Left	Thru		Right	Left	Left	Thru			Left	Left
eading Detector (ft)	70	37	37		0	70	37	37			20	20
railing Detector (ft)	0	ç-	-3		0	0	လု	-3			0	0
Detector 1 Position(ft)	0	ကု	5-		0	0	ကု	-3			0	0
Detector 1 Size(ft)	70	40	40		37	20	40	40			20	20
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
urn Type	pm+pt	pm+pt	NA		Perm	Perm	Perm	NA			Perm	Perm
Protected Phases	2	2	2					9				
Permitted Phases	2	2			2	9	9				10	10
Detector Phase	2	2	2		2	9	9	9			10	10
Switch Phase												

Synchro 8 Report Page 1 EX am Baseline EX am

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/9/2015

		-								•		
Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Lane Configurations	4		4				je sa	<b>2</b>				
Volume (vph)	0	00	-	c	12	178	0	190	49	6	19	
Ideal Flow (vphpf)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	12	12	Ξ	=	Ξ	10	10
Grade (%)	1%		-3%					3%				
Storage Length (ft)		0		0			200		0			150
Storage Lanes		0		0			-		0			
Taper Length (ft)					1	,	25			1	1	25
Lane Util. Factor	00.1	90:1	8.	00.1	00.1	00.1	00.1	00:	90:	8.	8.	9.1
<u> </u>	0.982		0.873					0.965				
Fit Protected	0.958						0.950					0.950
Satd. Flow (prot)	1498	0	1418	0	0	0	1604	1575	0	0	0	1573
Flt Permitted	0.743						0.152					0.600
Satd. Flow (perm)	1162	0	1418	0	0	0	257	1575	0	0	0	994
Right Turn on Red					N					S		
Satd. Flow (RTOR)												
Link Speed (mph)	22		25					40				
Link Distance (ff)	492		264					1336				
Travel Time (s)	13.4		16.3					22.8				
Peak Hour Factor	96.0	96.0	96.0	96.0	96.0	96:0	96.0	96:0	96:0	96:0	96:0	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	∞	<del>-</del>	3	12	185	0	198	21	6	70	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	0	16	0	0	0	185	258	0	0	0	28
Enter Blocked Intersection	2	2	8	8	2	2	2	8	2	2	2	2
Lane Alignment	Left	Right	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Median Width(ft)	0		0					12				
Link Offset(ft)	0		0					0				
Crosswalk Width(ft)	10		10					10				
Two way Left Turn Lane												
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.09	1.09	1.14	1.14	1.14	1.12	1.12
Turning Speed (mph)		6		6	6	15	15		6	6	15	_
Number of Detectors	<b>-</b>		<b>-</b>			-	-	-			-	
Detector Template	Thru		Thru			Left	Left	Thru			Left	Left
Leading Detector (ft)	37		37			50	37	37			20	37
Irailing Detector (ft)	υ (		ņ, α			0 0	ς, c	ņ, α			0 0	
Detector   Position(rt)			ņ :			0 8	γ.	γ, :			0 8	
Detector 1 Size(ft)	40		40			20	40	40			20	40
Detector 1 Type	CI+EX		CI+EX			CI+EX	CI+EX	CI+EX			CI+EX	CI+EX
Detector 1 Channel	4											•
Detector 1 Extend (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Detay (s)	0.0		0.0			0:0	0.0	0:0			0:0	0.0
Turn Type	NA C		NA C			pm+pt	pm+pt	¥ °			Ferm	FeIII
Florecied Filases	2		•			2 0	20	0			-	
Permitted Finases	10		0			° °	° °	α			t <	
Science I Hase	2					ר	0	0			-	
Switch Filase Minimum Initial (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0
william middl (3)	9		9			9	9	9			9	5

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/9/2015

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

Lane configurations	Ť.		
Volume (vph)	131	152	
Ideal Flow (vphpl)	1800	1800	
ne Width (ft)	10	10	
Grade (%)	-1%		
Storage Length (ft)		0	
Storage Lanes		0	
Taper Length (ft)			
Lane Util. Factor	1.00	1.00	
Æ	0.919		
Fit Protected			
Satd. Flow (prot)	1522	0	
Fit Permitted			
Satd. Flow (perm)	1522	0	
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)	22		
Link Distance (ft)	3168		
Fravel Time (s)	86.4		
Peak Hour Factor	96:0	96.0	
Heavy Vehicles (%)	2%	5%	
Adj. Flow (vph)	136	158	
Shared Lane Traffic (%)			
Lane Group Flow (vph)	294	0	
Enter Blocked Intersection	No No	No	
Lane Alignment	Left	Right	
Median Width(ft)	12		
Link Offset(ft)	0		
Crosswalk Width(ft)	10		
Two way Left Turn Lane			
Headway Factor	1.12	1.12	
Turning Speed (mph)		6	
Number of Detectors	-		
Detector Template	Thru		
Leading Detector (ft)	37		
Trailing Detector (ft)	ကု		
Detector 1 Position(ft)	ç,		
Detector 1 Size(ft)	40		
Detector 1 Type	CI+Ex		
Detector 1 Channel			
Detector 1 Extend (s)	0.0		
Detector 1 Queue (s)	0.0		
Detector 1 Delay (s)	0.0		
Turn Type	NA		
Protected Phases	4		
Permitted Phases			
Detector Phase	4		
Switch Phase			
Minimum Initial (c)	30		

13.0 32.0 20.0% 26.0 3.0 3.0 3.0 None Synchro 8 Report Page 4 Gap (Gap 11.3 Gap 11.3 Gap 9.5 Gap 0.0 Skip Skip 13.0 32.0 20.0% 26.0 3.0 3.0 Lag 3.0 None Gap Gap 11.3 Gap 9.5 Gap 0.0 w 33.0 Max 33.0 Max 33.0 Max 33.0 Max 417 #713 21.0 39.0 39.0 33.0 33.0 3.0 3.0 6.5 6.5 3.0 None 7.0 20.0 0 33.0 0.28 1.07 92.7 92.7 WBL 21.0 39.0 24.4% 3.0 None 7.0 20.0 0 33.0 0.12 40.8 0.0 40.8 33.0 Max Max 33.0 Max 33.0 Max 33.0 Max 8 33.0 3.0 3.0 0.5 6.5 Lag 21.0 21.0 39.0 24.4% 33.0 3.0 3.0 Lag 3.0 None 7.0 20.0 33.0 Max Max 33.0 Max Max 33.0 Max Max 21.0 21.0 55.0 44.4% 49.0 3.0 3.0 0.5 6.5 3.0 Max 7.0 20.0 0 0.42 0.30 9.7 A 49.0 MaxR 49.0 MaxR 49.0 MaxR 49.0 MaxR 27 21.0 21.0 55.0 34.4% 49.0 3.0 3.0 0.5 3.0 Max 7.0 20.0 49.2 0.42 0.73 35.2 0.0 35.2 D 49.0 MaxR 49.0 MaxR 49.0 MaxR 49.0 49.2 49.2 3.0 None 49.2 0.42 1.31 201.2 0.0 201.2 F 13.0 16.0 10.0% 10.0 Max 10.0 Max 10.0 Max 10.0 Max 10.0 Max 17.2 3.0 3.0 3.0 0.5 6.5 Lead 300 176 0 0 0 0 3.0 None 13.0 16.0 10.0% 10.0 3.0 3.0 10.0 Max Max Max Max Max Max Max Other Cycle Length: 160 Actuated Cycle Length: 117.2 Natural Cycle: 150 Total Lost Time (s)
Leadt.ag
Leadt.ag
Leadt.ag
Leadt.ag optimize?
Verhole Extension (s)
Recall Mode
Walk Time (s)
Pedestrian Calis (#hn)
Act Efft Green (s)
Acutaled Green (s)
Acutaled Green (s)
Acutaled Green (s)
Acutaled Green (s)
Control Delay
Lotal Delay
Lotal Delay
Lotal Delay
Control Delay
Outh Sulfe Green (s)
Soth Wale Green (s)
Oth Wale Green (s)
Oth Wale Green (s)
Oth Wale Term Code
Soth Wale Green (s)
Oth Wale Green (s)
Outh Wale Frem Code
Oueue Length Soth (ft)
I'm Bay Length (t)
Rase Capacity (wh)
Salarvalon Cap Reduch Spillback Cap Reducth Storage Cap Reducth Reduced v/c Ratio lane Group
Minimum Split (s)
Total Split (s)
Total Split (%)
Maximum Green (s)
Maximum Green (s)
All-Red Time (s)
Lost Time (s) ntersection Summary EX am Baseline EX am

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/9/2015

	-	_	+	×	,	_	\	`	•	*	•	+
ane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Minimum Split (s)	13.0		13.0			13.0	13.0	13.0			13.0	13.0
otal Split (s)	32.0		32.0			15.0	15.0	41.0			26.0	26.0
otal Split (%)	20.0%		20.0%			9.4%	9.4%	25.6%			16.3%	16.3%
Maximum Green (s)	26.0		26.0			0.6	0.6	32.0			20.0	20.0
Yellow Time (s)	3.0		3.0			4.0	4.0	4.0			4.0	4.0
All-Red Time (s)	3.0		3.0			2.0	2.0	2.0			2.0	2.0
ost Time Adjust (s)	0.5		0.5				0.5	0.5				0.5
otal Lost Time (s)	6.5		6.5				6.5	6.5				6.5
-ead/Lag	Lag		Lead			Lead	Lead				Lag	Lag
-ead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0
Recall Mode	None		None			None	None	None			None	None
Nalk Time (s)								7.0				
Flash Dont Walk (s)								25.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)	11.1		9.9				35.0	35.0				19.8
Actuated g/C Ratio	0.09		90.0				0.30	0.30				0.17
//c Ratio	0.55		0.20				1.05	0.55				0.17
Control Delay	72.7		63.8				120.7	42.9				50.2
Queue Delay	0.0		0.0				0.0	0.0				0.0
otal Delay	72.7		63.8				120.7	45.9				50.2
SO	ш		ш				ш	۵				٥
Approach Delay	72.7		63.8					75.4				
Approach LOS	ш		ш					ш				
Oth %ile Green (s)	17.8		9.3			0.6	0.6	35.0			20.0	20.0
90th %ile Term Code	Gap		Gap			Max	Max	Max			Max	Max
'0th %ile Green (s)	14.3		7.9			0.6	0.6	32.0			20.0	20.0
'0th %ile Term Code	Gap		Gap			Max	Max	Hold			Max	Max
50th %ile Green (s)	11.3		0.0			0.6	0.6	35.0			20.0	20.0
50th %ile Term Code	Gap		Skip			Max	Max	Hold			Max	Max
30th %ile Green (s)	9.5		0.0			0.6	0.6	32.0			20.0	20.0
30th %ile Term Code	Gap		Skip			Max	Max	Hold			Max	Max
0th %ile Green (s)	0.0		0.0			0.6	0.6	35.0			20.0	20.0
0th %ile Term Code	Skip		Skip			Max	Max	Hold			Max	Max
Queue Length 50th (ft)	43		Ξ				~110	156				18
Queue Length 95th (ft)	86		36				#312	301				54
nternal Link Dist (ft)	412		517					1256				
urn Bay Length (ft)							200					150
Base Capacity (vph)	256		313				176	470				167
Starvation Cap Reductn	0		0				0	0				0
Spillback Cap Reductn	0		0				0	0				0
Storage Cap Reductn	0		0				0	0				0
Padilical v/r Ratio	VC 0		0.05				1 05	0.55				0 17

Synchro 8 Report Page 5	
EX am Baseline EX am	

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

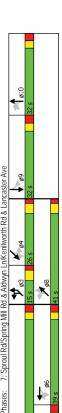
3/9/2015

Lane Group	2001	SWK
Minimum Split (s)	13.0	
Total Split (s)	26.0	
Total Split (%)	16.3%	
Maximum Green (s)	20.0	
Yellow Time (s)	4.0	
All-Red Time (s)	2.0	
Lost Time Adjust (s)	0.5	
Total Lost Time (s)	6.5	
Lead/Lag	Lag	
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)	19.8	
Actuated g/C Ratio	0.17	
v/c Ratio	1.15	
Control Delay	146.3	
Queue Delay	0.0	
Total Delay	146.3	
SOT	ഥ	
Approach Delay	137.9	
Approach LOS	ഥ	
90th %ile Green (s)	20.0	
90th %ile Term Code	Max	
70th %ile Green (s)	20.0	
70th %ile Term Code	Max	
50th %ile Green (s)	20.0	
50th %ile Term Code	Max	
30th %ile Green (s)	20.0	
30th %ile Term Code	Max	
10th %ile Green (s)	20.0	
10th %ile Term Code	Max	
Queue Length 50th (ft)	~248	
Queue Length 95th (ft)	#521	
Internal Link Dist (ft)	3088	
Turn Bay Length (ft)		
Base Capacity (vph)	256	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	1.15	

Lanes, Volumes, Timings
7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave Control Type: Actuated-Uncoordinated

colling Type: Actuated-Official different	
Maximum v/c Ratio: 1.31	
Intersection Signal Delay: 79.4	Intersection LOS: E
Intersection Capacity Utilization 105.6%	ICU Level of Service G
Analysis Period (min) 15	
90th %ile Actuated Cycle: 135.1	
70th %ile Actuated Cycle: 130.2	
50th %ile Actuated Cycle: 113.3	
30th %ile Actuated Cycle: 111.5	
10th %ile Actuated Cycle: 96	
<ul> <li>Volume exceeds capacity, queue is theoretically infinite.</li> </ul>	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	ger.
Queue shown is maximum after two cycles.	

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave



Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

3/9/2015

3/9/2015

	EB	FDK	WBL	WBT	NBL	NBR	
Lane Configurations	<b>*</b>			₩.	Þ		
Volume (vph)	866	95	11	959	6	4	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Width (ft)	1	=	1	=	12	12	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00	
냪	0.986				0.961		
Flt Protected				0.999	996.0		
Satd. Flow (prot)	3196	0	0	3238	1638	0	
Flt Permitted				0.942	996.0		
Satd. Flow (perm)	3196	0	0	3053	1638	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	22				4		
Link Speed (mph)	32			32	22		
Link Distance (ft)	1609			1285	319		
Doak Hour Eactor	000	000	000	0.62	00.0	000	
Adi Flow (vph)	07.7	103	12	1042	10	7.0	
Shared Lane Traffic (%)		2	7_	710	2	F	
Lane Group Flow (vnh)	1080	C	C	1054	14	c	
Enter Blocked Intersection	2	S	N S	N S	- S	S 8	
I ane Alignment	e e	Right	e de	e E E	e de	Right	
Median Width(ft)	12	i i	į	12	12	ĥ	
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane							
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07	
Turning Speed (mph)		6	15		15	6	
Number of Detectors	<del>-</del>		<del>-</del>	-	-		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (ft)	37		20	37	37		
Trailing Detector (ft)	ς'n		0	ς'n	ç,		
Detector 1 Position(ft)	ကု		0	ကု	ကု		
Detector 1 Size(ft)	40		50	40	40		
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel	0		d	0	d		
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Turn Tyne	NA N		Perm	NA N	Prot		
Protected Phases	2			9	00		
Permitted Phases			9				
Detector Phase	2		9	9	00		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	4.0		
Minimum Split (s)	21.0		21.0	21.0	28.0		
Total Split (s)	29.0		29.0	29.0	31.0		
Total Split (%)	48.3%		48.3%	48.3%	51.7%		
Maximum Green (s)	24.0		24.0	24.0	26.0		
Yellow Time (s)	3.0		3.0	3.0	3.0		

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EX am Baseline EX am

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave Analysis Period (min) 15

Lane Group All-Red Time (s) Lost Time Adjust (s) Total Lost Time (s)	EBT	EBR WBL	WBT	NBL	C C
All-Red Time (s)  ost Time Adjust (s)  fotal Lost Time (s)	000				NBR
ost Time Adjust (s)  Total Lost Time (s)	2.0	2.0		2.0	
Fotal Lost Time (s)	0.5		0.5	0.5	
	5.5		5.5	5.5	
Lead/Lag					
ead-Lag Optimize?	d			0	
Vehicle Extension (s)	3.0	3.0		3.0	
Recall Mode	C-Max	C-Max	ن	None	
Nalk Time (s)	10.0	10.0	Ì	7.0	
-lash Dont Walk (s)	0.0	0.0	0	16.0	
Pedestrian Calls (#/hr)	0	0		0	
Act Effct Green (s)	29.5		26.5	9.6	
Actuated g/C Ratio	0.94		0.94	0.09	
//c Ratio	0.36		0.37	0.00	
Control Delay	1.5		3.7	22.5	
Queue Delay	0.0		0.0	0.0	
Fotal Delay	1.5		3.7	22.5	
TOS	A		⋖	ပ	
Approach Delay	1.5		3.7	22.5	
Approach LOS	A			O	
90th %ile Green (s)	42.8	42.8		7.2	
90th %ile Term Code	Coord	Coord	Coord	Gap	
70th %ile Green (s)	55.0	55.0		0.0	
70th %ile Term Code	Coord	Coord	O	Skip	
50th %ile Green (s)	22.0	55.0		0.0	
50th %ile Term Code	Coord	Coord	O	Skip	
30th %ile Green (s)	22.0	22.0		0.0	
30th %ile Term Code	Coord	Coord	O	Skip	
10th %ile Green (s)	55.0	55.0		0.0	
Oth %ile Term Code	Coord	Coord	00 C	Skip	
Queue Length 50th (ft)	0		0	3	
Queue Length 95th (ft)	16		348	9	
nternal Link Dist (ft)	1529		1205	239	
Furn Bay Length (ft)					
Base Capacity (vph)	3009		2873	869	
Starvation Cap Reductn	0		0	0	
Spillback Cap Reductn	0		0	0	
Storage Cap Reductn	0		0	0	
Reduced v/c Ratio	0.36		0.37	0.02	
ntersection Summary					
Area Type:	Other				
Cycle Length: 60					
Actuated Cycle Length; 60 Officer, 65 (00%) Deferenced to whose 2-68T and 6-MBTL Start of Vollam	) cod to phace .	OFET and 6:WE	TI Ctart o	of Vollow	
Jilset. 33 (92 %), Releieli Vatural Cycle: 60	ced to pridate	Z.E.D.I dilu 0.WE	JIE, SIGILO	MOILLE	
Control Type: Actuated-Coordinated	oordinated				
Maximum v/c Ratio: 0.37					
ntersection Signal Delay: 2.7	2.7		=	Intersection LOS: A	1LOS: A
ntersection Canacity I Hilization 48 7%	zation 48 7%			ماميمااا	CITT avail of Sanica A

		EXam Baselina		

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EX am Baseline EX am

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	₩		×	₩₽		*	£\$		F	2	
Volume (vph)	88	780	32	133	839	44	84	173	74	25	214	47
deal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
.ane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		%0			3%			1%			%0	
Storage Length (ft)	140		0	20		0	105		0	99		0
Storage Lanes	<del>-</del>		0	-		0	-		0	<del>-</del>		0
Faper Length (ft)	22			22			25			25		
ane 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
	000	0.994		010	0.992		0 10 0	0.955		0	0.9/3	
	0.950	0000	•	0.950	0	c	0.950	0	•	0.950	1	•
rot)	1520	3022	0	1497	2970	0	1512	1520	0	1520	1557	0
	0.180	0000	4	0.18/	0	•	0.332	0	•	0.363		•
Satd. Flow (perm)	887	30.22	0 .	242	0/67	0 .	274	1520	0 ;	281	122/	0 ;
Kignt Turn on Ked			2			2			ON No			0N
Sata. Flow (KTOK)		35			36			30			100	
ink Distance (#)		1001			30.00			10.2			670	
Constance (ii)		25.0			20.5			201			37.5	
Havel IIIIe (s)	800	23.0	700	000	0.70	700	V 0	0.0	V 0	700	20.0	000
Jean Hour Factor	D. 94	D. 74	0.94	0.74 E0/	0.94 E0/	0.74 E0/	0.94 E0/	0.94 E0/	0.94 E0/	0.94 E0/	0.94 E0/	P.0.
avy velicies (70)	000	0.00	0,0	141	000	0,0	000	10.4	0,0	0,0	330	8 2
Ruj. Filow (vpir) Shared Lane Traffic (%)	44	000	2	+	043	4	60	104	61	17	077	00
ane Group Flow (vph)	94	867	С	141	940	C	68	263	C	77	278	0
Enter Blocked Intersection	8	No.	N <sub>o</sub>	8	2	8	2	2	8	2	No.	8
ane Alignment	H <sub>o</sub>	H <sub>O</sub>	Right	H <sub>d</sub>	- Hell	Right	H <sub>O</sub>	le l	Right	le le	He H	Right
Median Width(ft)	Š	10	5	5	10	5		10	65.	i	10	n
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
wo way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
'urning Speed (mph)	15		6	15		6	15		6	15		6
Number of Detectors	-	0		-	0		-	-		-	-	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
eading Detector (ft)	37	0		37	0		37	37		37	37	
railing Detector (ft)	ကု	0		ကု	0		ငှ	-3		-3	ငှ	
Detector 1 Position(ft)	ကု	0		ကု	0		ကု	ကု		ς'n	ကု	
۵	40	9		40	9		40	40		40	40	
Detector 1 Type (	CI+EX	CHEX		CI+EX	CI+EX		CI+EX	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Extend (c)	0	0		0	C		0	0		0	0	
Detector 1 Exterior (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
	10.0	2.5		0.0	0.0 V		Dorm Dorm	2.5		Dorm	0.5 V	
Dhacoc	1 1 2	5 0		7 T	4		<u> </u>	2			5	
Dormitted Dhases		7		- 4	0		o.	0		_	-	
Detector Phase	1 гс	0		- 0	4		α	α			-	
Switch Phase	0	7		-	0		0	0		+	+	
imum Initial (s)	3.0	34.0		3.0	34.0		3.0	3.0		3.0	3.0	
Swiich Phase Minimum Initial (s)	3.0	34.0		3.0	34.0		3.0	3.0			3.0	

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

unations (f)	l ane Group	60
A compared to the compared t	Lane Configurations	
w (virgu) w (virgu) hi fill (i) length (ii) Length (ii) Length (iii) Length (iiii) Length (iiii) Length (iiii) Length (iiiii) Length (iiiiii) Length (iiiiiii) Length (iiiiiiii) Length (iiiiiiiii) Length (iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	Volume (Collinguiations	
w (virple)  the (i)  (ii)  (iii)  (iii)  (iii)  (iii)  (iii)  (iiii)  (iii)  (iiii)  (iiii)  (iiii)  (iiii)  (iiii)  (iiii)  (iiii)  (iiiii)  (iiiii)  (iiiiii)  (iiiiiii)  (iiiiiiii	Volume (vpn)	
in (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	Ideal Flow (vphpl)	
Lanes  Lanes  Lanes  Lanes  Lanes  Lycat  W (grad)  An e Traffic (%)  An e Traffic (%)	Cane Width (II)	
Lanes  yaght (t)  Lanes  yaght (t)  Lanes  w (pac)  w (pac)  w (pac)  w (pac)  w (pac)  and Red  d (nph)  ance (t)  w (pac)  ance (t)  w (pac)  ance (t)  ance (to pac)  an	Storage Length (ft)	
Factor   Carlo   Car	Storage Lanes	
Factor ded	Taner Length (#)	
Cate of the cate	lane IIII Factor	
ded w (trout) ance (ii) ance (iii) ance (iiii) ance (iiii) ance (iiii) ance (iii) an	Fr	
ww (prot) titled ww (prot) titled ww (prot) mon Red ww (prot) end (mp) end (mp) chief (mp) chief (mp) end (mp) from (prot) end (mp) end (mp) from (mp) end (mp) from (mp) end (mp) from (mp) from (mp) end (mp) from (mp) end (mp) from (mp)	Fit Protected	
we (RTOR) we (RTOR) we (Imph) me (s) we (Imph) me (s) we (Imph) me (s) we (Imph) me (s) we (Imph) we (Imph	Satd Flow (prot)	
ww (perm)  In on Red  In on Red  In on Red  In on Red  In me (s)  In E (s)	Fit Permitted	
m on Red ww (RTOR) ed (mpt) mre (s) mre Taron youngent less critical solutions mre Tariff (s) mred (s) pred (mpt) of Detectors Factor Template Percor (ti) Detector (ti) Det	Satd. Flow (perm)	
ww (RTOR) are (in the (in the (in) the (s) are (in the (s) are Traffic (%) bright (in the (in)	Right Turn on Red	
and (mph) me (s) me (s) me (s) w Factor w Flow (vph) celd (mph) celd (mph) celd (mph) celd (mph) d Detectors Template Detector (t) Detectors 1 Type 1 Type 1 Technol (s) 1 Delay (s) be the sees  9 d Phases  9 d Phases  Hase Baseline Baseline Baseline	Satd. Flow (RTOR)	
ance (ft)  Inne (s)  Inne	Link Speed (mph)	
ime (s) ime (solid Eactor chicles (%)  (vph)  are Traiffic (%)  are Traiffic (%)  are Traiffic (%)  are Traiffic (%)  are Traiffic (mph)  betector (t)  betector (t)  betector (t)  betector (t)  1 Type  1 Type  1 Type  1 Type  1 Type  4 Phases  9  4 Phases  9  A Phases  9  Baseline (s)  1 Delay (s)  A Phase  Baseline (s)  Baseline (s)	Link Distance (ft)	
ur Factor herices (%)  v (vph)  ane Traffic (%)  and Flow (vph)  and Width(f)  width(f)  width(f)  width(f)  Left Turn Lane  y Factor  Speed (mph)  of Delectors  Template  Delector (f)  Delectors  Template  Delector (f)  To Boed (mph)  of Delectors  Template  Delector (f)  To Boed (mph)  of Delectors  Template  Of Delectors  Of Delectors  Template  Of Delectors  Of Delectors  Template  Of Delectors  Of De	Travel Time (s)	
ehicles (%) are Traffic (%) by Plow (mph) bet(n) bet(n) betector (m) betector (m) Topic (mph)	Peak Hour Factor	
a. the Trailite (%)           b. de Flance (%)           b. de Flance (%)           b. de Mark (%)           cet (mph)           f. de Corr           f. de Phases           g. de Phases           f. de Phases <td>Heavy Vehicles (%)</td> <td></td>	Heavy Vehicles (%)	
ania Traffic (%)  ania Traffic (%)  by Flow (yph)  Cocked Intersection  Midth (1)  Width (1)  Width (1)  Width (1)  Width (1)  Width (1)  Width (1)  Left Turn Lane  F factor  Template  Detector (1)  Detector (1)  Detector (1)  Detector (1)  Detector (1)  Type  1 Type  1 Channel  2 Channel  4 Channel  6 Channel  1 Channel  6 Channel  1 Channel  2 Channel  3 Channel  3 Channel  3 Channel  4 Channel  5 Channel  5 Channel  6 Chan	Adj. Flow (vph)	
aup Flow (rph)  grament  width(ft)  width(ft)  width(ft)  width(ft)  width(ft)  width(ft)  width(ft)  Left Turn Lane  y Factor  y Factor  Template  Delectors  Template  Temp	Shared Lane Traffic (%)	
cxcked Intersection           worth(1)           worth(1)           well(1)           Ik Width(1)           Ik Width(1)           Ik Turn Lane           7 Eactor           Speed (mph)           6 Dectors           7 Eactor           Pactor           Delector (1)           1 Postion(2)           1 Postion(3)           1 Size(11)           1 Type           1 Type           1 Channel           1 Channel           1 Channel           1 Lever (s)           1 Outere (s)           1 Outere (s)           1 Outere (s)           4 Phases           9           4 Phases           Phase           Phase           Hase           Haseline           Synchro 8	Lane Group Flow (vph)	
gyment width(f) el(f) ki Width(f) el(f) ki Width(f) Left Tun Lane f Factor f Pactor f Pactor f Pectors Template Detector (f) Detector (f) Detector (f) 1 Type 1 Type 1 Type 1 Type 1 Type 2 Template 1 Extend (s) 2 Queue (s) 4 Phases 9 Phas	Enter Blocked Intersection	
Wdth(t)       ke(ff)       ke(ff)       ke(ff)       ke(ff)       Left Turn tane       Factor       Speed (mph)       Of Detectors       Template       Detector (ff)       Petector (ff)       1 Type       1 Channel       1 Channel       1 Channel       1 Channel       1 Detector (ff)       4 Phases       9       4 Phases       Phase	Lane Alignment	
it width (f)  I will furn Lane  y Factor  2 Speed (mpt)  of Delectors  Template  Delector (f)  Delector (f)  To Position (f)  1 Size (f)  1 Size (f)  1 Size (f)  1 Delay (s)  2 Phases  9 d Phases  Phase hase  Baseline  Synchro 8  Baseline	Median Width(ft)	
Width(ff)	Link Offset(ft)	
Y Eactor  Y Eactor  Speed (mph)  Of Detector  Speed (mph)  Of Detector  Template  Detector (ft)  Detector (ft)  Detector (ft)  Detector (ft)  1 Type  1 Type  1 Type  1 Type  1 Touleue (s)  1 Delay (s)  Be  Of Phases  Of Phases  Of Phases  Hase  Baseline  Basseline  Synchro 8	Crosswalk Width(ft)	
y Factor           y Factor           peed (mph)           of Delectors           Template           Detector (ft)           Detector (ft)           Detector (ft)           Detector (ft)           Detector (ft)           Detector (ft)           1 Postion (ft)           1 Size(ft)           1 Size(ft)           1 Size(ft)           1 Size(ft)           1 Size(ft)           1 Size(ft)           2 Abanet           3 Phases           4 Phases           5 Spinchro         Synchro	Two way Left Turn Lane	
Speed (mph) Speed (mph) Delectors Template Delector (1) Delector (1) Delector (2) 1 Position (1) 1 Size (1) 1 Type 1 Tippe 1 Tippe 1 Telen (s) 1 Oueue (s) 1 Oueue (s) 1 Delay (s) 2 Phases 9 d Phases 9 d Phases 1 Phase hase 1 Initial (s) 2 4.0  Synchro 8	Headway Factor	
Template Delector (1) Detector (1) Detector (1) Detector (1) Detector (1) Delector (1) Type Type Type Type Synchro 8 Delay (s)	Turning Speed (mph)	
Template Template Detector (it) Detector (it) Detector (it) 1 Position(f) 1 Type 1 Type 1 Touche (s) 1 Delay (s) Del	Number of Detectors	
Detector (ft) Detector (ft) Deservation (ft) 1 Page	Detector Template	
1 Position(1) 1 Position(1) 1 Size(II) 1 Type 1 Type 1 Channel 1 Extend (s) 1 Oueue (s) 1 Oueue (s) 1 Delay (s) 2 Phases 9 d Phases 9 d Phases Phase hase 1 Initial (s) 2 4.0 Synchro 8	Leading Detector (ft)	
1 Position(ff) 1 Size(ft) 1 Size(ft) 1 Type 1 Type 1 Clause (s) 1 Delay (s) 2 d Phases 4 Phases 4 Phases 1 Initial (s) 2 4.0  Synchro 8	Trailing Detector (ft)	
1 Type 1 Type 1 Channel 1 Extend (s) 1 Dueue (s) 1 Dueue (s) 1 Delay (s) 9 d Phases 9 d Phases 1 Phase Phase 1 Initial (s) 1 Extend (s) 1 Extend (s) 9 d Phases 9 d Phases 1 Phase Phase 1 Initial (s) 1 Extend (s) 1	Detector 1 Position(ft)	
1 Type 1 Channel 1 Channel 1 Exeruf (s) 1 Oueue (s) 1 Oueue (s) 1 Delay (s) 2 Phases 9 d Phases 9 phase hase 1 Initial (s) 1 24.0  Synchro 8	Detector 1 Size(ft)	
1 Channel 1 Extend (s) 1 Oudure (s) 1 Oudure (s) 1 Delay (s) 2 Phases 4 Phases Phase Phase Phase Phase Phase Phase Baseline Synchro 8	Detector 1 Type	
1 Exeron (s) 1 Locaue (s) 1 Delay (s) 9 d Phases 9 4 Phases 9 1 Delay (s) 1 Delay (s) 9 a Phases 9 1 Initial (s) 24.0 Synchro 8	Detector 1 Channel	
1 Delay (s) 1 Delay (s)  4 Phases 9 4 Phase Phase hase 1 Initial (s) 24.0 Synchro 8	Detector 1 Extend (s)	
1 Delay (s)  1 Delay (s)  4 Phases  7 Phase Phas	Detector 1 Queue (s)	
De d'Anses 9 de Phases 9 de Phase 9 de P	Detector 1 Delay (s)	
d Phases 9 d Phases Thase hase 1 Initial (s) 24.0 Synchro 8	Turn Type	
d Phases Phase hase hase initial (\$) 24.0 Synchro 8	Protected Phases	6
Phase hase n Initial (\$) 24.0  Synchro 8	Permitted Phases	
hase Initial (s) 24.0 Baseline Synctro 8	Detector Phase	
n Initial (s) 24.0 Baseline Synctro 8	Switch Phase	
Synchro 8	Minimum Initial (s)	24.0
	EX am Baseline	Synchro 8 Report
	EX am	Page 2

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

State   Comp.   EB   EB   EB   WB   WB   WB   WB   WB	(\$) 13.0 (13					NBT 13.0 29.2% 29.2% 29.0 4.0 0.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6	N	Z	SBR
(\$) 130 400 130 400 130 130 130 130 130 130 130 130 130 1	(\$) 13.0  (\$) 13.0  (\$) 10.8%  (\$) 7.0  (\$) 7.0  (\$) 2.0  (\$) 2.0  (\$) 2.0  (\$) 2.0  (\$) 6.5  (\$) 6.5  (\$) 6.5  (\$) 6.5  (\$) 8.5  (\$) 1.0  (\$) 6.5  (\$) 1.0  (\$) 6.5  (\$) 1.0	40.0 44.0 44.0 38.0 40.0 5.7 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 0.3 3.0 0.7 46.5 0.3 9.0 0.7 48.5 0.3 9.0 0.7 46.5 46.5 46.5 46.5 46.5 46.5 46.5 46.5		40.0 38.3% 46.0 38.3% 40.0 2.0 0.5 6.5 Lag 3.0 C-Max 48.5 0.48 32.1 C 32.1 C 32.1 C 33.0 32.1 C C C C C C C C C C C C C C C C C C C	13.0 29.2% 29.2% 29.2% 4.0 2.0 0.5 6.5 6.5 6.5 0.2 0.2 92.7 92.7	13.0 29.2% 29.2% 4.0 4.0 5.0 0.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6	13.0 29.2% 29.2% 29.2% 20.2.2 3.0 0.2.2 0.2.2 42.0 0.2.2 42.0 0.2.2	N N N N N N N N N N N N N N N N N N N	
130   440   150   460   350	13.0 (s) 10.8% sen (s) 7.0 (s) 2.0 (s) 2.0 (s) 2.0 (s) 6.5 (s) 6.5 (s) 6.5 (s) 6.5 (s) 6.5 (s) 7.0 (s) 6.5 (s) 7.0 (s) 6.5 (s)	44.0 38.7% 38.0 4.0 0.5 6.5 6.5 1.8g 3.0 3.0 0.74 0.74 0.74 0.74 0.74 0.74 0.74 0.		46.0 38.3% 40.0 40.0 2.0 0.5 6.5 1.29 3.0 0.40 0.78 32.1 0.0 0.78 32.1 0.0 0.78 32.1 0.0 0.78 32.1 0.78 33.1.8 0.78	35.0 29.2% 29.2% 20.0 2.0 0.05 6.5 6.5 6.5 6.5 0.21 0.21 0.21 92.7	35.0 29.2% 20.0 4.0 2.0 0.5 6.5 6.5 3.0 None 0.21 0.21 0.21 0.21 0.03 67.8	35.0 29.2% 29.0 2.0 2.0 0.0.5 6.5.6 3.0 0.22 0.22 42.5 0.22 0.22 0.22 0.22 0.22 0.22 0.23 0.23	2 S	
10.8% 36.7%   12.5% 38.3%   29.2%	een (s) 7.0 8% 7.0 (s) 7.0 (s) 7.0 (s) 7.0 (s) 7.0 (s) 7.0 (s) 2.0 (s)	38.0 38.0 4.0 2.0 0.5 6.5 Lag 3.0 3.0 0.74 0.74 0.0 38.1 0.0 38.1 0.0		38.3% 40.0 40.0 2.0 0.5 6.5 Lag 3.0 C-Max 0.40 0.78 32.1 0.0 32.1 0.3 32.1 0.3 32.1 0.3 33.1 0.3 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7	29.2% 29.0 20.0 2.0 0.5 6.5 6.5 6.5 0.21 0.21 0.27 92.7 F	29.2% 29.0 4.0 2.0 0.5 0.5 6.5 6.5 24.9 0.21 0.83 67.8 E. E. E.	29.2% 29.0 4.0 5.0 6.5 8.0 8.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9	Z Z	
Section   Sect	sen (s) 7.0 s) 10 4.0 vist (s) 2.0 vist (s) 6.5 re (s) 6.5 re (s) 6.5 re (s) 10 0.5 re (s) 10 0.5 re (s) 10 0.44	38.0 4.0 2.0 0.5 6.5 Lag 3.0 3.0 0.74 0.39 0.74 0.39 0.74 0.39		40.0 4.0 2.0 2.0 0.5 6.5 Lag 3.0 C-Max 48.5 0.40 0.78 32.1 0.0 32.1 C.78 32.1 0.3 32.1 0.3 0.3 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7	29.0 4.0 2.0 0.5 6.5 6.5 3.0 None 24.9 0.21 92.7 6.8	29.0 4.0 2.0 0.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6	29.0 4.1. 2.0.0 0.15 6.5 8.0 None 0.22 42.0 0.23 42.0 0.23	2 (1001)	
State	s) 40 (s) 20 (ust(s) 0.5 10 6.5 10 6.5 (ust(s) 6.5 (ust) 6.5 (ust) 6.5 (ust) 7.8 (ust) 8.0 (ust) 8.0 (ust) 9.0 (ust) 9.0	4.0 0.5 0.5 6.5 1.40 2.0 0.74 38.1 0.0 0.0 0.0		4.0 2.0 0.5 6.5 1.ag 3.0 0.40 0.78 3.2.1 0.0 3.2.1 C	4.0 2.0 0.5 6.5 6.5 24.9 0.21 0.82 92.7 F	4.0 2.0 0.5 6.5 6.5 7.0 0.21 0.21 0.83 0.0 67.8	4.0 2.0 0.0 0.0 3.0 0.22 42.5 0.22 0.22 0.22 0.22 0.22 0.22 0.22 0	2 (100)	
(\$) 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	(\$) (\$) 2.0 lust (\$) 0.5 le (\$) (\$) 6.5 le (\$) (\$) 6.5 le (\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$)	2.0 0.5 6.5 Lag 3.0 3.0 0.74 0.74 0.0 38.1 0.0 0.74 0.74 0.74 0.74 0.74 0.74 0.74		2.0 6.5 6.5 1.ag 3.0 3.0 0.40 0.78 3.2.1 0.0 3.2.1 C.C.3 3.1.8	2.0 0.5 6.5 3.0 None 24.9 0.21 0.82 0.0 92.7	2.0 0.5 6.5 3.0 None 24.9 0.21 0.83 67.8 67.8	2.0 0.0 3.0 3.0 None 0.22 0.22 42.0 0.02	2 (100)	
The color of the	intize? 0.5  re (s) 6.5  Lead imize? 3.0  sion (s) None  alk (s) 52.9  Ratio 0.44  2.78	0.5 6.5 1.49 3.0 2.1/46.5 0.74 0.74 0.0 38.1 0.0		0.5 6.5 Lag 3.0 C-Max 48.5 0.40 0.78 32.1 0.0 32.1 C	0.5 6.5 3.0 None 0.21,9 0.21 0.27 92.7 F	6.5 6.5 3.0 None 0.21 0.21 67.8 67.8	0.5 3.6 6.5 None 0.22 42.6 0.2		
Second Register   Second Reg	Imize? 6.5  Lead imize? 3.0  Ision (s) None in (s) 52.9  Ratio 0.49  2.78	6.5 Lag 3.0 3.0 C-Max 46.5 0.39 0.0 38.1 D		6.5 Lag 3.0 C-Max 48.5 0.40 0.78 32.1 0.0 32.1 C C	6.5 3.0 None 24.9 0.21 0.82 92.7 92.7	3.0 None 24.9 0.21 0.83 67.8 E	6.5 3.0 None 0.22 42.0 0.2 42.0 0.2		
Lead	Lead imize? 3.0 sion (s) 3.0 None alk (s) 52.9 Ratio 0.44 27.8	Lag 3.0 3.0 5.4Max 46.5 0.39 0.74 0.0 0.38.1 0.0 38.1		Lag 3.0 C-Max 48.5 0.40 0.78 32.1 C 31.8 C	3.0 None 24.9 0.21 0.82 92.7 6.00	3.0 None 24.9 0.21 0.83 67.8 67.8	3.0 None 24.9 0.27 42.9 0.0 0.0 0.0 0.0 0.0		
Signate   Sign	sion (s) 3.0  None I (k) (s) 52.9  Ratio 0.44  0.49	3.0 46.5 0.74 0.74 0.73 38.1 0.0 0.0 0.0 0.0 0.74 0.74 0.74 0.74 0.7		3.0 C-Max 48.5 0.40 0.78 32.1 0.0 32.1 C C	3.0 None 24.9 0.21 0.82 92.7 0.0	3.0 None 24.9 0.21 0.83 67.8 67.8	3.0 None 24.9 0.22 0.22 42.9 42.9		
sion (\$) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	sion (s) 3.0 None alk (s) alls #fin) 52.9 Ratio 0.44 0.49	3.0 C-Max 46.5 0.74 38.1 0.0 38.1		3.0 C-Max 48.5 0.40 0.78 32.1 0.0 31.8 C	3.0 None 24.9 0.21 0.82 92.7 6.0	3.0 None 24.9 0.21 0.83 67.8 0.0 67.8	3.C None 0.22 0.22 42.5 42.5 7.4 7.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1		
alk (s)  alk	None alk (s)	2-Max 46.5 0.39 0.74 38.1 0.0 38.1		C-Max 48.5 0.40 0.78 32.1 0.0 32.1 C C	None 24.9 0.21 0.82 92.7 6.0 92.7 F	24.9 0.21 0.83 67.8 0.0 67.8	None 24.5 0.27 42.5 42.5 7.6 42.5 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6	_	
Section   Sect	ak (s) alls (#Inr) an (s) Ratio	46.5 0.39 0.74 38.1 0.0 38.1	56.8 0.47 0.63 29.6 0.0 29.6 C	48.5 0.40 0.78 32.1 0.0 32.1 C	24.9 0.21 0.82 92.7 0.0 92.7 F	24.9 0.21 0.83 67.8 0.0 67.8	24.5 0.23 0.23 42.5 42.5 0.0		
Second Residue   Second Residence   Second Reside	alk (s) alls (#/hr) en (s) Ratio	46.5 0.39 0.74 38.1 0.0 0.0	56.8 0.47 0.63 29.6 0.0 29.6 C	48.5 0.40 0.78 32.1 0.0 32.1 C C	24.9 0.21 0.82 92.7 0.0 92.7 F	24.9 0.21 0.83 67.8 0.0 67.8	24.5 0.27 0.28 42.9 0.0		
Ratio   6.29   46.5   56.8   48.5   24.9   24.9   24.9   24.9     Ratio   0.44   0.39   0.47   0.40   0.21   0.21   0.21     27.8   38.1   2.96   32.1   29.7   67.8   42.9     27.8   38.1   2.96   32.1   29.7   67.8   42.9     27.8   38.1   2.96   32.1   27.7   67.8   42.9     27.8   38.1   2.96   32.1   27.7   67.8   42.9     38.0   0.0   0.0   0.0   0.0     37.1   2.96   32.1   27.7   67.8   42.9     48.0   0.0   0.0   0.0   0.0     58.0   0.0   0.0   0.0     58.0   0.0   0.0   0.0     58.0   0.0   0.0   0.0     58.0   0.0   0.0   0.0     58.0   0.0   0.0   0.0     58.0   0.0   0.0   0.0     59.0   29.0   29.0   29.0     59.0   29.0   29.0     59.0   29.0   29.0     59.0   29.0   29.0     59.0   29.0   29.0     59.0   29.0   29.0     59.0   29.0   29.0     59.0   29.0   29.0     59.0   29.0   29.0     59.0   29.0   29.0     59.0   29.0   29.0     59.0   29.0   29.0     59.0   29.0   29.0     59.0   29.0   29.0     59.0   29.	Ratio (C)	46.5 0.39 0.74 38.1 0.0 38.1 D	56.8 0.47 0.63 29.6 0.0 29.6 C	48.5 0.40 0.78 32.1 0.0 32.1 C C	24.9 0.21 0.82 92.7 0.0 92.7	24.9 0.21 0.83 67.8 0.0 67.8	24.5 0.21 0.22 42.5 42.6		
Ratio 0.44 0.39 0.47 0.40 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.2	Ratio	0.39 0.74 38.1 0.0 38.1 D	0.47 0.63 29.6 0.0 29.6 C	0.40 0.78 32.1 0.0 32.1 C 31.8	0.21 0.82 92.7 0.0 92.7	0.21 0.83 67.8 0.0 67.8	0.27 0.27 42.9 0.0 42.9		
17   17   17   17   17   18   18   18		0.74 38.1 0.0 38.1 D	0.63 29.6 0.0 29.6 C	0.78 32.1 0.0 32.1 C 31.8	0.82 92.7 0.0 92.7 F	0.83 67.8 0.0 67.8	0.23 42.9 0.0 42.9		
27.8   38.1   29.6   32.1   92.7   67.8   42.9     27.8   38.1   29.6   32.1   92.7   67.8   42.9     27.8   37.1   2.0   0.0   0.0   0.0     C		38.1 0.0 38.1 D	29.6 0.0 29.6 C	32.1 0.0 32.1 C 31.8 C	92.7 0.0 92.7 F	67.8 0.0 67.8	42.9 0.0 42.9		
ay 27,8 38.1 29,6 32.1 67,8 42,9 42,9 67,8 42,9 67,9 67,9 67,9 67,9 67,9 67,9 67,9 67		0.0 38.1 D	0.0 29.6 C	0.0 32.1 C C 31.8	0.0 92.7 F	0.0 67.8 E	0.0 42.5		
27.8 38.1 29.6 32.1 92.7 67.8 42.9  37.1 C C C C C F E D  38.0 37.1 38.0 40.0 29.0 29.0 29.0  60.0 29.0 29.0 29.0 29.0  60.0 3.8 20.0 40.0 29.0 29.0 29.0  60.0 3.0 40.0 29.0 29.0 29.0  60.0 40.0 29.0 29.0 29.0  60.0 40.0 29.0 29.0 29.0  60.0 40.0 29.0 29.0 29.0  60.0 29.0 29.0 29.0  60.0 40.0 29.0 29.0 29.0  60.0 40.0 29.0 29.0 29.0  60.0 40.0 29.0 29.0 29.0  60.0 40.0 29.0 29.0 29.0  60.0 40.0 29.0 29.0 29.0  60.0 40.0 29.0 29.0 29.0  60.0 40.0 29.0 29.0 29.0  60.0 40.0 29.0 29.0 29.0  60.0 40.0 29.0 29.0 29.0  60.0 40.0 29.0 29.0  60.0 40.0 29.0 29.0  60.0 60.0 60.0  60.0 60.0 60.0  60.0 60.0		38.1 D	29.6 C	32.1 C 31.8 C	92.7 F	67.8 E	42.9 D		
C D C C F E D 74.1  37.1 31.8 74.1  70. 38.0 9.0 40.0 29.0 29.0 29.0 29.0 29.0 29.0 29.0 2		D 77.1	ပ	31.8 C	ഥ	ш			
37.1         31.8         74.1           7.0         38.0         9.0         40.0         29.0         29.0           7.0         38.0         9.0         40.0         29.0         29.0         29.0           7.0         38.0         9.0         40.0         29.0         29.0         29.0           Max         Coord         Max         Coord         27.0         27.0         29.0           Max         Coord         Max         Coord         27.0         27.0         29.0           Max         Coord         40.0         40.0         27.0         27.0         29.0           Max         Coord         Max         Coord         Hold         Hold         Gap           6.4         75.5         8.2         77.3         18.3         18.3         18.3           6.4         75.5         8.2         77.3         18.3         18.3         18.3           6.4         75.5         8.2         77.3         18.3         18.3         18.3           140         75.5         8.2         77.3         18.2         45.5         18.3           140         7.0         7.0         47.5		27.1		31.8 C		1			
7.0         38.0         9.0         40.0         29.0         29.0         29.0           Max         Coord         Max         Coord         Max         Max         Max           7.0         38.0         9.0         40.0         29.0         29.0         29.0           7.0         43.5         9.0         40.0         29.0         29.0         29.0           Max         Coord         Max         Coord         Max         Max         Max           7.0         43.5         9.0         45.5         23.5         23.5         23.5           Max         Coord         Hold         Hold         Gap         Gap           6.4         7.5         8.2         77.3         18.3         18.3           6.4         7.5         8.2         77.5         23.5         23.5           6.4         7.5         8.2         77.3         14.0         Hold         Gap           6.4         7.5         8.2         77.3         14.0         Hold         Gap           7.0         4.4         3.3         6.3         3.68         6.5         19.3         17           140         7.0 <td>pproach Delay</td> <td>37.1</td> <td></td> <td>ပ</td> <td></td> <td>74.1</td> <td></td> <td>68.4</td> <td></td>	pproach Delay	37.1		ပ		74.1		68.4	
7.0         38.0         9.0         40.0         29.0         29.0         29.0           7.0         38.0         40.0         40.0         29.0         29.0         29.0           7.0         40.0         9.0         40.0         9.0         40.0         29.0         29.0           7.0         40.0         9.0         42.0         27.0         27.0         27.0         27.0           7.0         40.0         9.0         42.0         27.0 <td< td=""><td></td><td>D</td><td></td><td></td><td></td><td>ш</td><td></td><td></td><td></td></td<>		D				ш			
Max         Coord         Max         Coord         Max	7.0	38.0	0.6	40.0	29.0	29.0	29.(		
7.0         38.0         9.0         40.0         29.0         2	Max	Coord	Max	Coord	Max	Max	May		
Max	7.0	38.0	0.6	40.0	29.0	29.0	29.0		
And the condition of the condition	e Max	Coord	Max	Coord	Max	Max	May		
Nax   Coord   Max   Coord   Hold   Hold   Cap     Nax   Coord   Max   Coord   Hold   Hold   Cap     Nax   Coord   Max   Coord   Hold   Hold   Cap     Sap   Sap   Sap   Sap   Sap   Sap     Sap   Sap   Sap   Sap   Sap   Sap   Sap     Sap   Sap   Sap   Sap   Sap   Sap   Sap     Sap   Sap   Sap   Sap   Sap   Sap   Sap     Sap   Sap   Sap   Sap   Sap   Sap   Sap   Sap     Sap   Sap   Sap   Sap   Sap   Sap   Sap   Sap     Sap   Sap   Sap   Sap   Sap   Sap   Sap   Sap   Sap     Sap   Sap   Sap   Sap   Sap   Sap   Sap   Sap   Sap   Sap     Sap   Sa	0.7	40.0	0.6	42.0	27.0	27.0	27.0		
A35         91         45.5         23.5         23.5         23.5           A87         Coord         Hold         Hold         Cop         Cop           6.4         75.5         8.2         77.3         18.3         18.3         18.3           Gap         Coord         Coord         Hold         Hold         Gap         Cop           79         26.5         3.8         6.5         19.3         17         47           79         70         105         6.5         19.3         47         45	Max	Coord	Max	Coord	Pied i	Hold	Cap		
Max Coord Max Coord Hold Hold Gap 6.4 75.5 8.2 77.3 18.3 18.3 18.3 18.3 Gap Coord Hold Hold Gap 41 331 6.3 368 6.5 193 17 79 #465 m111 #502 #152 #302 45 # 140 70 195 105 65 194 1170 225 1199 125 361 137 0	7.0	43.5	0.6	45.5	23.5	23.5	23.5		
G4 75.5 8.2 77.3 18.3 18.3 18.3 18.3 18.3 18.3 18.3 18	Max	Coord	Max	Coord	Hold	Hold	Gab		
Cap Coord Cap Coord Hold Fold Cap Cap Coord Cap Coord Fold Fold Cap Coord Fold Fold Cap	6.4	75.5	8.7	77.3	18.3	18.3	78.		
79 4 331 003 368 003 193 17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Cab	Coord	Cap	Coord	Hold	Hold	Gar		
79 #465 M11 #50.2 #15.2 #30.2 45 140 126 70 1955 103 65 194 1170 225 1199 125 36.1 137 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		331	503	308	00	193			
140 70 70 1933 105 65 65 194 1170 225 1199 125 361 137 105 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		#465	E E	#50Z	#152	#305	4		
194 1170 225 1199 125 361 137 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		502	02	1700	105	202	19		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1170	225	1199	125	361	137		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0	0	0	0	0			
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0	0	0	0	0	J		
0.48 0.74 0.63 0.78 0.71 0.73 0.20 Other		0	0	0	0	0			
rea Type: Other		0.74	0.63	0.78	0.71	0.73	0.20		
rea Type: Other	ntersection Summary								
Section 120									
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1									
	Actuated Cycle Lepath: 120								

Lanes, Volumes, Trinings

27: Sithan Ave/Nithan Ave & Lancaster Ave

Bere Goupe

Melinum Spill (s)

Tradi Sp

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EX am Baseline EX am

3/9/2015 Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 43.3	Intersection LOS: D
Intersection Capacity Utilization 77.6%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	Le may be longer.
Queue shown is maximum after two cycles.	
m. Volume for 95th percentile griefle is metered by instream signal	vinstream signal

Splits and Ph

Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave	Ave	•
₩ 22 (R)		\$ 64
44 s	26 s	35.5
₹ 6(R)		₩₩
46 s		35.5

HCM 2010 Signalized Intersection Summary 51: Lowrys Ln & Lancaster Ave

3/9/2015

Movement Lane Configurations Volume (veh/h)												
Lane Configurations Volume (veh/h)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (veh/h)		th th			đ.			÷			4	
Nimber	92	1035	19	16	1063	22	46	102	38	21	02	19
Sallow	2	2	12	-	9	16	3	∞	18	7	4	14
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
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
_	1800	1748	1800	1773	1721	1773	1900	1845	1900	1881	1827	1881
Adj Flow Rate, veh/h	19	1113	20	17	1143	24	49	110	41	23	75	20
Adj No. of Lanes	0	2	0	0	2	0	0	-	0	0	-	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	က	က	co	က	က	က	m	co	က	co	3
Cap, veh/h	74	2076	37	72	2047	43	120	160	53	100	191	45
Arrive On Green	1.00	1.00	1.00	0.65	0.65	0.65	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	19	3202	22	15	3156	99	297	1056	349	189	1263	296
Grp Volume(v), veh/h	263	0	555	919	0	268	200	0	0	118	0	0
Grp Sat Flow(s),veh/h/ln	1698	0	1580	1682	0	1555	1701	0	0	1748	0	0
O Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	12.1	3.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	11.8	0.0	12.1	6.7	0.0	0.0	3.6	0.0	0.0
Prop In Lane	0.03		0.04	0.03		0.04	0.24		0.20	0.19		0.17
Lane Grp Cap(c), veh/h	1163	0	1025	1153	0	1008	333	0	0	337	0	0
V/C Ratio(X)	0.51	0.00	0.54	0.53	0.00	0.56	09.0	0.00	0.00	0.35	0.00	0.00
Avail Cap(c_a), veh/h	1163	0	1025	1153	0	1008	672	0	0	9/9	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00	1.00	1.00
Upstream Filter(I)	0.62	0.00	0.62	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	2.8	0.0	2.8	24.4	0.0	0.0	23.1	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	1.3	7.8	0.0	2.3	1.7	0.0	0.0	9.0	0.0	0.0
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
%ile BackOfQ(-26165%),veh/ln		0.0	0.4	0.9	0.0	2.7	3.3	0.0	0.0	1.8	0.0	0.0
LnGrp Delay(d),s/veh	1.0	0.0	1.3	9.7	0.0	8.1	26.1	0.0	0.0	23.8	0.0	0.0
LnGrp LOS	A		A	Α		A	ပ			ပ		
Approach Vol, veh/h		1152			1184			200			118	
Approach Delay, s/veh		1.			7.8			26.1			23.8	
Approach LOS		V			A			O			O	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs		2		4		9		8				
Phs Duration (G+Y+Rc), s		45.4		14.6		45.4		14.6				
Change Period (Y+Rc), s		0.9		2.0		0.9		2.0				
Max Green Setting (Gmax), s		27.0		22.0		27.0		22.0				
Max Q Clear Time (g_c+11), s		2.0		9.6		14.1		8.7				
Green Ext Time (p_c), s		11.8		1.0		8.0		1.0				
Intersection Summary												
HCM 2010 Ctrl Delay			7.0									
HCM 2010 LOS			A									

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EX am Baseline EX am

HCM 2010 Signalized Intersection Summary 16: Sproul Rd & Conestoga Rd

HCM 2010 Signalized Intersection Summary 25: S Ithan Ave & Conestoga Rd

3/9/2015

NBL   WBT   WBR   WER   WER   WBL   WBT   WBR   WBL   WBT   WBR   WBL   WBT   WBR   WBT   WBR   WBT   WBR   WBT   WBR   WBT	ا لا م	J	*	•	٠ •
146   542   135   35   589   56   209   140	WBL		NEL NET	NER S	SWL SWT
146         542         135         35         589         56         209           7         4         14         3         8         18         1           1.00         1.00         1.00         1.00         1.00           1.00         1.00         1.00         1.00         1.00           1.00         1.00         1.00         1.00         1.00           1.00         1.00         1.00         1.00         1.00           1.00         1.00         1.00         1.00         1.00           1.01         1.01         1.00         1.00         1.00           1.02         1.00         1.00         1.00         1.00           1.01         1.01         1.01         1.00         1.00           1.02         1.03         1.04         1.00         1.00           1.01         1.01         1.01         1.01         1.00           1.02         1.03         2.01         0.01         1.00           1.04         1.04         0.33         3.3         3.3         3.3         3.3         3.3         3.3         3.3         3.3         3.3         3.3         3.3	¥-		£		4
7         4         14         3         8         18         1           10.00         0         0         0         0         0         0           1.00         1.00         1.00         1.00         1.00         1.00         1.00           1.00         1.00         1.00         1.00         1.00         1.00         1.00           1.748         1748         1800         1791         1791         1845         1739         1.00           1.91         0.91<	32		76	27	55 196
0	co		1 6	16	5 2
1,00	0		0 0		0 0
1,00	1.00				
1748   1748   1800   1791   1845   1739   1645   1749   1791   1845   1739   1691   691	1.00		1.00 1.00		
160   596   0   38   647   0   230     3   3   3   3   3   3   3     3   3	1791		_	1791	_
1	38		230 288	. ,	60 215
0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91	<del>-</del>				
3         6         0	0.91	0	0.91 0.91		0.91 0.91
200         847         0         261         630         0         336           1664         748         0         831         1791         0         1666           160         596         0         38         647         0         230           1664         748         0         831         1791         0         1666           166         748         0         831         1791         0         1666           1664         748         0         831         1791         0         1666           1664         748         0         831         1791         0         1666           5.3         240         0.0         15.4         316         0.0         6.5           1.00         0.0         1.54         316         0.0         6.5         1.00	3			3	
10,07	261			62	
1664   1748   0   831   1791   0   1666   1664   1748   0   38   647   0   230   1466   154   1748   0   34   314   0   0   1656   153   240   0.0   34   316   0.0   6.5   1.00   0.00   1.00   0.00   1.00   0.0	0.35		0.07 0.39	0.39	0.25 0.25
166   596   0   38   647   0   230     1664   1748   0   811   1791   0   1656     5.3   240   0.0   13.4   31.6   0.0   6.5     1.00   3.4   0.00   15.4   31.6   0.0   6.5     1.00   847   0   261   630   0   336     200   847   0   261   630   0   336     1.00   1.00   0.00   0.10   1.00   1.00     2.01   847   0   261   630   0   336     2.02   847   0   261   630   0   0.6     2.03   1.00   1.00   1.00   1.00     2.16   181   0.0   288   29.2   0.0   2.4     2.16   181   0.0   288   29.2   0.0   2.4     2.16   181   0.0   288   29.2   0.0   2.4     2.16   181   0.0   0.0   0.0   0.0     2.16   230   0.0   0.0   0.0     2.17   2   3   4   5   6   7     2.18   2.5   2.5   2.5     2.19   2.10   2.10   38.5   7.0     2.10   2.10   2.10   38.5   7.0     2.10   2.10   2.10   38.5   7.0     2.10   2.11   7.2   2.4   0.0     2.11   2   3   4.10   38.5   7.0     2.12   2.13   2.50   2.4   0.0     2.13   2.50   2.14   0.0     2.14   2.15   2.4   0.0     2.15   2.16   2.16   2.10     2.17   2.17   2.14   0.0     2.18   2.18   2.50   2.10     2.19   2.10   2.10     2.10   2.11   2.11   2.11     2.11   2.11   2.11   2.11     3.12   3.13   3.12   3.12     3.13   3.13   3.13   3.13   3.13     3.14   3.15   3.13   3.13   3.13     3.15   3.16   3.16   3.13   3.13     3.17   3.18   3.18   3.13   3.13     3.18   3.18   3.18   3.18   3.18     3.19   3.18   3.18   3.18   3.18     3.10   3.18   3.18   3.18     3.11   3.12   3.18   3.18     3.12   3.13   3.18   3.18     3.13   3.14   3.18   3.18     3.14   3.18   3.18   3.18     3.15   3.18   3.18   3.18   3.18     3.16   3.18   3.18   3.18   3.18     3.17   3.18   3.18   3.18   3.18     3.18   3.18   3.18   3.18   3.18     3.18   3.18   3.18   3.18   3.18     3.18   3.18   3.18   3.18   3.18     3.18   3.18   3.18   3.18   3.18     3.18   3.18   3.18   3.18   3.18     3.18   3.18   3.18   3.18   3.18     3.18   3.18   3.18   3.18   3.18     3.18   3.18   3.18   3.18   3.18     3.18   3.18   3.18   3.18     3.18   3.18   3.18   3.18   3.18     3.18   3.18   3.18   3.18   3.18	831	0		161	194 1018
1664   1748   0   831   1791   0   1656     5.3   24.0   0.0   15.4   31.6   0.0   6.5     1.00   200   13.4   31.6   0.0   6.5     1.00   847   0   261   630   0   336     200   847   0   261   630   0   336     200   847   0   261   630   0   336     200   847   0   261   630   0   336     201   100   1.00   1.00   1.00     210   1.00   1.00   1.00   1.00     210   1.00   1.00   1.00   1.00     210   244   0.0   1.2   43.0   0.0     210   249   0.0   1.2   43.0   0.0     210   240   0.0   0.0   0.0     211   2   3   4   5   6   7     212   284   40.1   20     213   260   41.0   38.5   5.0     214   251   260   41.0   38.5   7.0     252   253   260   14.0     253   254   260   14.0     254   260   1.00   14.0     255   256   250     257   260   270   274   0.0     258   258   270   270     259   250   270   270     260   270   270   270     260   270   270   270     260   270   270   270     260   270   270   270     260   270   270   270     260   270   270   270     260   270   270   270     260   270   270     270   270   270   270     270   270   270   270     270   270   270   270     270   270   270   270     270   270   270   270     270   270   270   270     270   270   270   270     270   270   270     270   270   270   270     270   270   270     270   270   270   270     270   270   270   270     270   270     270   270   270     270   270   270     270   270   270	88	0		318	355 0
5.3         24.0         0.0         3.4         31.6         0.0         6.5           1.0         2.0         15.4         31.6         0.0         6.5           2.00         847         0         261         630         0         336           2.00         847         0         261         630         0         336           2.00         847         0         261         630         0         336           2.00         847         0         261         630         0         336           2.00         1.00         1.00         1.00         1.00         0.08         1.00           2.00         1.00         1.00         1.00         1.00         1.00         1.00           2.16         1.81         0         2.88         29.2         0         2.44           2.01         4.9         0         1.00         1.00         1.00         1.00         1.00           2.16         1.81         0         0         0         0         0         0         0         0         0         0         2.4         0         2.4         0         2.4         0 <t< td=""><td>831</td><td>0</td><td>1656 0</td><td></td><td>564 0</td></t<>	831	0	1656 0		564 0
5.3         24.0         0.0         15.4         316         0.0         6.5           1.00         370         0.00         1.00         0.00         1.00           0.80         0.70         0.00         0.15         1.03         0.00         0.68           200         847         0         261         630         0         336           1.00         1.00         1.00         0.00         0.15         1.03         0.00         336           1.00         1.00         1.00         1.00         1.00         1.00         1.00           21.6         18.1         0.0         261         6.30         0         336           21.1         1.00         1.00         1.00         1.00         1.00         1.00           21.6         1.81         0.0         2.88         29.2         0.0         24.4           20.1         4.9         0.0         1.2         43.0         0.0         5.7           20.1         4.9         0.0         1.0         0.0         0.0         0.0         0.0         0.0           20.2         0.0         0.0         0.0         0.0         0.0	3.4	0:0	6.5 0.0	12.6	14.2 0.0
1.00	15.4	0.0		12.6	
200         847         0         261         630         0         336           0.80         0.77         0.00         0.15         1.00         0.06         0.68           1.00         1.00         1.00         1.00         1.00         1.00         0.68           1.00         1.00         1.00         1.00         1.00         1.00         1.00           1.00         1.00         1.00         1.00         1.00         1.00         1.00           1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00           2.01         4.9         0.0         1.2         43         0.0         2.4         4.4         0.0         1.00	1.00	0.00		0.09	0.17
0.80 0.70 0.00 0.15 1.03 0.00 0.68 200 847 0 261 630 0 336 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	261	0		662	
200 847 0 261 630 0 336 1.00 1.00 1.00 1.00 1.00 1.00 1.00 21.6 18.1 0.0 28.8 29.2 0.0 24.4 20.1 4.9 0.0 1.2 43.0 0.0 5.7 20.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 41.6 23.0 0.0 30.0 72.2 0.0 2.9 41.6 23.0 0.0 30.0 72.2 0.0 30.1 D C F C F C 2.5 2.5 3.4 4 5 6 7 1.2 3.4 4 5 6 7 1.2 3.4 4 5 6 7 1.2 2.4 4 6 7 2.5 5.5 5.0 5.0 5.0 5.0 2.6 41.0 38.5 7.0 8.5 2.18 2.60 1.46 7.3 0.0 1.1 7.2 2.4 0.0	0.15		0.08 0.00	0.48	Ö
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	261			722	
1100 100 0.00 1.00 1.00 0.00 1.00 1.10 0.11 0.10 0.00 0.10 0.	1.00			1.00	
2016 181 000 288 292 000 244 2011 449 000 12 430 000 57 000 000 000 000 000 000 000 135 126 000 099 2331 000 29 416 230 000 300 722 000 301 0 C F C F 269 689 269 699 1 2 3 4 5 6 7 125 284 491 409 12.0 55 55 55 50 50 50 11 70 260 410 38.5 7.0 85 218 260 114 73	1.00		0	1.00	0
20.1 4.9 0.0 1.2 43.0 0.0 5.7  20.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0  41.6 23.0 0.0 0.0 2.9  41.6 23.0 0.0 30.0 72.2 0.0 2.9  756 685  26.9 699  C F C F  1 2 3 4 5 6 7  1 2 3 4 5 6 7  1 2 3 4 5 6 7  1 2 3 4 5 6 7  1 2 3 4 5 6 7  1 2 3 4 5 6 7  1 2 3 4 5 6 7  1 2 3 4 5 6 7  1 2 3 4 5 6 7  1 2 3 4 5 6 7  1 2 3 4 5 7  1 2 3 7 4 6 7  1 2 3 7 4 6 7  1 3 8.5 5.5 5.0  2 6 7 7  4 8 5 7 0  3 8 6 7 7  4 9 7 7  4 10 7 2 8 7  4 10 7 2 8 7  4 10 7 2 8 7  4 10 7 3  8 5 18 5 18 5 0  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	28.8			20.7	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1.2			0.5	
126 00 09 23.1 0.0 2.9 11.6 23.0 0.0 30.0 72.2 0.0 30.1 D C C F C 26.9 69.9 C E E 1.2 28.4 49.1 40.9 12.0 5.5 5.5 5.0 5.0 7.0 8.5 21.8 26.0 11.4 7.3 14.3 26.0 1.46 7.3	0.0			0.0	
416 230 0.0 30.0 72.2 0.0 30.1  D C C F T56 685 26.9 69.9  C E E T1.2 3 4 5 6 7 T1.2 284 49.1 40.9 12.0 5.5 5.5 5.0 5.0 5.5 5.0 7.0 26.0 41.0 38.5 7.0 8.5 21.8 26.0 14.6 73 0.0 1.1 72 2.4 0.0	6:0		2.9 0.0	0.9	0.0 7.6
D   C   C   F   C     756   685     269   699     C   C   E     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   2   3   4   5   6   7     1   3   4   5   6   7     1   3   5   7     1   4   7   7     1   7   7   7     1   7   7   7     1   7   7   7     1   7   7   7     1   7   7   7     1   7   7   7     1   7   7   7     1   7   7   7     1   7   7   7     1   7   7   7     1   7   7   7     1   7   7   7     1   7   7   7     1   7   7   7     1   7     1   7   7     1   7   7     1   7   7     1   7   7     1   7   7     1   7   7     1   7   7     1   7   7     1   7   7     1   7   7     1   7   7     1   7   7     1   7   7     1   7     1   7   7     1   7   7     1   7     1   7   7     1   7     1   7   7     1	30.0			21.3	
756 685 269 699 C E E 1 2 3 4 5 6 7 125 284 49.1 40.9 12.0 55 5.5 5.0 5.0 5.5 5.0 00 1.1 7.2 2.4 0.0	C	_	С	С	D
269 699  C E E  1 2 3 4 5 6 7  125 284 49,1 40,9 12,0 5.5 5.5 5.0 5.0 5.5 5.0 70 260 41,0 38.5 7,0 8.5 21.8 26,0 14,6 7,3 0.0 1.1 7.2 2,4 0.0	389		548		355
C E E 6 7 125 284 49.1 40.9 12.0 3 5.5 5.5 5.0 5.0 5.5 5.0 7.0 26.0 41.0 38.5 7.0 3 8.5 21.8 26.0 14.6 7.3 3 0.0 1.1 7.2 2.4 0.0	5.69	~	25.0		42.0
1 2 3 4 5 6 7 125 284 49.1 6.9 12.0 5 5.5 5.5 5.0 5.0 5.5 5.0 7.0 26.0 41.0 38.5 7.0 2 8.5 21.8 26.0 14.6 7.3 3 0.0 1.1 7.2 2.4 0.0	ш		S		O
125 284 49.1 40.9 12.0 5 55 55 50 5.0 5.0 5.5 5.0 7.0 260 41.0 38.5 7.0 2 8.5 21.8 26.0 14.6 7.3 3 0.0 1.1 72 2.4 0.0	3 4		7 8		
12.5 28.4 49.1 40.9 12.0 3 5.5 5.5 5.0 5.0 5.5 5.0 7.0 26.0 41.0 38.5 7.0 3 8.5 21.8 26.0 14.6 7.3 3 0.0 1.1 72 2.4 0.0	4	9	7 8		
5.5 5.5 5.0 5.0 5.5 5.0 7.0 26.0 41.0 38.5 7.0 2 8.5 21.8 26.0 14.6 7.3 3 0.0 1.1 7.2 2.4 0.0	49.1	40.9	12.0 37.1		
7.0 26.0 41.0 38.5 7.0 8.5 21.8 26.0 14.6 7.3 0.0 1.1 7.2 2.4 0.0	5.0	5.5			
85 218 260 146 73 0.0 1.1 7.2 2.4 0.0 413	41.0	38.5	7.0 29.0		
s 0.0 1.1 7.2 2.4 0.0 41.3	26.0	14.6			
41	7.2	2.4	0.0 0.0		
41					
	41.3				
F	? 0				

Synchro 8 Report Page 1

EX am Baseline EX am

0.81 306 21.9 C 0.81 99 422 422 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 0 1.00 1.00 1844 75 0 0 12 0 0 1.00 1763 1763 0 0 0.81 4 4 26 0.23 1113 1.00 0.0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 221 19.6 B 0.81 4 349 0.23 1494 12 0 1.00 1.00 1764 154 0 0 0.81 4 4 191 0.53 360 0.0 0.00 0. 1.00 696 547 0.81 4 682 0.53 WBT 0 0.81 4 65 0.53 0.81 2 0.53 0.81 4 442 0.53 831 0.00 0.00 0.00 0.00 0.0 0.0 674 50.6 D Ť Number Initial O (Ob), weh Perking Bus, Adi April 1 Adi Sal Flow, vehyhln 18 Adi Sal Flow, vehyhln 18 Adi How Rate, vehh 2 Adi No of Lanes Peak Hour Factor Percent Heavy Veh, % 2 Adi No of Lanes Percent Heavy Veh, % 2 Adi No of Lanes Percent Heavy Veh, % 2 Adi No of Lanes Prow, vehh 6 Arrive On Green 0 Sal Flow, vehh 7 Gry Sal Flow, vehh 10 Gry Sal Flow, shehh 11 O Serve(g.s.), s Cycle O Clear(g.c.), s Cycle O Approach Vol, veh/h Approach Delay, s/veh Approach LOS Lane Configurations Volume (veh/h) -nGrp Delay(d), s/veh -nGrp LOS

201 0.23 861

0.0

0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Synchro 8 Report Page 1 EX am Baseline EX am

8 19.4 6.0 20.0 12.0

6.0 6.0 30.0 31.5 0.0

6.0 20.0 8.5 1.7

236.0 6.0 30.0 21.6 4.4

Assigned Phs
Phs Duration (G+Y+RC), s
Change Period (Y+RC), s
Max Green Setting (Gmax), s
Max O Clear Time (g\_c+H), s
Green Ext Time (g\_c, H), s

28.9 C

HCM 2010 Ctrl Delay HCM 2010 LOS

HCM 2010 Signalized Intersection Summary 33: Williams Rd/Garrett Ave & Conestoga Rd

Movement   EBL   EBT	EBR 1100 1100 1100 1100 1100 1100 1100 11	WBL V 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	WBT W 410 6 0 6 0 11.00 1 11872 11 1872 11 1872 11 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.0000000000000000000000000000000000000	NER 100 1.00 1.00 1.00 1.00 0.08 0.08 0.08	SWL 15 7 0 1.00 1.00 1.00 1.00 0.08 0.08 0.08 0.06 335 62 1.482 1.482 1.482 1.583 0.00 0.	SWT 4 4 4 4 0 0 11.00 11.28 3 3 3 3 3 3 3 3 4 4 4 0 0 0.06 8 8 0.06 8 8 0.06 8 0.00 0.00	37 37 100 100 100 100 100 100 100 100 100 10
25 5 1.00 1.00 1.00 1.00 0.08 0.08 0.07 1822 0.05 1.00 1.00 1.00 1.00 1.00 1.00 1.00					0.00	100 11.00 11.00 1800 1800 0.08 0.00 0.00	15 7 0 0 1.00 1.00 1.728 1.728 0 0 0 0 0 0 0 1.01 0.06 3.35 6.2 1.482 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	1100 1728 3 3 1100 1728 3 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	37 114 1100 1100 1100 1100 1000 000 000 00
25 100 110					0.00	180 1,00 1,00 1,00 1,00 0,08 0,08 0,00 0,00	15 7 7 1.00 1.00 1.00 1.00 0 0 0 0 0 0 1.01 0 0 0 1.02 1.03 1.04 1.06	3 1.00 1.00 1.00 1.00 0 0 0 0 0 0 0 0 0 0	114 1100 1100 1100 1100 1000 1000 1000
5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					0.00	100 1.00 1.00 1.00 1.00 0.08 0.08 0.06 0.00 0.00 0.00 0.00 0	7 0 1.00 1.00 1.00 1.728 1.728 1.728 1.728 1.738 1.538	1.00 1.00 1.00 1.00 0.00 0.00 0.00 0.00	1100 1.00 1.00 1.00 1.00 1.00 1.00 1.00
1.00 1.00 1.00 28 0 0 0 0 71 42 1368 1368 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0					0.00	100 1100 1100 00.0 00.0 00.0 00.0 00.0	1.00 1.00 1.00 1.728 1.728 0 0 0 0.08 0 0.06 335 2.3 2.3 0.27	1.00 1728 3 3 1 1 0.06 0.00 0.00 0.00 0.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
1.00 1.00 1.00 0.08 0.08 0.09 1.00 1.00 1.00 1.00 1.00 1.00 1.00					0.0	1.00 1.00 1.00 1.00 0.08 0.08 0.08 0.06 0.00 0.00 0.00 0	1.00 1728 1728 1728 0 0 0.08 0 0 101 101 1482 1.5 2.3 0.27	1.00 1728 3 3 1 0.08 0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
1.00 1.00					0.0	1.00 1800 0.088 0.088 0.006 0.00 0.00 0.00 0.0	1.00 1728 17 0 0 0 0 0 101 101 103 62 1482 1.5 2.3 0.27	1.00 1.728 3 3 1.008 0.00 0.00 0.00 0.00	1.00 1728 1728 0.08 0.06 0.00 0.00 0.00 0.00 0.00
1872					0.0	1800 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1728 17 0 0 0.08 0 0 101 0.06 335 62 1482 1.5 2.3 0.27	1728 3 3 3 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	1728 442 0.088 0.066 0.00
28 0 0 8 0 0 7 1 2 1 2 19 1388 0.05 0.05 1.00 1.00 1.00 1.00 1.00 1.00					0 0 0.0	00 00 00 00 00 00 00 00 00 00 00 00 00	17 0 0 0 0 0 0 101 0.06 335 62 1482 1.5 2.3 0.27	0.00 0.	0.06 0.06 0.06 0.06 0.00 0.00 0.00 0.00
0.08 0.08 0.07 4.7 7 519 1832 0.00 6.2 0.05 1.388 0.38 1.388 0.05 1.00 1.00 1.00 3.3 0.0 1.00 4.1 A					9 9 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.08 0.006 101 0.06 335 62 1482 1.5 2.3 0.27	0.00 0 0.00 0 0.00 0 0.00 0 0.00	0.06 0.06 0.06 0.00 0.00 0.00
0.08 0.71 6.71 1832 0.0 0.05 1368 1368 1368 1.00 1					0 0 0	0.06 0.06 700 0.00 0.00 0.00 0.00	0.06 335 62 1482 1.5 2.3 0.27	0.00 0.00 0.00 0.00 0.00 0.00	0.06
0 98 71 42 7519 1368 0.05 1.00 1.00 1.00 1.00 1.00 1.00 1.00					0 0 00	0 0.06 700 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.06 335 62 1482 1.5 2.3 0.27	0 0.0 0.0 0.0 0.0	0.06
98					0 0 0:0	0.00 0.00 0.00 0.00 0.00 0.42	0.06 335 62 1482 1.5 2.3 0.27	0.00 0.00 0.00 0.00 0.00	0.06
0.71 519 1822 0.0 6.2 0.05 1368 1368 1308 1.00 1.00 1.00 1.00 1.00 1.00 4.1 A					0.00	0.06 0 0 0 0.0 0.0 0.0 0.42	0.06 335 62 1482 1.5 2.3 0.27	000000000000000000000000000000000000000	0.001
42 7 1832 00 00 005 1368 0.38 1368 1300 100 100 100 100 100 100 100 100 10					9 00	700 0 0.0 0.0 0.42	335 62 1482 11.5 2.3 0.27	0 0 0.0 0.0	0.0000000000000000000000000000000000000
519 1832 0.0 6.2 0.05 1368 0.38 1.00 1.00 1.00 3.3 0.0 0.0 0.0 4.1 A				·	0 0 0	0 0.0 0.0 0.42 0.42	62 1482 1.5 2.3 0.27	0.0	0.0
1832 0.0 6.2 0.05 1388 0.38 1388 1.00 1.00 3.3 0.0 0.0 0.0 4.1 A					0 0 0	0.0 0.0 0.42	1482 1.5 2.3 0.27	0.0	0.00
0.0 6.2 0.05 1388 1388 1388 1.00 1.00 1.00 0.8 0.8 0.8 4.1 A					0 0	0.0 0.42 0.42	1.5 2.3 0.27 167	0.0	0.0
6.2 0.05 1368 1368 1.00 1.00 3.3 0.8 0.0 0.0 4.1 A						0.0	2.3	0.0	99.0
0.05 1368 0.38 1.368 1.00 1.00 3.3 3.3 0.0 3.5 4.1						0.42	0.27	0 0	0.00
1368 0.38 1.00 1.00 3.3 0.8 0.0 4.1 A						0	167	0	0.00
0.38 1368 1.00 1.00 3.3 0.8 0.0 3.5 4.1								0	0.00
1368 1.00 1.00 3.3 0.8 0.0 3.5 4.1 A						0.00	0.37	0.00	
1.00 1.00 3.3 0.8 0.0 3.5 4.1 A				0 634		0	591	0	_
1.00 (0.8 0.8 0.0 3.5 4.1 A A						1.00	1.00	1.00	1.00
3.3 0.8 0.0 3.5 A	_		_		_	0.00	1.00	0.00	0.00
0.0 3.5 4.1 A		3.2		•		0.0	25.8	0.0	0.0
0.0 3.5 4.1 A		0.7		0.0 0.5		0.0	1.9	0.0	0.0
3.5 A.1	0.0	0.0	0.0	0.0 0.0		0.0	0.0	0.0	0.0
4.1 A		3.0	0.0		0.0	0.0	1.0	0.0	0.0
A	0.0	3.8	0.0	0.0 25.6		0.0	27.7	0.0	0:0
		А		C			C		
			476		24			62	
			3.8		25.6			27.7	
Approach LOS A	_		⋖		S			O	
limer 1 2	3	4	2	6 7	8				
Assigned Phs 2		4		9	∞				
Phs Duration (G+Y+Rc), s 46.0		6.7	7	46.0	9.7				
		0.9		0.9	0.9				
Max Green Setting (Gmax), s 40.0		20.0	4	40.0	20.0				
Max Q Clear Time (g_c+l1), s 8.2		4.3		7.5	2.8				
Green Ext Time (p_c), s 4.4		0.3		4.4	0.3				
ntersection Summary									
HCM 2010 Ctrl Delay	2.8								
HCM 2010 LOS	e A								

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HCM 2010 Signalized Intersection Summary 3: County Line Rd & Spring Mill Rd

3/9/2015

3/9/2015

•	•	†	~	<b>/</b>	ţ	4	•	•	•	٠	-	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Volume (veh/h)	34	274	26	19	260	9/	40	245	44	32	322	52
Number	വ	2	12	-	9	16	3	00	18	7	4	14
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
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	1800	1630	1800	1800	1731	1800	1800	1731	1800	1800	1731	1800
Adj Flow Rate, veh/h	36	288	62	64	274	80	42	258	46	34	339	22
	0	-	0	0	-	0	0	-	0	0	<del>-</del>	0
	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
avy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
	100	909	123	144	222	150	86	371	62	84	403	63
_	0.50	0.50	0.50	0.50	0.50	0.50	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	73	1214	246	155	1111	300	112	1274	212	73	1383	215
Grp Volume(v), veh/h	386	0	0	418	0	0	346	0	0	428	0	0
Grp Sat Flow(s),veh/h/ln	1534	0	0	1566	0	0	1598	0	0	1671	0	0
O Serve(g_s), s	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0
Cycle Q Clear(g_c), s	10.0	0.0	0.0	10.3	0.0	0.0	11.9	0.0	0.0	15.0	0.0	0.0
Prop In Lane	60.0		0.16	0.15		0.19	0.12		0.13	0.08		0.13
Lane Grp Cap(c), veh/h	829	0	0	846	0	0	230	0	0	549	0	0
V/C Ratio(X)	0.47	0.00	0.00	0.49	0.00	0.00	0.65	0.00	0.00	0.78	0.00	0.00
Avail Cap(c_a), veh/h	829	0	0	846	0	0	916	0	0	951	0	0
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)	0.29	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.3	0.0	0.0	10.4	0.0	0.0	19.7	0.0	0.0	20.8	0:0	0.0
Incr Delay (d2), s/veh	9.0	0.0	0.0	2.0	0.0	0.0	0.5	0.0	0.0	0.9	0.0	0.0
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
%),veh/ln	4.4	0.0	0.0	5.2	0.0	0.0	5.4	0.0	0.0	7.0	0.0	0.0
y(d),s/veh	10.8	0.0	0.0	12.4	0.0	0.0	20.2	0.0	0.0	21.8	0.0	0.0
LnGrp LOS	<u>а</u>			В			ပ			ပ		
Approach Vol, veh/h		386			418			346			428	
Approach Delay, s/veh		10.8			12.4			20.2			21.8	
Approach LOS		Ω			В			O			O	
Timer	_	2	က	4	വ	9	7	<b>∞</b>				
Assigned Phs		2		4		9		8				
Phs Duration (G+Y+Rc), s		37.5		24.5		37.5		24.5				
Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
Max Green Setting (Gmax), s		16.0		34.0		16.0		34.0				
Max Q Clear Time (g_c+I1), s		12.0		17.0		12.3		13.9				
Green Ext Time (p_c), s		1.4		1.6		1.3		1.6				
Intersection Summary												
HCM 2010 Ctrl Delay			16.3									
HCM 2010 LOS			В									

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HCM 2010 TWSC

HCM 2010 TWSC 15: Conestoga Rd & Spring Mill Rd

ntersection								
nt Delay, s/veh 3.1								
Movement	EBT	T EBR	~	WBL WBT	WBT	NBL	NBR	
Vol, veh/h	1070	0 24	_	19	19 1100	0	25	
Conflicting Peds, #/hr			_	0	0	0	0	
Sign Control	Free	e Free	0	Free Free	Free	Stop	Stop	
RT Channelized		- None	0	٠	None		None	
Storage Length				•			0	
Veh in Median Storage, #		0		•	0	0		
Grade, %				•	က	0		
Peak Hour Factor	v	_	_	<i>L</i> 9		29	29	
Heavy Vehicles, %				0	0	0	0	
Mvmt Flow	1597	7.		88	1642	0	37	
Major/Minor	Major1	<del></del>		Major2		Minor1		
Conflicting Flow All		0		1633	0	2493	816	
Stage 1		ľ		٠		1615		
Stage 2				٠		878		
Critical Hdwy		ľ	l.	4.1		9.9	6.9	
Critical Hdwy Stg 1						2.8		
ical Hdwy Stg 2		i		٠		5.8		
Follow-up Hdwy				2.2	,	3.5	3.3	
Pot Cap-1 Maneuver				403		25	324	
Stage 1		ì		•		151		
Stage 2				•	,	372		
Platoon blocked, %								
Mov Cap-1 Maneuver				403		2	324	
Mov Cap-2 Maneuver		į		•		2		
Stage 1				٠		151		
Stage 2				•		78		
Approach	ш	EB		WB		NB		
HCM Control Delay, s		0		5.8		17.6		
HCM LOS						U		
Minor Lane/Major Mvmt N	NBLn1 EBT	T EBR	\ MBL	WBT				
Capacity (veh/h)	324	ľ	- 403					
HCM Lane V/C Ratio	0.115		- 0.07	٠				
HCM Control Delay (s)	17.6	ľ	- 14.6	9.9				
ON Long LAND	•							
	ی		α.	V				

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Int Delay, s/veh (	0.2							
Movement	EBL	EBT		WBT	WBR	SWL	SWR	
Vol, veh/h	2	625		8/9	3	4	8	
Conflicting Peds, #/hr	0	0		0	0	0	0	
Sign Control	Free Free	Free		Free	Free	Stop	Stop	
RT Channelized		- None		٠	None		None	
Storage Length	٠			٠		0		
Veh in Median Storage, #		0		0		0		
Grade, %	•	0		0		0		
Peak Hour Factor	98	98		98	98	98	98	
Heavy Vehicles, %	4	4		4	4	4	4	
Mvmt Flow	2	727		788	m	2	6	
Major/Minor	Major1		N	Major2		Minor2		
Conflicting Flow All	792	0		•	0	1521	790	
Stage 1	٠			٠		790		
Stage 2				٠		731		
Critical Hdwy	4.14			٠		6.44	6.24	
Critical Hdwy Stg 1				٠		5.44		
Critical Hdwy Stg 2	•			•		5.44		
Follow-up Hdwy	2.236			٠		3.536	3.336	
Pot Cap-1 Maneuver	820			٠		129	387	
Stage 1	•					444		
Stage 2	•			٠		473		
Platoon blocked, %				1				
Mov Cap-1 Maneuver	820			٠		128	387	
Mov Cap-2 Maneuver	•			•		128		
Stage 1				٠		444		
Stage 2	•			•		471		
Approach	B			WB		MS		
HCM Control Delay, s	0			0		21.6		
HCM LOS						S		
Minor Lane/Major Mvmt	EBL	EBT WBT	T WBRSWLn1					
Capacity (veh/h)	820		231					
HCM Lane V/C Ratio	0.003		90.0					
HCM Control Delay (s)	9.4	0	21.6					
HCM Lane LOS	<	<	ر					
	_	₹	ر.					

HCM 2010 TWSC 29: Strathmore Dr/Lowrys Ln & Conestoga Rd

Major   Majo	ntersection													
## 150   FEBL EBR   W.BL WBT WBR   NBL NBL NBT    46 415   14   9 447   5   13   14    6 0 0 0 0 0 0 0 0 0 0 0    6 0 0 0 0 0 0 0 0 0 0    7 0 0 0 0 0 0 0 0 0    8 0 0 0 0 0 0 0 0    8 0 0 0 0 0 0 0 0    8 0 0 0 0 0 0 0 0    8 0 0 0 0 0 0 0 0    8 0 0 0 0 0 0 0 0    9 0 0 0 0 0 0 0    1 0 0 0 0 0 0 0    1 0 0 0 0 0 0 0    1 0 0 0 0 0 0    1 0 0 0 0 0 0    1 0 0 0 0 0 0    1 0 0 0 0 0 0    1 0 0 0 0 0 0    1 0 0 0 0 0 0    1 0 0 0 0 0 0    1 0 0 0 0    1 0 0 0 0    1 0 0 0 0    1 0 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0 0 0    1 0		9.1												
## FEIL FEIT FEIR WIST WIST WIST NBT NBT NBT NBT NBT NBT NBT NBT NBT NB														
## 46 415 14 9 447 5 13 14    Free Free Free Free Free Free Stop Stop   Free Free Free Free Free Free Free Stop Stop   Free Free Free Free Free Free Free Fre	ovement	EBL	EBT	EBR				WBR	NBL	NBT	NBR	SBL	SBT	SBR
Free Free Free Free Free Stop Stop	ol, veh/h	46	415	14		6	447	2	13	14	12	2		8
Free   Free   Free   Free   Stop   Stop	onflicting Peds, #/hr	0	0	0		0	0	0	0		0	0	0	
# None None None None	gn Control	Free				Free	Free	Free	Stop			Stop	Stop	Stop
#	Channelized			None		٠	-	Vone			None			None
## - 0 0 0 0 - 0 - 0 - 0 - 0	orage Length		•	٠		٠	٠			•	٠		•	
Najort   State   Sta	h in Median Storage, #		0	,		٠	0			0			0	ľ
Majort   M	ade, %		0	•		٠	0			0			0	,
Majort   M	ak Hour Factor	8	80	8		8	80	8	80			80		80
Majort	avy Vehicles, %	3	3	က		3	3	က	33	3		3	3	3
Majort   Major2   Minor1   Major4   S46   0   S36   0   0   1287   1231   123	mt Flow	28	519	9		=	226	9	16	9	15	2		101
Majort														
565 0 0 536 0 0 1287 1231	jor/Minor	Major1			2	lajor2			Minor1			Minor2		
4.13 643 683 4.13 643 683	nflicting Flow All	299	0	0		536	0	0	1287	1231	528	1243	1235	562
4.13	Stage 1			٠		٠	٠		643	643	٠	584	584	
4.13	Stage 2			٠		٠	1		644	588	٠	699		ľ
2227	tical Hdwy	4.13	'	'		4.13	٠		7.13	6.53	6.23	7.13	6.53	6.23
1002   1002   1002   1000	tical Hdwy Stg 1					٠	•		6.13		٠	6.13		ľ
2227 - 2227 - 3527 4027 3 1002 - 1027 - 140 177 1002 - 1027 - 140 460 467 1002 - 1027 - 640 467 1002 - 1027 - 640 467 1002 - 1027 - 640 467 1003 - 1027 - 1027 - 1027 1003 - 1027 - 1027 - 370 1003 - 1027 - 10331 1003 - 1027 - 10331	tical Hdwy Stg 2		•	٠		٠	٠		6.13		٠	6.13		
1002	low-up Hdwy	2.227	•	•		2.227	٠		3.527	4.027	3.327	3.527	4.027	3.327
1002	Cap-1 Maneuver	1002		٠		1027	٠		140		548	151	176	525
1002	Stage 1		1	1		1	1		460	467		496		
1002     1027     95   160       1027     95   160           95   160           95   160       .   .   .   .   95   160	Stage 2	•	'	•		٠	٠		460	494	٠	451	463	'
1002	toon blocked, %			•			٠							
Color   Colo	v Cap-1 Maneuver	1002	•	٠		1027	٠		95		548	125		525
FB	v Cap-2 Maneuver	•	•	•		٠	٠		95		٠	125	159	ľ
FB   WB   NB   NB     O	Stage 1			٠		٠	٠		422	428	٠	455		
EB   WB   0.2   0.2   0.2   0.2   0.2   0.2   0.2   0.2   0.2   0.3	Stage 2	•	1	•		٠	1	·	351	486	٠	386	425	·
NBLn1   EBL EBT EBR WBL WBT WBR SBLn1     158   1002	4000	E				CW.			2			5		
1 NBLn1 EBL EBT EBR WBL WBT WBR SBLn1 158 1002 - 1027 - 370 0.309 0.057 - 0.011 - 0.331 37.6 88 0 - 85 0 - 19.5 E A A A A A C 1 2 0 - 10	JUDACII	LD				O V			ONI			OC		
1 NBLn1 EBL EBT EBR WBL WBT WBRSELn1 158 1002 - 1027 - 370 0.309 0.057 - 0.011 - 0.331 37.6 8.8 0 - 85 0 - 19.5 E A A A A A C 12 0.2 - 0 - 14.5	M Control Delay, s	0.0				0.2			37.6			19.5		
NBLn1 EBL EBT EBR WBL WBT WBR SE	MLOS								ш			O		
NBLni EBI EBI EBI WBI WBR SE   158 1002   1027   - 1027   - 0   0.309 0.057   - 0.011   - 0   37.6 88 0   8.5 0   - 0   E A A A A A A A A A A A A A A A A A A														
158 1002 - 1027	nor Lane/Major Mvmt	NBLn1		EBT	EBR		WBT	<b>WBR SBL</b>	11					
0.309 0.057 0.011 0 37.6 8.8 0 . 8.5 0 E A A . A A 1 12 0.2 0	pacity (veh/h)	158	1002	٠	•	1027	٠	,	70					
37.6 8.8 0 - 8.5 0 - E A A - A A - 12 02 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0	tM Lane V/C Ratio	0.309	0.057	•	•	0.011	٠	- 0.3	31					
12 02 - 0 1	:M Control Delay (s)	37.6		0	•	8.5	0	- 19	.5					
12 02 - 0	:M Lane LOS	ш	A	V	•	A	V		S					
1.0	HCM 95th %tile Q(veh)	1.2	0.2	٠		0	٠	,	4.					

	%tile Q(veh) 1.2 0.2 · · 0 · · 1.4		Synctro 8 Report Page 1
TOTAL CALLS	HCM 95th %tile Q(veh)		EX am Baseline EX am

Lane Group Lane Configurations Lane Configurations Ideal Flow (php) Islan Factor In 0,967 Frt Frt Protected Sard. Flow (pron) In Speed (mph) In Diank Speed (mph) In Diank Speed (mph) In Rowleron In Children (pron) In Chil	0.0 1.1 0.0 1.1	SWL 152 1900 1.00 0.947	99 1900 1,00 0	
1838 108 108 1900 1900 1900 1900 1900 1901 100 100 1		152 1900 1.00 0.947 0.971	99 1900 1,00 0	
338 108 1900 1900 1,000 1,00 0,967 1801 0 30 2,95 6,7 0,91 0,91		152 1900 1.00 0.947 0.971	99 1900 1.00 0	
1900 1900 1900 100 0.967 0.967 1801 0 30 2.95 6.7 0.91 0.91	0.01	1900 1.00 0.947 0.971	1900 1.00 0	
100 1.00 0.967 1801 0 1801 0 30 295 6.7 6.7	0 - 0 -	1.00 0.947 0.971	0 0	
0.967 1801 0 1801 0 30 295 6.7 091 091 09	0.982 1829 0.982 1829	0.947	0	
1801 0 1801 0 30 295 6.7 6.7	0.982 1829 0.982 1829	0.971	0	
1801 0 1801 0 30 295 6.7 6.7	1829 0.982 1829		0	
1801 0 30 295 6.7 0.91 0.91	0.982	1713		
1801 0 30 295 6.7 0.91 0.91 0.9	1829	0.971		
30 295 6.7 0.91 0.91		1713	0	
295 6.7 0.91 0.91	30	30		
6.7 0.91	1901	824		
0.91 0.91	43.2	18.7		
	0.91	0.91	0.91	
Adj. Flow (vph) 371 119 180	322	167	109	
affic (%)				
Lane Group Flow (vph) 490 0 0	205	276	0	
		No	No	
)   	Left	Left	Right	
(£)	0	12		
	0	0		
Crosswalk Width(ft) 10	10	10		
m Lane				
1.00 1.00 1.	1.00	1.00	1.00	
Turning Speed (mph) 9 15		15	6	
Sign Control Free	Stop	Stop		
Intersection Summary				
Area Type: Other				
Control Type: Unsignalized				
Intersection Capacity Utilization 73.3%	⊇	U Level o	ICU Level of Service D	

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EX am Baseline	EXam

Lanes, Volumes, Timings 2: County Line Rd & N Ithan Ave

	4	1	_#	•	€	<b>~</b> /	
Lane Group	EBL	EBR	SBL	SBR	NWL	NWR	
Lane Configurations	>		>		>		
Volume (vph)	199	15	138	328	37	250	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.991		0.905		0.882		
Fit Protected	0.956		0.985		0.994		
Satd. Flow (prot)	1765	0	1660	0	1633	0	
Flt Permitted	0.956		0.985		0.994		
Satd. Flow (perm)	1765	0	1660	0	1633	0	
Link Speed (mph)	30		30		30		
Link Distance (ft)	973		295		2020		
Travel Time (s)	22.1		6.7		45.9		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	212	16	147	349	36	266	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	228	0	496	0	305	0	
Enter Blocked Intersection	No	N N	9	8	9	No No	
Lane Alignment	Left	Right	Left	Right	Left	Right	
Median Width(ft)	22		12		12		
Link Offset(ft)	0		0		0		
Crosswalk Width(ft)	10		10		10		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	6	15	6	15	6	
Sign Control	Stop		Free		Stop		
Intersection Summary							
Area Type:	Other						
Control Type: Unsignalized				9		-	
Intersection Capacity Utilization 67.3%	ion 67.3%			<u>ವ</u>	) Level o	ICU Level of Service C	
Analysis Period (min) 15							

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3/9/2015 147 30 0 0 Free Free 0 0 87 0 0 169 SB NBL NBT
57 233
0 0
Free Free
- None 0 0 87 0 0 268 2.2 87 1381 NB 1.5 SBT SBR 1381 - 618 0.047 - 0.259 7.7 0 12.8 A A B 0.1 - 1 6.2 861 HCM 2010 TWSC 53: County Line Rd & Lowrys Ln 5.4 5.4 5.4 5.4 5.4 5.4 85.1 85.1 85.1 85.1 0 0 0 87 0 0 0 12.8 B 450 450 851 644 EBL 3.7 Vol, vetvin
Conflicting Pecks, #/hr
Sign Control
RT Channelized
Storage Length
Veh in Median Storage, #
Grade, %
Grade, %
Median Yether
Heavy Vehicles, %
Mmtt Flow Capacity (veh/h)
HCM Lane V/C Ratio
HCM Control Delay (s)
HCM Lane LOS
HCM 95th %tile Q(veh) Approach HCM Control Delay, s HCM LOS Major/Minor
Conflicting Flow All
Stage 1
Stage 1
Stage 2
Critical Hdwy
Critical Hdwy Sig 1
Critical Hdwy Sig 2
Follow-up Hdwy
Pot Cap 1 Maneuver
Stage 1
Stage 2
Platroon blocked, %
Mov Cap 2 Maneuver
Mov Cap 2 Maneuver
Stage 1
Stage 2
Stage 2
Stage 2
Stage 2
Stage 2 Intersection Int Delay, s/veh

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(am Baseline	EXam

HCM 2010 TWSC 52: Airdale Rd & County Line Rd

HCM 2010 TWSC 43: County Line Rd & Roberts Rd

Int Delay, s/veh 3	3.9						
Movement	EBL	EBT		WBT	WBR	SBL	SBR
Vol, veh/h	199	216		282	70	15	96
Conflicting Peds, #/hr	0	0		0	0	0	0
Sign Control	Free	Free		Free Free	Free	Stop	Stop
RT Channelized		None		-	None		None
Storage Length	•			٠		0	
Veh in Median Storage, #	ľ	0		0		0	
Grade, %	٠	0		0		0	
Peak Hour Factor	88	88		88	88	88	88
Heavy Vehicles, %	<del></del>	_		_	<del>-</del>	_	-
Mvmt Flow	226	245		320	23	17	109
Major/Minor	Major1		~	Major2		Minor2	
Conflicting Flow All	343	0		•	0	1030	332
Stage 1				٠		332	
Stage 2	•			٠		869	
Critical Hdwy	4.11					6.41	6.21
Critical Holwy Stg 1	•			٠		5.41	
Critical Hdwy Stg 2	•			٠		5.41	
Follow-up Hdwy	2.209			•		3.509	3.309
Pot Cap-1 Maneuver	1222			٠		260	712
Stage 1	•			•		729	
Stage 2	•			٠		495	
Platoon blocked, %				•			
Mov Cap-1 Maneuver	1222			٠		204	712
Mov Cap-2 Maneuver	•			•		204	,
Stage 1				٠		729	
Stage 2						389	
Annroach	H			WB		S.	
HCM Control Delay, s	4.1			0		13.8	
HCM LOS						В	
Minor I ano Major Munt	ä	FRT WRT	WRD CRI n1				
Canadata (supply)	1222		מסומה				
Capacity (ven/n)	0.185		- 533				
HOM Control Dolay (c)	0.00		'				
HOM COININ Delay (5)	0.0		- 13.0				
HOM LAIRE LOS	4	¥	٥ .				

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Synch	
EX am Baseline	EX am

Int Delay, s/veh 23.9	,										
	į	i	ć č							ě	0
Movement	EBL	EBI	EBK	WBL	≥	WBK	NBL		Ž	SBL	SB
Vol, veh/h	99	86	<b>∞</b>	7	23			14 607	22	00	464
Conflicting Peds, #/hr	0	0	0	0		0		0 0		0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	e Free	Free	Free	Free
RT Channelized	ľ		None	·		None		Ċ	None		
Storage Length		•		·		٠					
Veh in Median Storage, #	ľ	0		ľ	0	٠		0			0
Grade, %		0		İ	0	•		0 -	٠		0
Peak Hour Factor	88	88	88	88	88		8	88 88		88	88
Heavy Vehicles, %	2	2	2	2		2		2 2	2	2	2
Mvmt Flow	75	11	6	2	26		-	16 690		6	527
Major/Minor	Minor			Minor			ProicM	_		Croice	
Wigoth Willion	Z IOI III		100	A LOL		010	Iviajui			210	9
Cornicting Flow All	00%		697	10/4		329	600	0	0	/ 18	0
Stage 1	200		٠	/36		١			٠	•	
Stage 2	390		·	338				Ì			
Critical Hdwy	7.54		6.94	7.54		6.94	4.14	4		4.14	
Critical Hdwy Stg 1	6.54	5.54		6.54		•		•			
Critical Hdwy Stg 2	6.54			6.54				Ì			
Follow-up Hdwy	3.52	~	3.32	3.52	~		2.22	2 -		2.22	•
Pot Cap-1 Maneuver	213		712	174		638	666	. 6		879	
Stage 1	476			377		•					ľ
Stage 2	909	417		920	494	٠					
Platoon blocked, %								•			
Mov Cap-1 Maneuver	177		712	99		638	666	6		879	
Mov Cap-2 Maneuver	177			99		•				•	
Stage 1	463			367		٠					
Stage 2	246	406		491	487	•					
	£						•			c	
Approach	EB			WB			Z	NB		SB	
HCM Control Delay, s	181			33.7			0.3	3		0.2	
HCM LOS	ш.			D							
	i		4			i d	0				
Minor Lane/Major Mvmt	NBL	NBI	NBR EB	NBR EBLn1WBLn1	SBL	SBI	SBR				
Capacity (veh/h)	666					,					
HCM Lane V/C Ratio	0.016	,	· -		0	•					
HCM Control Delay (s)	8.7	0.1		181 33.7	7 9.1	0.1					
HCM Lane LOS	A	A		F D	Α .	¥					
HCM 95th %tile O(yeh)	_			10.4	•						

HCM 2010 TWSC 61: Dwy/Aldwyn Ln & S Ithan Ave

3/10/2015

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

,	7.1												
Novement	EBL	EBT	EBR	ૅ	WBL M	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
/ol, veh/h	6	351	6			189	13	7	_	12	16	0	59
Conflicting Peds, #/hr	0	0	0		0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	노	Free F	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	•	٠	None			-	None			None			None
Storage Length	•	•	٠					•				•	·
/eh in Median Storage, #	•	0	٠			0			0			0	
Grade, %	•	0	٠			0		1	0		٠	0	
Peak Hour Factor	81	8	8		81	81	81	8	8		81	8	8
Heavy Vehicles, %	4 4	4 0	4 2		4 6	4	4 ,	4 0	4 4		4 0	4 0	4 0
Will Flow	=	455	=			233	0	7		2	07	0	2
// // // // // // // // // // // // //	Major1			Major2	212			Minor1			Minor2		
Conflicting Flow All	249	0	0	4	444	0	0	778	750	439	750	748	241
Stage 1	٠		٠			٠		461	461		281	281	ľ
Stage 2	•	•	٠					317	289		469	467	·
Critical Hdwy	4.14	•	٠	4.	4.14	٠		7.14	6.54	6.24	7.14	6.54	6.24
Critical Hdwy Stg 1	•	•	1		ï	÷		6.14	5.54		6.14	5.54	ľ
Critical Hdwy Stg 2	•	•	٠			٠		6.14	5.54		6.14	5.54	
ollow-up Hdwy	2.236	•	•	2.2	2.236	٠		3.536	4.036	3.336		4	3.336
Pot Cap-1 Maneuver	1305		٠	11	1106	٠		311	338	614	325	339	793
Stage 1	•	•	٠					577	295		721	675	·
Stage 2	٠		٠					069	699		571	228	ľ
Platoon blocked, %		1	•			٠							
Mov Cap-1 Maneuver	1305	•	٠	11	1106			276	327	614	309	328	793
Aov Cap-2 Maneuver	•	•	•		ï	٠		276	327		309	328	
Stage 1	•		٠			٠		571	226		713	199	
Stage 2	•	•	٠			٠		613	655		220	552	
Approach	EB			Λ	WB			NB			SB		
HCM Control Delay, s	0.2				9.0			14.2			12.2		
HCM LOS								Ω			В		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR WBL		WBT	WBR SBLn1						
Capacity (veh/h)	417	1305		-	1106		- 594						
HCM Lane V/C Ratio	0.059	600.0	٠	- 0.018	18	٠	- 0.156						
HCM Control Delay (s)	14.2	7.8	0	,	8.3	0	- 12.2						
HCM Lane LOS	В	A	∢		A	A	B						

Synchro 8 Report Pane 1	EX pm Baseline	21.0	21.0	0.12	71:0
----------------------------	----------------	------	------	------	------

EX am Baseline EX am

Configurations	965 1800 11 11 3% 3% 0.995 111.2 111.2 111.2 995 1026 No	8	FBR2 WBL2  27	WBL 22 22 1800 12 75	WBT	WBR2	NBL2	NBL	NBT
tions 4 ((1) ((1) (1) (1) (1) (1) (1) (1) (1) (				22 1800 12 75	835 1800 12	32			
(ff) 1800 11 (ff) 1800 11 or 0.95 11 or 0.95 11 or 0.95 11 or 0.97 0 ft) 1900 11 or 0.97 0 or 0.97 0 or 0.97 0 tor 0.97 0 tor 0.97 0 tor 0.97 0				1800 1800 12	1800	32			4
(ff) 1800 11  (ff) 1900 11  (ff) 1900 11  (ff) 1900 11  (ff) 0 11  (ff) 0 0				1800	1800		7	21	.0
(ff)				12	12	1800	1800	1800	1800
(ff)  or  or  or  or  or  or  or  or  or  o				75	200	12	10	10	10
(ff)  or  or  or  or  or  or  or  or  or  o				75	%7-				1%
(1) (1) (2) (3) (4) (4) (5) (4) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7				,				0	
or 0.95 1  (a) 0.95 1  (b) 0.97 0  (c) 0.9				_				0	
0.97 0 0.97 0 0.97 0 0.97 0 0.97 0 0.97 0 0 0.97 0 0				25				22	
0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0				1.00	0.95	0.95	1.00	1.00	1.00
0 0 11 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	_				0.994				0.974
0 11 0 0.97 0 4				0.950					0.961
0 0.97 0 0.97 0 0 1.00				1693	3366	0	0	0	1534
0 097 0 4 11 11 11 11 11 11 11 11 11 11 11 11 1				0.199					0.754
0.97 0 4	_		es ov	355	3366	0	0	0	1204
0.97 0 4 0			90			Yes			
0.97 0 4 :- 0 :- 0 :- 0 :-			2		196				
0.97 0 4 :: 0 :: on No					35				7
0.97 0 4 :: 0 :: on No					1609				492
0.97 0 4 : 0 :: on No					31.3				13.4
on No			76.0 76.0	0.97	0.97	0.97	0.97	0.97	0.97
on No Left				23	861	33	7	23	
v (vph) 0 :: lersection No Left I									
tersection No		.,		25	894	0	0	0	_
Left			No No		N	9	No No	No	8
Median Width(ft)		Right Ric	Right Left		Left	Right	Left	Left	Fe
Link Offset(ft)	12				12	)			
(1)	0				0				0
Crosswalk Width(ft)	10				10				10
Two way Left Turn Lane									
Headway Factor 1.19 1.19	1.14	1.14 1.	1.01 1.16	1.06	1.06	1.06	1.18	1.18	1.18
Turning Speed (mph) 15 15		6	9 15	15		6	15	15	
Number of Detectors 1 1	-		_	<del>-</del>	_		_	_	
Left L	Thru	, R	Right Left	Left	Thru		Left	Left	Thru
	37		37 20	37	37		70	70	37
0	5-			-3	ç-		0	0	
0 (tt)	5-			-3	-3		0	0	
t) 20	40			40	40		20	70	9
Detector 1 Type CI+Ex CI+Ex	CI+Ex	CI+Ex	Ex CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+EX
0:0	0.0	_			0.0		0.0	0.0	0
0.0	0.0	_			0.0		0.0	0.0	0.0
Delay (s) 0.0	0.0	_			0.0		0.0	0.0	0
t+wd td+wd	NA	Pe	Perm Perm	Perm	¥		Perm	Perm	A
Protected Phases 5 5	2				9		,	,	10
35 2			2 6	9			10	10	
е 2	2		2 6	9	9		10	10	10
Minimum Initial (s) 3.0 3.0	15.0	1	15.0 15.0	15.0	15.0		3.0	3.0	3.0
	21.0	5.			21.0		13.0	13.0	13.0

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/10/2015

ane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	RE	NET	NER	NER2
Lane onfigurations					4				N.S.	æ		
Volume (vph)	4	10	<del></del>	<del></del>	0	co	14	187	0	110	20	<b>—</b>
ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	1	1	1
Grade (%)					-3%					3%		
Storage Length (ft)	0			0		0			200		0	
Storage Lanes	0			0		0			-		0	
Faper Length (ft)				22					25			
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
					0.879					926.0		
Flt Protected					0.995				0.950			
Satd. Flow (prot)	0	0	0	0	1462	0	0	0	1651	1640	0	0
Flt Permitted					0.992				0.170			
Satd. Flow (perm)	0	0	0	0	1458	0	0	0	295	1640	0	0
Right Turn on Red		8					2					8
Satd. Flow (RTOR)												
Link Speed (mph)					52					40		
Link Distance (ft)					265					1336		
Fravel Time (s)					16.3					22.8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	10	-	-	0	m	14	193	0	113	21	_
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	16	0	0	0	193	135	0	0
Enter Blocked Intersection	No No	No No	No	S	9	8	9	8	No No	No No	9	8
Lane Alignment	Right	Right	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right
Median Width(ft)					0					12		
Link Offset(ft)					0					0		
Crosswalk Width(ft)					10					10		
rwo way Left Turn Lane												
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.15	1.15	1.09	1.09	1.14	1.14	1.14
Turning Speed (mph)	6	6	12	12		6	6	15	12		6	6
Number of Detectors				-	, i					, i		
Detector Template			Left	Left	Thru			Left	Left	Thru		
Leading Detector (ft)			50	70	37			20	37	37		
railing Detector (ft)			0	0	ကု			0	ကု	ကု		
Detector 1 Position(#)			0	0	ή:			0	ကု	ကု :		
Detector 1 Size(ft)			20	20	40			20	40	40		
Detector 1 Type			CI+EX	CI+Ex	CI+Ex			CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Queue (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Delay (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Turn Type			Perm	Perm	N N			bm+pt	pm+pt	NA.		
Protected Phases			٠		6			'n	er.	00		
Permitted Phases			6	6				∞	∞			
Detector Phase			6	6	6			c	c	∞		
Switch Phase												
Minimum Initial (s)			3.0	3.0	3.0			3.0	3.0	3.0		
Minimum Split (s)			13.0	13.0	13.0			13.0	13.0	13.0		

Synchro 8 Report Page 3 Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave 1.12 1.12 9 1800 0 8 1.00 0.97 No No Right 0 0.97 230 1.00 0.950 0 1619 1555 0.671 0 1144 1555 1.00 25 3168 86.4 0.97 3.0 163 1800 -7% 406 No Left 12 0 0.0 0.0 NA 4 0.97 0.97 39 9 0.0 0.0 Perm 3.0 25 150 0.0 0.0 Perm 38 3.0 1.00 e S o Leading Detector (()
Trailing Detector (()
Detector 1 Position(()
Detector 1 Type
Detector 1 Type
Detector 1 Channel
Detector 1 Channel
Detector 1 Extent (s)
Detector 1 Detecto Switch Phase Minimum Initial (s) Minimum Split (s) Lane Configurations Volume (vph) Ideal Flow (vphpf) Lane Width (ft) EX pm Baseline

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

				٠						-	-	•
Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Total Split (s)	14.0	14.0	20.0		50.0	36.0	36.0	36.0		32.0	32.0	32.0
Total Split (%)	9.3%	9.3%	33.3%		33.3%	24.0%	24.0%	24.0%		21.3%	21.3%	21.3%
Maximum Green (s)	8.0	8.0	44.0		44.0	30.0	30.0	30.0		26.0	26.0	26.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				0.5
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				6.5
Lead/Lag	Lead	Lead				Lag	Lag	Lag		Lag	Lag	Lag
_ead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None		None	None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		44.3	44.3		44.3		30.0	30.0				11.6
Actuated g/C Ratio		0.41	0.41		0.41		0.28	0.28				0.11
v/c Ratio		1.51	0.79		0.37		0.26	0.83				0.57
Control Delay		283.2	35.5		10.4		44.7	37.7				65.8
Queue Delay		0.0	0.0		0.0		0.0	0.0				0.0
otal Delay		283.2	35.5		10.4		44.7	37.7				65.8
SOT		ш	Ω		В		Ω	Ω				ш
Approach Delay			71.4					37.9				65.8
Approach LOS			ш					۵				Ш
Queue Length 50th (ft)		~193	300		36		13	231				47
Queue Length 95th (ft)		#447	#261		126		47	#443				108
Internal Link Dist (ft)			497					1529				412
Furn Bay Length (ft)		300					75					
Base Capacity (vph)		169	1306		763		88	1080				290
Starvation Cap Reductn		0	0		0		0	0				0
Spillback Cap Reductn		0	0		0		0	0				0
Storage Cap Reductn		0	0		0		0	0				0
Reduced v/c Ratio		1.51	0.79		0.37		0.26	0.83				0.26
ntersection Summary												
Area Type:	Other											
Cycle Length: 150												
Actuated Cycle Length: 107.7	.7											
Natural Cycle: 150												
Control Type: Actuated-Uncoordinated	oordinated											
Maximum v/c Ratio: 1.68												
Intersection Signal Delay: 99.2	9.2			드	tersectio	Intersection LOS: F						
ntersection Capacity Utilization 114.6%	tion 114.69	<b>~</b>		⊇	:U Level	ICU Level of Service H	H					
Analysis Period (min) 15												

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

Synchro 8 Report Page 4 EX pm Baseline

3/10/2015 Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

7	* * * * * * * * * * * * * * * * * * *	•	•	_	•
<b>1</b> € 50		<b>F</b>	<b>X</b>	60	<b>1</b> ø10
503		13.5	23 s	32.5	32 s
<b>₹</b>	954	**************************************			
14 s	36 s	36.5			

Synchro 8 Report Page 5 EX pm Baseline

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

Lane Group Total Split (s) Total Split (%) Aaximim Green (s)					CDT							
Total Split (s) Total Split (%) Maximum Green (s)	NBR	NBR2	SBL2	SBL	201	SBR	SBR2	NEL2	NEL	NET	NER	NER2
Fotal Split (%)			32.0	32.0	32.0			13.0	13.0	36.0		
Maximum Green (s)			21.3%	21.3%	21.3%			8.7%	8.7%	24.0%		
Maximum Ologi, (2)			26.0	26.0	26.0			7.0	7.0	30.0		
Yellow Time (s)			3.0	3.0	3.0			4.0	4.0	4.0		
All-Red Time (s)			3.0	3.0	3.0			2.0	2.0	2.0		
Lost Time Adjust (s)					0.5				0.5	0.5		
Total Lost Time (s)					6.5				6.5	6.9		
Lead/Lag			Lead	Lead	Lead			Lead	Lead			
-ead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0			3.0	3.0	3.0		
Recall Mode			None	None	None			None	None	None		
Walk Time (s)										7.0		
-lash Dont Walk (s)										25.0		
Pedestrian Calls (#/hr)										0		
Act Effct Green (s)					6.7				30.0	30.0		
Actuated g/C Ratio					90:0				0.28	0.28		
//c Ratio					0.21				1.17	0.30		
Control Delay					28.7				157.9	36.7		
Queue Delay					0.0				0.0	0.0		
otal Delay					58.7				157.9	36.7		
SO.					ш				ш	۵		
Approach Delay					28.7					108.0		
Approach LOS					ш					ш		
Jueue Length 50th (ft)					12				~104	70		
Jueue Length 95th (ft)					41				#316	154		
nternal Link Dist (ft)					217					1256		
urn Bay Length (ft)									200			
Base Capacity (vph)					351				165	457		
Starvation Cap Reductn					0				0	0		
Spillback Cap Reductn					0				0	0		
Storage Cap Reductn					0				0	0		
Reduced v/c Ratio					0.02				1.17	0.30		
ntersection Summary												

EX pm Baseline Synchro 8 Report Page 6

anes, Volumes, Ilmings	: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave
Lanes, \	7: Sprou

3/10/2015

	•	<b>&gt;</b>	×	<b>&gt;</b>	\$
Lane Group	SWL2	SWL	SWT	SWR SWR2	SWR2
Total Split (s)	23.0	23.0	23.0		
Total Split (%)	15.3%	15.3%	15.3%		
Maximum Green (s)	17.0	17.0	17.0		
Yellow Time (s)	4.0	4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0		
Lost Time Adjust (s)		0.5	0.5		
Total Lost Time (s)		6.5	6.9		
Lead/Lag	Lag	Lag	Lag		
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0		
Recall Mode	None	None	None		
Walk Time (s)					
Flash Dont Walk (s)					
Pedestrian Calls (#/hr)					
Act Effct Green (s)		16.8	16.8		
Actuated g/C Ratio		0.16	0.16		
v/c Ratio		0.27	1.68		
Control Delay		20.0	351.7		
Queue Delay		0.0	0.0		
Total Delay		20.0	351.7		
SOT		Ω	ш		
Approach Delay			319.8		
Approach LOS			ш		
Queue Length 50th (ft)		28	~391		
Queue Length 95th (ft)		11	#719		
Internal Link Dist (ft)			3088		
Turn Bay Length (ft)		150			
Base Capacity (vph)		178	242		
Starvation Cap Reductn		0	0		
Spillback Cap Reductn		0	0		
Storage Cap Reductn		0	0		
Reduced v/c Ratio		0.27	1.68		
Intersection Summary					

Queues 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

1026 0.79 (0.79 (0.00 35.5 35.5 300 #561 497	25 0.26 44.7 0.0 44.7	894 0.83 37.7 0.0 37.7 231	NBT 74 0.57 65.8 0.0 65.8 47	SBT 19 0.21 58.7 0.0 58.7	193 1.17 157.9 0.0 157.9	135 0.30 36.7 0.0 36.7	SWL 48 0.27 50.0 0.0 50.0	SWT 406 1.68 351.7 0.0 351.7
256 1026 1.51 0.79 283.2 35.5 0.0 0.0 283.2 35.5 (1) #447 #561 300 497	25 0.26 44.7 0.0 44.7	894 0.83 37.7 0.0 37.7 231	74 0.57 65.8 0.0 65.8	19 0.21 58.7 0.0 58.7	193 1.17 157.9 0.0 157.9	135 0.30 36.7 0.0 36.7	48 0.27 50.0 0.0 50.0	406 1.68 351.7 0.0 351.7
1.51 0.79 283.2 35.5 0.0 0.0 283.2 35.5 (f) #447 #561 300 300	0.26 44.7 0.0 44.7	0.83 37.7 0.0 37.7 231	0.57 65.8 0.0 65.8	0.21 58.7 0.0 58.7	1.17 157.9 0.0 157.9	0.30 36.7 0.0 36.7	0.27 50.0 0.0 50.0	1.68 351.7 0.0 351.7
283.2 35.5 0.0 0.0 283.2 35.5 (ft) -193 300 (ft) #447 #561 300 497	44.7 0.0 44.7 13	37.7 0.0 37.7 231	65.8 0.0 65.8	58.7 0.0 58.7	0.0 157.9 -104	36.7	50.0	351.7 0.0 351.7
0.0 0.0 283.2 35.5 (f) -193 300 (f) #447 #561 300 497	0.0 44.7 13	0.0 37.7 231	0.0	0.0	0.0	36.7	0.0	351.7
(f) 283.2 35.5 283.2 35.5 (f) +447 #561 300	13	37.7	65.8	58.7	157.9 ~104	36.7	20.0	351.7
(f) ~193 300 (f) #447 #561 497 300	13	231	47	12	~104	i		100
(ft) #447 #561 497 300			:	7		20	78	-391
300	47	#443	108	41	#316	154	77	#719
300		1529	412	217		1256		3088
	72				200		150	
Base Capacity (vph) 169 1306 763	86	1080	290	351	165	457	178	242
Starvation Cap Reductn 0 0 0 0	0	0	0	0	0	0	0	0
Spillback Cap Reductn 0 0 0	0	0	0	0	0	0	0	0
Storage Cap Reducth 0 0 0	0	0	0	0	0	0	0	0
Reduced v/c Ratio 1.51 0.79 0.37	0.26	0.83	0.26	0.05	1.17	0.30	0.27	1.68

intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

- Volume sxoreeds capacity, queue is theoretically infinite.

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

Oueue shown is maximum after two cycles.

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

3/10/2015

3/10/2015

lane Groun	FBT	FBR	. MBI	WBT	NBI	NBR	
l and Configurations	¥			44	Þ		
Volume (vph)	1089	122	20	- 008 - 008	85	19	
Ideal Flow (vphpf)	1800	1800	1800	1800	1800	1800	
Lane Width (ft)	1	=	=	1	12	12	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00	
Ft	0.985				0.975		
Fit Protected				0.999	0.961		
Satd. Flow (prot)	3193	0	0	3238	1653	0	
Fill Permilled	2102	c	c	0.900	1462	c	
Sald. Flow (perm)	3193	0 %	0	7431	1003	0 20%	
Satd Flow (PTOP)	23	2			α	Les	
Jink Sneed (mnh)	3 5			35	25		
Link Distance (ff)	1609			1791	319		
Travel Time (s)	31.3			25.1	8.7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1184	133	22	870	92	21	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1317	0	0	892	113	0	
Enter Blocked Intersection	2	8	9	9	9	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
Link Offset(ff)	0 ;			0 ;	0 ;		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane	4	4	4	7	7	7	
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07	
Turning speed (mpn)	7	6	<u>.</u>	7	Ω 7	6	
Number of Detectors	- i		- <del>4</del>	- I	- #0 -		
Leading Detector (ft)	37		70 20	37	37		
Trailing Detector (ft)	; c;		2	; c;	; ~;		
Detector 1 Position(ff)	, ch		0	ņ	ņ		
Detector 1 Size(ft)	40		20	40	40		
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Turn Type	¥.		Perm	Ϋ́	Prot		
Protected Phases	7			9	∞		
Permitted Phases			9				
Detector Phase	2		9	9	00		
Switch Phase	6		6	6	-		
Minimum Initial (s)	10.0		0.02	10.0	4.0		
Minimum Spin (S)	71.0		21.0	0.12	74.0		
Total Split (S)	0.67		0.62	0.62	31.0		
Total Split (%)	48.3%		48.3%	48.3%	%/.16		
Maximum Green (s)	0.42		0.42	0.42	70.0		
Yellow Time (s)	3.0		3.0	3.0	3.0		

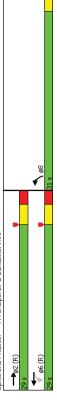
Synchro 8 Report Page 8

EX pm Baseline

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

ane Group	EBT EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.5		0.5	0.5	
otal Lost Time (s)	5.5		5.5	5.5	
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	С-Мах	C-Max	None	
Walk Time (s)	10.0	10.0	10.0	7.0	
Flash Dont Walk (s)	0.0	0.0	0.0	16.0	
Pedestrian Calls (#/hr)	0	0	0	0	
Act Effct Green (s)	43.7		43.7	8.5	
Actuated g/C Ratio	0.73		0.73	0.14	
v/c Ratio	0.57		0.42	0.45	
Control Delay	9.9		2.1	25.2	
Queue Delay	0.0		0.0	0.0	
Fotal Delay	9.9		2.1	25.2	
SOT	۷		A	ပ	
Approach Delay	9.9		2.1	25.2	
Approach LOS	A		V	ပ	
Queue Length 50th (ft)	107		-	32	
Queue Length 95th (ft)	199		m2	89	
Internal Link Dist (ft)	1529		1211	239	
Furn Bay Length (ft)					
Base Capacity (vph)	2330		2138	712	
Starvation Cap Reductn	0		0	0	
Spillback Cap Reductn	0		0	0	
Storage Cap Reductn	0		0	0	
Reduced v/c Ratio	0.57		0.42	0.16	
ntersection Summary					
Area Type:	Other				
Cycle Length: 60					
Actuated Cycle Length: 60					
Offset: 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow	ed to phase 2:EBT a	nd 6:WBT	L, Start o	f Yellow	
Natural Cycle: 80 Control Type: Actuated Coordinated	rdinatod				
Julio Type. Actualed-Cot	Juliateu				
Maximum v/c Ratio: 0.57					
ntersection Signal Delay: 5.8	œ.		≘	Intersection LOS: A	1LOS: A
Intersection Capacity Utilization 53.8%	ition 53.8%		೨	U Level o	ICU Level of Service A

11: Chapel Dr & Lancaster Ave Splits and Phases:



Synchro 8 Report Page 2 EX pm Baseline

EX pm Baseline

Synchro 8 Report Page 3

3/10/2015 113 0.45 25.2 0.0 25.2 32 68 239 EBT WBT 1317 892 0.57 0.42 6.6 2.1 0.0 0.0 6.6 2.1 107 1 199 m2 1529 1211 Queues 11: Chapel Dr & Lancaster Ave Control Delay
Queue Delay
Queue Delay
Total Delay
Total Delay
Queue Length 50th (ft)
Queue Length 95th (ft)
Internal Link Disk (ft)
Turn Bay Length (ft)
Base Capacity (oph)
Base Capacity (oph)
Slarvalion Cap Reducin
Spillback Cap Reducin
Storiage Cap Reducin
Reduced vic Ratio Lane Group Lane Group Flow (vph) v/c Ratio

Intersection Summary motore is metered by upstream signal.

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

									-		۰	
-ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	₩.		je-	₩.		je.	æ.		F	£,	
Volume (vph)	8	937	91	95	684	31	63	123	9/	9	232	73
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
-ane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		%0			3%			1%			%0	
Storage Length (ft)	140		0	20		0	105		0	9		0
Storage Lanes	-		0	-		0	<del></del>		0	<del>-</del>		0
Faper Length (ft)	22			22			25			25		
ane 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
==		0.987			0.993			0.943			0.964	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1565	3089	0	1541	3061	0	1557	1545	0	1565	1588	0
Fit Permitted	0.270			0.097			0.252			0.480		
Satd. Flow (perm)	445	3089	0	157	3061	0	413	1545	0	791	1588	0
Right Turn on Red			2			2			2			8
Satd. Flow (RTOR)												
Ink Speed (mph)		32			32			52			52	
ink Distance (ft)		1291			2034			183			973	
ravel Time (s)		25.1			39.6			2.0			26.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	986	96	100	720	33	99	129	80	89	244	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	1082	0	100	753	0	99	209	0	89	321	0
Enter Blocked Intersection	2	8	8	2	2	2	2	2	8	9	8	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Lef	Right	Left	Leff	Right
Median Width(ft)		10			10			10			10	
-ink Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
wo way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	15		6	15		6	12		6	12		6
Number of Detectors		, i		-	, i			, i			<u> </u>	
Detector Template	E !	밀		Le <del>ll</del>	밀		Let			Let		
eading Detector (ft)	3/	3/		3/	3/		3/	3/		37	37	
railing Detector (ft)	ကု	ကု		ကု	ကု		ကု	ကု		ကု	ကု	
Detector 1 Position(ft)	ကု	ကု		က	ကု		ကု	ç,		ب	ကု	
Detector 1 Size(ft)	40	40		40	40		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CHEX	CI+EX		CI+EX	CI+Ex	
Detector 1 Channel		4		4	4		4	4				
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0:0		0.0	0.0		0.0	0.0	
l urn i ype	nd+md	NA C		pm+pt	NA.		Fell	NA C		FeIII	₹,	
Profession Priases	o c	7		- 7	0		c	0			4	
Petrote Phone	7	c		o 4	,		0 0	c		+ <	,	
Defector Fliase	n	7		-	0		0	0		4	4	
SWILLI FILASE Minimum Initial (c)	3.0	340		3.0	34.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	
(a) and a												

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lane Group	09
Lane Configurations	
Volume (voh)	
Ideal Flow (vohol)	
l ane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
F.	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ff)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	6
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s) Minimum Split (s)	24.0 26.0
FX nm Baseline	Powed 8 Orleans
	Page 2

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Leane Group  EBL   EBT   EBR   WBL   WBT   WBR   NBT   NBR   SBL   SBL   Total Split (§)   15.0   46.0   16.0   47.0   32.0		4	†	<i>&gt;</i>	<b>&gt;</b>	ţ	4	•	<b>←</b>	•	۶	<b>→</b>	•
(\$)   150	ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
(%)         12.5%         38.3%         13.3%         39.2%         26.7%         2	Fotal Split (s)	15.0	46.0		16.0	47.0		32.0	32.0		32.0	32.0	
Green (s)         9,0         40.0         10.0         41.0         26.0         26.0           re (s)         4.0	rotal Split (%)	12.5%	38.3%		13.3%	39.2%		26.7%	26.7%		26.7%	26.7%	
ters(s) 4,0 4,0 4,0 4,0 4,0 4,0 4,0 4,0 4,0 4,0	Maximum Green (s)	0.6	40.0		10.0	41.0		26.0	26.0		26.0	26.0	
Adjust (s) 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 4 4 (s) 4 (s) 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	rellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Adjust (\$) 0.5 0.5 0.5 0.5 0.5 0.5 0.5 Time (\$) 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Time (s) 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 City (yigh) 2.81 1.82 City (yigh) 2.81 1.83 1.83 1.83 1.83 1.83 2.84 1.84 1.84 1.84 1.84 1.84 1.84 1.84 1	ost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lead   Lag   Lead   Lag   Lead   Lag     Calls (#Int)   Sa   3.0   3.0   3.0   3.0     Calls (#Int)   Sa   45.9   56.5   49.1   25.3   25.3     Calls (#Int)   Sa   45.9   56.5   49.1   25.3   25.3     Calls (#Int)   Sa   45.9   56.5   49.1   25.3   25.3     Calls (#Int)   Sa   45.9   6.40   0.77   0.21   0.21     Calls (#Int)   Sa   2.0   3.0   0.0   0.0   0.0     Calls (#Int)   Sa   2.0   2.0   0.88   0.60   0.77   0.64   0.41     Calls (#Int)   Sa   2.0   2.0   0.0   0.0   0.0     Calls (#Int)   Sa   2.0   2.0   0.0   0.0   0.0     Calls (#Int)   Sa   2.50   49   196   48   149   46     Calls (#Int)   Sa   2.50   49   196   48   149   46     Calls (#Int)   Sa   2.50   49   196   48   149   46     Calls (#Int)   Sa   2.50   49   196   48   149   46     Calls (#Int)   Sa   2.50   49   196   48   149   46     Calls (#Int)   Sa   2.50   49   196   48   149   46     Calls (#Int)   Sa   2.50   60   0   0   0   0     Calls (#Int)   Sa   2.50   0.0   0   0   0   0     Calls (#Int)   Sa   2.50   0.60   0.0   0   0   0     Calls (#Int)   Sa   2.50   0.60   0.0   0   0   0     Calls (#Int)   Sa   2.50   0.60   0.0   0   0   0     Calls (#Int)   Sa   2.50   0.60   0.0   0   0   0     Calls (#Int)   Sa   2.50   0.60   0.0   0   0   0   0     Calls (#Int)   Sa   2.50   0.60   0.0   0   0   0   0   0     Calls (#Int)   Sa   2.50   Sa   3.50   0.60   0   0   0   0   0   0     Calls (#Int)   Sa   2.50   Sa   3.50   0.60   0.0   0   0   0   0   0   0   0   0	otal Lost Time (s)	9.9	6.5		6.5	6.5		6.5	6.9		6.5	9.9	
tension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 4	.ead/Lag	Lead	Lag		Lead	Lag							
Heavier   State   St	.ead-Lag Optimize?												
tie None C-Max None C-Max None (c-Max None (c-Max None C-Max None C-Max None C-Max None C-Max None (c-Max None C-Max None	ehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
(s)  (valk	Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
realis (#) realis (#) realis (#\mu) satisfy realis (#\mu) satisfy satisfy realis (#\mu) satisfy satisf	Valk Time (s)												
I Calls (#In/)         53.6         45.9         56.5         49.1         25.3         25.3           I creen (\$)         33.6         45.9         56.5         49.1         25.3         25.3         25.3           I creen (\$)         35.6         43.9         0.4         0.4         0.21         0.21         0.21         0.21           I/C Ratio         0.31         0.92         0.58         0.60         0.77         0.64         0.41           Iay         22.0         50.1         36.6         26.8         94.2         53.4         49.4           Iay         22.0         50.1         36.6         26.8         94.2         53.4         49.4           Iay         C         D         C         P         F         D         D           Delay         C         D         C         F         D         D         D           OS         C         D         C         F         D <td>lash Dont Walk (s)</td> <td></td>	lash Dont Walk (s)												
ricen (s) 536 459 565 491 25.3 25.3 25.3 25.3 1  ricen (s) 536 459 56.5 491 25.3 25.3 25.3 25.3 1  ricen (s) 638 60.3 0.41 0.41 0.41 0.41 0.41 0.41 0.41 0.41	edestrian Calls (#/hr)												
I/C Ratio         0.45         0.38         0.47         0.41         0.21         0.21         0.21           I/S Ratio         0.31         0.92         0.68         0.60         0.77         0.64         0.41           I/S Jay         2.2.0         50.1         3.66         2.68         94.2         53.4         49.4           I/S Jay         2.2.0         50.1         3.6         2.68         94.2         53.4         49.4           John         C         D         C         D         C         D         D           Delay         C         D         C         D         C         D         D           LOS         D         C         D         C         D         D         D           LOS         D         C         D         C         D         D         D           LOS         D         C         D         C         A         A         A         A           LOS         D         D         C         D         D         D         A         A         A         A         A         A         A         A         A         A         A	ct Effct Green (s)	53.6	45.9		299	49.1		25.3	25.3		25.3	25.3	
lay 0.31 0.92 0.58 0.60 0.77 0.64 0.41   lay 2.20 50.1 36.6 26.8 94.2 53.4 94.4   y 2.20 50.1 36.6 26.8 94.2 53.4 94.4   y 2.20 50.1 36.6 26.8 94.2 53.4 94.4   y 2.20 50.1 36.6 26.8 94.2 53.4 94.4   Delay C D D C C P F D D D C G F E D D D C G S S S S S S S S S S S S S S S S S S	ctuated g/C Ratio	0.45	0.38		0.47	0.41		0.21	0.21		0.21	0.21	
22.0 50.1 36.6 26.8 94.2 53.4 49.4 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	/c Ratio	0.31	0.92		0.58	09:0		0.77	0.64		0.41	96:0	
100   0.0	ontrol Delay	22.0	50.1		36.6	26.8		94.2	53.4		49.4	87.8	
22.0 50.1 36.6 26.8 94.2 53.4 49.4 49.4 C	tueue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
C D D C F D D C F A3.2  48.1 27.9 63.2  35 -5.00 49 196 48 149 46  m6.3 #6.40 m105 2.88 #131 234 94  140 1211 70 1954 105 65  2.81 1182 183 1253 87 328 168  0 0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0	otal Delay	22.0	50.1		36.6	26.8		94.2	53.4		49.4	87.8	
48.1 27.9 63.2 63.2 63.2 65.2 65.0 69 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	SO	S	O		Ω	S		ш	۵		Ω	ш	
35 -500	pproach Delay		48.1			27.9			63.2			81.1	
35 -500 49 196 48 149 46  m63 #640 m105 258 #131 234 94  1211 70 1954 105  281 1182 1183 1253 87 328 168  0 0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0	pproach LOS		Ω			ပ			ш			ш	
m63 #640 m105 258 #131 234 94  1211 70 1954 103 65  281 1182 183 1253 87 328 65  0 0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0	Jueue Length 50th (ft)	32	~200		46	196		48	149		46	247	
140 1211 1954 103 65 281 1182 1253 87 328 168 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	theue Length 95th (ft)	m63	#640		m105	258		#131	234		94	#428	
140 70 105 105 65 281 1182 183 1253 87 328 168 28 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	nternal Link Dist (ft)		1211			1954			103			893	
281 1182 183 1253 87 328 168 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	urn Bay Length (ft)	140			20			105			99		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ase Capacity (vph)	281	1182		183	1253		87	328		168	337	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tarvation Cap Reductn	0	0		0	0		0	0		0	0	
0.64 0.40	pillback Cap Reductn	0	0		0	0		0	0		0	0	
0.64 0.40	torage Cap Reductn	0	0		0	0		0	0		0	0	
Netsection Summary  The state of the state o	educed v/c Ratio	0.30	0.92		0.55	09:0		0.76	0.64		0.40	0.95	
rea Type:  ycle Length: 120  Jifset V (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  Jifset V (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  Journal Cycle: 105  Sontrol Type: Actualee-Coordinated	ntersection Summary												
ydel Length: 120 Cutculado Cyde Length: 120 Miseu o (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Jaural Cycle: 105 Sontrol Tyde: Actuated-Coordinated	rrea Type:	Other											
cctuated Cycle Length: 120 Silviet of USA), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection statural cycle: 105 Silviet of USA), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Silviet Silvi	Sycle Length: 120												
Lance to Vos), Keteratived to prase zeb il ano ovos IL, Sant or renow, Master intersecuori Janual Cycle: 105 Control Type: Actuated-Coordinated	ctuated Cycle Length: 120	1000	FOL	TOWN	Jo to do		de charles	1					
vatural Cycle: 105 Sontrol Type: Actuated-Coordinated	Jilset: U (U%), Kelerenced	to priase z.	EBIL an	1 0:WB   L	, Start or	reliow, iv	laster IIII	a section					
Control Type: Actuated-Coordinated	Vatural Cycle: 105												
	Control Type: Actuated-Coc	ordinated											

Intersection LOS: D ICU Level of Service D Maximum VIC Ratio: 0.96
Intersection Signal Delay 48.0
Intersection Capacity Utilization 78.9%
Intersection Capacity Utilization 78.9%
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.

M volume for 95th percentile queue is metered by upstream signal.

Synchro 8 Report Page 3 EX pm Baseline

3/10/2015 . ₽ ₽ 9 Splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave **₽** 46 s **∱** %(R)

Synchro 8 Report Page 4 EX pm Baseline

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

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Queues 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/10/2015

Lane Group	60	
Total Split (s)	26.0	
Total Split (%)	22%	
Maximum Green (s)	24.0	
Yellow Time (s)	2.0	
All-Red Time (s)	0.0	
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)	0.6	
Flash Dont Walk (s)	15.0	
Pedestrian Calls (#/hr)	45	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
FOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

SBT	321	97.8	0.0	87.8	247	893		337	0	0	0	0.95																
SBL	89	0.41	0.0	49.4	46	Ę	99	168	0	0	0	0.40																
NBT	209	0.64	0.0	53.4	149	103		328	0	0	0	0.64																
NBL	99	0.77	0.0	94.2	48	2	105	87	0	0	0	9.76						_										
WBT	753	0.60	0.0	26.8	196	1954		1253	0	0	0	09.0				no longer		am signa	,									
WBL	100	36.6	0.0	36.6	49	2	70	183	0	0	0	0.55		ally infinite		1 vem en		by upstre										
EBT	1082	50.1	0.0	50.1	~500	1211		1182	0	0	0	0.92		theoretics	cycles	acity one	cycles.	metered										
EBL	84	0.31	0.0	22.0	35	2	140	281	0	0	0	0.30		di eue is	after two	peds can	after two	anene is										
Lane Group	Lane Group Flow (vph)	V/c Ratio	Queue Delay	Total Delay	Queue Length 50th (ft)	Internal Link Dist (ft)	Turn Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary	<ul> <li>Volume exceeds capacity, queue is theoretically infinite.</li> </ul>	Oueue shown is maximum after two cycles.	# 95th nercentile volume exceeds canacity querie may be longer	Oueue shown is maximum after two cycles.	m Volume for 95th percentile queue is metered by upstream signal										
Lane	2																											
Lane																												
Lane																												
Lane	77.																											
Lane	77.																											
Lang	77.																											
Lane	7																											
Lanc	7																											
Lanc	77																											
Lan	אין																											

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HCM 2010 Signalized Intersection Summary 51: Lowrys Ln & Lancaster Ave

HCM 2010 Signalized Intersection Summary 16: Sproul Rd & Conestoga Rd

3/10/2015

			٠				-	-			٠	
Jovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		<del>₹</del>			₩ ₩			4			4	
/olume (veh/h)	2	1138	22	15	887	4	19	35	15	96	69	70
Number	2	2	12	-	9	16	33	∞	18	7	4	14
nitial Q (Qb), veh	0 8	0	0 9	0 9	0	0 9	0 9	0	0 0	0 0	0	0 9
ed-Bike Adj(A_pbT)	00.1		00.1	00:1		00.1	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
Adj Sat Flow, veh/h/ln	1800	1782	1800	1773	1755	1773	1900	1881	1900	1881	1863	1881
Adj Flow Rate, veh/h	2	1237	24	J6	964	4	71	38	16	104	75	76
Adj No. of Lanes	0	7	0	0	7	0	0	-	0	0	-	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	<del>-</del>	<del>-</del>	<del>-</del>	<del>-</del>	-	-	-	-	-	-	-	<del>-</del>
Sap, veh/h	61	2028	36	72	1993	∞	134	206	71	191	109	92
Arrive On Green	0.81	0.81	0.81	0.61	0.61	0.61	0.19	0.19	0.19	0.19	0.19	0.19
sat Flow, veh/h	<del>-</del>	3326	64	17	3269	13	566	1084	375	295	572	482
Grp Volume(v), veh/h	663	0	009	209	0	475	75	0	0	255	0	0
3rp Sat Flow(s),veh/h/ln	1781	0	1610	1704	0	1595	1758	0	0	1616	0	0
Serve(q_s), s	0.0	0.0	8.4	0.0	0.0	6.6	0.0	0.0	0.0	6.9	0.0	0.0
Cycle Q Clear(q c), s	8.4	0.0	8.4	9.6	0.0	6.6	2.1	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.00		0.04	0.03		0.01	0.28		0.21	0.41		0.30
ane Grp Cap(c), veh/h	1146	0	982	1101	0	972	411	0	0	392	0	0
//C Ratio(X)	0.58	0.00	0.61	0.46	0.00	0.49	0.18	0.00	0.00	0.65	0.00	0.00
wail Cap(c_a), veh/h	1146	0	985	1101	0	972	684	0	0	657	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
pstream Filter(I)	0.34	0.00	0.34	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Iniform Delay (d), s/veh	3.0	0.0	3.0	6.4	0.0	6.5	20.5	0.0	0.0	23.2	0.0	0.0
ndr Delay (d2), s/veh	0.7	0.0	1.0	1.4	0.0	1.8	0.2	0.0	0.0	1.8	0.0	0.0
nitial 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
6ile BackOfQ(-26165%),veh/ln		0.0	3.6	4.9	0.0	4.8	1.	0.0	0.0	4.2	0.0	0.0
nGrp Delay(d),s/veh	3.7	0.0	4.0	7.8	0.0	8.3	20.7	0.0	0.0	25.1	0.0	0.0
nGrp LOS	Α		Α	Α		Α	C			C		
Approach Vol, veh/h		1263			984			75			255	
Approach Delay, s/veh		3.9			8.0			20.7			25.1	
pproach LOS		⋖			A			ပ			ပ	
imer	<del>-</del>	2	က	4	2	9	7	8				
ssigned Phs		2		4		9		∞				
Phs Duration (G+Y+Rc), s		43.1		16.9		43.1		16.9				
Change Period (Y+Rc), s		0.9		2.0		0.9		2.0				
Max Green Setting (Gmax), s		27.0		22.0		27.0		22.0				
Max Q Clear Time (g_c+I1), s		10.4		11.0		11.9		4.1				
Green Ext Time (p_c), s		8.9		6.0		8.4		<del></del>				
ntersection Summary												
HCM 2010 Ctrl Delay			8.0									

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440 53.8 D 0.95 0.00 0.00 0.00 0.00 0.00 0.00 0.00 308 0.26 1203 0 1.00 1.00 1809 53 0 86 138 440 440 440 1144 20.5 20.5 0.02 476 476 1.00 30.0 23.8 6.00 1.00 0.00 1. 27 16 0 1.00 1.00 1791 28 0 0 0.95 589 0.39 0.00 0.00 0.00 0.00 0.00 0.00 0.00 328 18.0 B 1.00 0.0 1.00 1.00 1773 108 0.95 ٧J 632 0.86 632 1.00 1.00 24.3 24.3 14.0 0.0 0.0 13.6 38.3 D 1.00 827 541 0.95 1 632 0.35 0.35 1827 541 1827 22.0 WBT 0.95 279 0.35 869 28 869 2.1 2.1 12.4 11.00 279 279 279 11.00 11.00 25.3 0.7 0.0 0.0 0.0 0.0 0.0 0.00 0. 0.95 832 0.47 1782 569 20.0 20.0 832 3.68 832 11.00 11.00 116.7 4.5 0.0 10.8 1.00 782 569 0.95 241 0.05 1697 1.00 1.00 782 108 ኘ Number initial O (Ob), weh Ped-Bike Adj(A\_pt) 1 Parking Bus, Adj and How Rate, vehh 17 Adj Sat Flow, veh/hhm 17 Adj Nof Lanes Peak Hour Tactor Percent Heavy Veh, % 2 Cap, veh/h 17 Adj Nof Lanes Peak How's weh/h 16 Grp Volume(v), veh/h 16 Grp Sat Flow, veh/h 17 Adj Nof Di Lane Grp Cap (Cot Sat Flow, veh/h 18 Cycle O Clear(g\_c, s), s Cycle O Clea Approach Vol, veh/h Approach Delay, s/veh Approach LOS -nGrp Delay(d),s/veh Lane Configuration Volume (veh/h) nGrp LOS

0.0

0.00

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8 33.2 5.0 24.0 24.0 0.0

> 9.7 5.0 7.0 5.1 0.0

42.9 5.0 36.0 22.0 6.0

26.5 5.5 21.0 22.5 0.0

Assigned Phs
Phs Duration (G+Y+RC), s
Change Period (Y+RC), s
Max Green Setting (Gmax), s
Max O Clear Time (g\_c+H), s
Green Ext Time (g\_c, H), s

5.5 7.0 5.6 0.0 32.4 C

HCM 2010 Ctrl Delay HCM 2010 LOS

5.5 33.5 9.1 2.4

HCM 2010 Signalized Intersection Summary 25: S Ithan Ave & Conestoga Rd

	•	<b>†</b>	~	<b>&gt;</b>	ļ	4	•	-	•	•	-	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Volume (veh/h)	63	512	7	1	462	36	7	18	9	25	98	134
Number	-	9	16	2	2	12	7	4	14	co	00	18
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
Adj Sat Flow, veh/h/ln	1854	1836	1854	1764	1747	1764	1763	1745	1763	1844	1826	1844
Adj Flow Rate, veh/h	72	285	∞	12	525	44	8	20	7	26	86	152
Adj No. of Lanes	0	-	0	0	<del>-</del>	0	0	_	0	0	_	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	-	-	<del>-</del>	-	-	-	-	-	-	-	-	,
Cap, veh/h	147	742	10	91	726	09	148	264	11	148	145	186
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	116	1606	71	1	1571	130	188	1134	331	206	621	800
Grp Volume(v), veh/h	662	0	0	581	0	0	32	0	0	309	0	0
Grp Sat Flow(s),veh/h/ln	1743	0	0	1712	0	0	1653	0	0	1627	0	0
O Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0
Cycle Q Clear(g_c), s	13.4	0.0	0.0	11.7	0.0	0.0	0.7	0.0	0.0	7.6	0.0	0.0
Prop In Lane	0.11		0.01	0.02		0.08	0.23		0.20	0.19		0.49
Lane Grp Cap(c), veh/h	899	0	0	877	0	0	489	0	0	479	0	0
V/C Ratio(X)	0.74	0.00	0.00	99.0	0.00	0.00	0.07	0.00	00:00	0.64	00.0	0.00
Avail Cap(c_a), veh/h	1275	0	0	1264	0	0	825	0	0	839	0	0
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	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.7	0.0	0.0	9.3	0.0	0.0	12.8	0.0	0.0	15.4	0.0	0.0
Incr Delay (d2), s/veh	1.4	0.0	0.0	6.0	0.0	0.0	0.1	0.0	0.0	1.5	0.0	0.0
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(-26165%),veh/ln	8.9	0.0	0.0	2.7	0.0	0.0	0.3	0.0	0.0	3.6	0.0	0.0
LnGrp Delay(d),s/veh	11.0	0.0	0.0	10.2	0.0	0.0	12.9	0.0	0.0	16.9	0.0	0.0
LnGrp LOS	В			В			В			В		
Approach Vol, veh/h		662			581			35			309	
Approach Delay, s/veh		11.0			10.2			12.9			16.9	
Approach LOS		В			В			В			В	
Timer	<del></del>	2	က	4	2	9	7	∞				
Assigned Phs		2		4		9		∞				
Phs Duration (G+Y+Rc), s		26.2		16.4		26.2		16.4				
Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
Max Green Setting (Gmax), s		30.0		20.0		30.0		20.0				
Max Q Clear Time (g_c+l1), s		13.7		2.7		15.4		9.6				
Green Ext Time (p_c), s		2.0		1.2		4.8		1.0				
Intersection Summary												
HCM 2010 Ctrl Delay			11.9									
HCM 2010 LOS			В									
)))			ì									

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HCM 2010 Signalized Intersection Summary 33: Williams Rd/Garrett Ave & Conestoga Rd

3/10/2015

Color   Colo	•	ኘ	†	۴	Ļ	ţ	<b>»</b> J	₹	×	•	٠	×	>
26         40         12         40         12         40<	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
26         488         9         12         486         28         16         1         11         27         12           5         2         12         1         6         16         3         8         18         18         7         4           0	Lane Configurations		4			4			4			4	
5         2         12         1         6         16         3         8         18         7         4           0	Volume (veh/h)	56	488	6	12	486	28	16	-	1	27	12	51
1,00	Number	വ	2	12	-	9	16	co	00	18	7	4	14
1,00		0	0	0	0	0	0	0	0	0	0	0	0
1,00		1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
1872 1872 1872 1872 1872 180 1800 1800 1728 1728 28 530 10 13 528 30 17 1 12 29 113 28 6 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
28         530         10         13         528         30         17         1         12         29         13           0         <		1872	1872	1872	1872	1872	1872	1800	1800	1800	1728	1728	1728
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Adj Flow Rate, veh/h	28	530	10	13	528	30	17	<del>-</del>	12	29	13	55
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92		0	<del>-</del>	0	0	-	0	0	-	0	0	<del></del>	0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
93 1208 22 73 1193 67 155 27 56 110 26 164 1069 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0	%	0	0	0	0	0	0	0	0	0	0	0	0
0.69 0.69 0.69 0.69 0.69 0.69 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.0		93	1208	22	73	1193	19	155	27	26	110	26	71
58         1753         32         13         1732         97         675         317         661         335         310           568         0         0         571         0         0         0         97         0           1824         0         0         1840         0         0         1499         0           0.0         0.0         0.0         0.0         0.0         0.0         25         0           0.0         0.0         0.0         0.0         0.0         0.0         25         0           0.05         0.2         0.02         0.02         0.02         0.02         0.0         38         0           0.05         0.2         0.02         0.02         0.02         0.0 <td< td=""><td></td><td>69.0</td><td>69.0</td><td>69.0</td><td>69:0</td><td>69.0</td><td>69.0</td><td>0.08</td><td>0.08</td><td>0.08</td><td>0.08</td><td>0.08</td><td>0.08</td></td<>		69.0	69.0	69.0	69:0	69.0	69.0	0.08	0.08	0.08	0.08	0.08	0.08
568         0         571         0         30         0         97         0           1824         0         0         1841         0         0         1633         0         0         1490         0           7.8         0.0         0.0         0.0         0.0         0.0         0.0         3.6         0         0         1490         0           7.8         0.0         0.0         1.0         0.0         0.0         3.6         0         0         3.6         0           1323         0         0.0         1.0         0.0         0.0         0.0         3.6         0         0         3.6         0         0         0         0         0         0         0.0         0.0         0		39	1753	32	13	1732	67	675	317	199	335	310	845
1824 0 0 1841 0 0 1653 0 0 1499 0 0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		268	0	0	571	0	0	30	0	0	46	0	0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		1824	0	0	1841	0	0	1653	0	0	1490	0	0
7.8 0.0 0.0 7.9 0.0 0.0 1.0 0.0 0.0 3.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	O Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0
0.05 0.02 0.02 0.057 0.09 0.30 0.1323 0 0 0 0 237 0 0 0 0 0.30 0.043 0.00 0.030 0.043 0.00 0.13 0.00 0.043 0.00 0.043 0.00 0.13 0.0 0.0 0.47 0.00 0.133 0 0 0 604 0 0 582 0 0.100 0.00 0.00 0.100 0.100 0.100 0.00 0.100 0.100 0.0	S	7.8	0.0	0.0	7.9	0.0	0.0	1.0	0.0	0.0	3.6	0:0	0.0
1323 0 0 0 1333 0 0 0 237 0 0 0 207 0 0 0 1 323 0 0 0 0 1333 0 0 0 0 0 0 0 0 0 0 0 0 0		0.05		0.02	0.02		0.02	0.57		0.40	0.30		0.57
1323 0.00 0.00 0.43 0.00 0.013 0.00 0.00 0.47 0.00 1323 0 0 0 644 0 0 682 0 0 0 680 0.00 0.00 0.00 1.00 1.00 1.00 1.00 1.	p(c), veh/h	1323	0	0	1333	0	0	237	0	0	207	0	0
1323 0 0 1333 0 0 604 0 0 562 0 1300 100 100 100 100 100 100 100 100 1.00 0.00 0		0.43	0.00	0.00	0.43	0.00	0.00	0.13	0.00	0.00	0.47	0.00	0.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	_	1323	0	0	1333	0	0	604	0	0	582	0	0
1,00 0,00 0,00 1,00 0,00 0,00 1,00 0,00 0,00 1,00 0,00 1,00 0,00 1,00 0,00 1,00 0,00 1,00 0,00 1,00 0,00 1,00 0,00 1,00 0,00 1,00 0		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4.0 0.0 0.0 4.0 0.0 0.0 245 0.0 0.0 257 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
1.0 0.0 0.0 1.0 0.0 0.0 0.3 0.0 0.0 23  1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  5.0 0.0 0.0 4.3 0.0 0.0 0.0 0.0 0.0 0.0  5.0 0.0 0.0 5.0 0.0 0.0 248 0.0 0.0 1.6  5.0 0.0 0.0 5.0 0.0 0.0 248 0.0 0.0 1.6  5.0 0.0 5.0 0.0 0.0 248 0.0 0.0 1.6  5.0 5.0 5.0 5.0 5.0  4.0 5.0 5.0 5.0 5.0  4.0 6 6 8  6.0 6.0 6.0 6.0  4.0 0.0 0.0 0.0  9.8 5.6 9.9 3.0  7.2  A A  A  A  A  A  A  A  A  A  A  A  A	Uniform Delay (d), s/veh	4.0	0.0	0.0	4.0	0:0	0.0	24.5	0.0	0.0	25.7	0:0	0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	1:0	0.0	0.0	1.0	0.0	0.0	0.3	0.0	0.0	2.3	0.0	0.0
1 2 3 4 5 6 7 8 8 6 7 8 8 6 6 6 6 6 6 6 6 6 6 6 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
5.0 0.0 0.0 5.0 0.0 0.0 24.8 0.0 0.0 28.0 5.0 5.0 5.0 0.0 0.0 24.8 0.0 0.0 28.0 5.0 5.0 5.0 5.0 24.8 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	%ile BackOfQ(-26165%),veh/ln	4.3	0.0	0.0	4.3	0.0	0.0	0.5	0.0	0.0	1.6	0.0	0.0
568 571 30 CC	LnGrp Delay(d),s/veh	2.0	0.0	0.0	2.0	0.0	0.0	24.8	0.0	0.0	28.0	0:0	0.0
5.68 5.71 3.0 5.0 5.0 24.8 A A A C C 4.60 11.3 46.0 11.3 46.0 11.3 46.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	LINGIP LUS	¥			¥			ر			ر		
3.0 24.0 24.0 24.0 24.0 24.0 24.0 24.0 24	Approach Vol, ven/h		268			5/1			30			/6	
1 2 3 4 5 6 7 8 2 4 6 7 8 460 11.3 460 11.3 6.0 6.0 6.0 6.0 40.0 20.0 40.0 20.0 9.8 5.6 9.9 3.0 5.3 0.5 A A A B A B B B B B B B B B B B B B B B	Approach Delay, siven		5. <			0. <			24.0			20.0	
2 3 4 5 6 7 2 460 460 60 60 60 400 200 400 98 5.6 99 5.3 0.5 5.3	Approach LOS		4			τ.			ر			ر	
2 4 6 460 11.3 460 60 6.0 6.0 40.0 20.0 40.0 9.8 5.6 9.9 5.3 0.5 5.3	Timer	1	2	3	4	2	9	7	8				
460 11.3 460 6.0 6.0 6.0 40.0 20.0 40.0 9.8 5.6 9.9 5.3 0.5 5.3	Assigned Phs		2		4		9		∞				
6.0 6.0 6.0 40.0 20.0 40.0 2.9 9.8 5.6 9.9 5.3 0.5 5.3	Phs Duration (G+Y+Rc), s		46.0		11.3		46.0		11.3				
40.0 20.0 40.0 9.8 5.6 9.9 5.3 0.5 5.3 7.2	Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
9.8 5.6 9.9 5.3 0.5 5.3 7.2 A	Max Green Setting (Gmax), s		40.0		20.0		40.0		20.0				
5.3 0.5 5.3 7.2 A	Max Q Clear Time (g_c+I1), s		9.8		9.6		6.6		3.0				
ımary Jelay 7	Green Ext Time (p_c), s		5.3		0.5		5.3		0.5				
7 Jelay 7	Intersection Summary												
	HCM 2010 Ctrl Delay			7.2									
	HCM 2010 LOS			⋖									

EX pm Baseline Synchro 8 Report Page 1

HCM 2010 Signalized Intersection Summary 3: County Line Rd & Spring Mill Rd

3/10/2015

37 0 Stop None

82 0 84

0 0 8 0 0

	4	†	<u> </u>	<b>&gt;</b>	ţ	4	<	<b>—</b>	•	٠	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		€			<del>(</del> ‡			4			4	
Volume (veh/h)	63	300	93	22	240	21	71	199	37	64	390	44
Number	2	2	12	_	9	16	3	80	18	7	4	14
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
Adj Sat Flow, veh/h/In	1800	1789	1800	1800	1766	1800	1800	1800	1800	1800	1773	1800
Adj Flow Rate, veh/h	88	333	108	9/	276	8	88	255	99	84	438	64
Adj No. of Lanes	0	-	0	0	<b>-</b> -	0	0		0	0	<b>,</b>	0
Peak Hour Factor	0.72	06:0	98.0	0.72	0.87	0.64	0.81	0.78	99.0	0.76	0.89	69.0
Percent Heavy Veh, %	-	-	-	m	co	m	0	0	0	-	-	-
Cap, veh/h	144	416	126	139	405	108	155	390	77	134	203	70
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	190	1069	323	175	1043	277	207	786	195	167	1286	178
Grp Volume(v), veh/h	529	0	0	432	0	0	366	0	0	286	0	0
Grp Sat Flow(s),veh/h/ln	1582	0	0	1495	0	0	1389	0	0	1631	0	0
O Serve(g_s), s	3.8	0.0	0.0	0.0	0:0	0.0	0.0	0.0	0.0	6.5	0.0	0.0
Cycle Q Clear(g_c), s	18.3	0.0	0.0	14.4	0.0	0.0	13.7	0.0	0.0	20.3	0.0	0.0
Prop In Lane	0.17		0.20	0.18		0.19	0.22		0.14	0.14		0.11
Lane Grp Cap(c), veh/h	982	0	0	652	0	0	621	0	0	712	0	0
V/C Ratio(X)	0.77	0.00	0.00	99.0	0.00	0.00	0.64	0.00	0.00	0.82	0.00	0.00
Avail Cap(c_a), veh/h	685	0	0	652	0	0	811	0	0	920	0	0
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)	0.09	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.6	0.0	0.0	15.3	0.0	0.0	14.6	0.0	0.0	16.9	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.0	2.5	0.0	0.0	0.4	0.0	0.0	3.7	0.0	0.0
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
%ile BackOfQ(-26165%),veh/ln	8.1	0.0	0.0	6.9	0:0	0.0	5.5	0.0	0.0	6.6	0.0	0.0
LnGrp Delay(d),s/veh	17.4	0.0	0.0	20.5	0.0	0.0	15.0	0.0	0.0	20.7	0.0	0.0
LnGrp LOS	В			C			В			C		
Approach Vol, veh/h		529			432			366			286	
Approach Delay, s/veh		17.4			20.5			15.0			20.7	
Approach LOS		В			ပ			В			ပ	
Timer	<del></del>	2	က	4	2	9	7	8				
Assigned Phs		2		4		9						
Phs Duration (G+Y+Rc), s		29.8		30.2		29.8		30.2				
Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
Max Green Setting (Gmax), s		16.0		32.0		16.0		32.0				
Max Q Clear Time (g_c+11), s		20.3		22.3		16.4		15.7				
Green Ext Time (p_c), s		0.0		1.9		0.0		2.2				
Intersection Summary												
HCM 2010 Ctrl Delay			18.6									
HCM 2010 LOS			9 9 9									

2158 1495 663 6.8 5.8 5.8 5.8 7.7 42 175 47 900 0 0 Free Free - None 0 3 82 0 1098 2.2 444 82 0 57 1203 46 0 0 Free Free - None 82 0 56 HCM 2010 TWSC 79: Garrett Rd & Lancaster Ave 0 -3 82 0 0 1.4 Vol, vetvih
Conflicting Pects, #/hr
Sign Control
Sign Control
RT Channelized
Storage Length
Veh in Median Storage, #
Grade, &
Peak Hour Factor
Heavy Vehicles, % Approach HCM Control Delay, s HCM LOS Stage 2 Platoon blocked, % Mov Cap-1 Maneuver Stage 1 Stage 2 Major/Minor
Conflicting Flow All
Stage 1
Stage 2
Critical Hdwy Stg 1
Critical Hdwy Stg 1
Critical Hdwy Stg 2
Follow-up Hdwy
Pot Cap-1 Maneuver
Stage 1 nt Delay, s/veh

6.9

762

3.3

352

28 28 175 322

16.7 C NB

2.1 A

- 444 - 0.129 - 14.3 - B

352 0.128 16.7 C

Capacity (veh/h)
HCM Lane V/C Ratio
HCM Control Delay (s)
HCM Lane LOS
HCM 95th %tile Q(veh)

NBLn1 EBT EBR WBL

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EX pm Baseline

HCM 2010 TWSC

Intersection   Inte		
EBL   EBT   WBT		
Free		
Free		
10 646 607   607	SWL SWR	
Begin by the Begin	17 9	
Free Free Free Free   Free Free   Free Free	0 0	
- None	Stop Stop	
99.# - 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
96, # - 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	. 0	
Najort   Najort   Najort	- 0	
Major1		
Major1 Major2  635 0 636	96 96	
Major1 Major2 635		
Major1	6 8	
Majori		
4.11		
4.11	1328 034	
4.11	634 -	
### EBL EBT WBT WBRSWLn1    1,11	. 41	
2209		
2209	5.41	
2.0ver 953	3.509 3.309	
8%		
%	530 -	
% ** ** ** ** ** ** ** ** ** ** ** ** **	498 -	
EB BT WBT WBRSWILTI  FINAVINI EBL EBT WBT WBRSWILTI  953 - 218  Pain 0011 - 0124		
EB WILL EBL EBT WBT WBRSWLn1 953 - 218 alio 0.01 - 0.134	169 481	
EB   W   W   W   W   W   W   W   W   W	169 -	
19,y S 0.1  FMVmt EBL EBT WBT WBRSWLn1 953 218 and 0.011 0.124	530 -	
EB	490 -	
EB   W   W   W   W   W   W   W   W   W		
Alto 10.11 - 0.124  Alto 0.011 - 0.124	SW	
rMvmt <u>EBL EBT WBT WBRS</u> V	23.8	
rMvmt EBL EBT WBT WBRS\ 953	ပ	
953 953 (100 )		
3atio 0.011 0		
lay (s) 8.8 0 - 2		
HCM Lane LOS A A - C		

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EX pm Baseline	
	K pm Baseline Synchro 8 Repo

HCM 2010 TWSC 29: Strathmore Dr/Lowrys Ln & Conestoga Rd

Movement   EBL EBT EBR   WBI WBT WBR   NBI NBT NBR   SBI SBT SS   Vol. verh   36 494   17   17 456   16   15   8   17   9   17   17 456   16   15   8   17   9   17   17 456   16   15   8   17   9   17   17 456   16   15   8   17   9   17   17 456   16   15   8   17   9   17   17   456   16   15   8   17   9   17   17   456   16   16   10   10   10   10   10   1	Intersection												
## SEE EBR WBI WBI WBR NBL NBT NBR SBLIT SBT SBT SBT SBT SBT SBT SBT SBT SBT SB		9:											
Feb. EBI EBI													
Free	Movement	EBL	EBT	EBR	WBL		WBR	NBL	NBT	NBR	SBL	SBT	SB
Free   Free   Free   Free   Free   Stop	Vol, veh/h	36	494	17	17		16	15	∞	17	6	17	ш,
Free Free Free Free Free Free Stop Stop Stop Stop Stop Stop Stop Stop	Conflicting Peds, #/hr	0	0	0	0		0	0	0	0	0	0	
Majort   None    Sign Control	Free		Free	Free		Free	Stop	Stop		Stop			
Majort	RT Channelized			None	·	•	None			None			None
Major   Najor   Najo	Storage Length	•		٠		•		•					
Najort   N	Veh in Median Storage, #		0	٠		0			0			0	
Majort   1   1   1   1   1   1   1   1   1	Grade, %	•	0	٠		0		•	0			0	
Majort	Peak Hour Factor	96	96	96	96		%	%	96	96	%	96	%
Major	Heavy Vehicles, %	<b>.</b>	<del>-</del>	<b>—</b>		τ-	-	τ-	_	<del>-</del>		_	
Majort   Major2   Minor2   Minor3   M	Mvmt Flow	38	515	18	18		17	16	00	18	6	18	
Majort													
492         0         532         0         0         1153         1125         523         1130         1126           -         -         -         -         -         -         598         98         -         519         519         519         519         519         519         519         519         519         519         519         519         519         519         519         519         519         519         511         622         622         622 </td <td>Major/Minor</td> <td>Major1</td> <td></td> <td></td> <td>Major2</td> <td></td> <td></td> <td>Minor1</td> <td></td> <td></td> <td>Minor2</td> <td></td> <td></td>	Major/Minor	Major1			Major2			Minor1			Minor2		
A	Conflicting Flow All	492	0	0	532		0	1153	1125	523	1130	1126	483
4,11     4,11     555   527   .   611   607       4,11     5,11   5,51   6,21   5,11   6,51         6,11   5,51   .   6,11   5,51     2,209     2,209   .   .   6,11   5,51   .   6,11   5,51     1,077   .	Stage 1			٠				298	298		519	519	
411	Stage 2		•	٠		•		222	527		611	607	
1077   1077	Critical Hdwy	4.11		٠	4.11	'		7.11	6.51	6.21	7.11	6.51	6.21
1077   1041   1041   1042   1044	Critical Hdwy Stg 1	•		٠		•		6.11	5.51		6.11	5.51	
1077   1041   1041   1044	Critical Hdwy Stg 2			٠				6.11	5.51		6.11	5.51	
1077     1041     175   206   556   182   206	Follow-up Hdwy	2.209	•	•	2.209	•		3.509	4.009		3.509	4.009	3.309
1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1041   1077   1077   1041   1077	Pot Cap-1 Maneuver	1077	•	٠	1041	•		175	206	226	182	206	286
1077     518   530   - 483   488       139   191   556   161   191	Stage 1		1	•		•		491	492		542	534	
1077   -   1041   -   139   191   556   161   191   191   191   192   192   192   193	Stage 2	•	'	•		'		518	530		483	488	
1077     1041     139   191   556   161   191	Platoon blocked, %		•	•		•							
FB	Mov Cap-1 Maneuver	1077	•	٠	1041	•		139	191	226	161	191	286
FB	Mov Cap-2 Maneuver	•	•	•		•		139	191		161	191	
FB	Stage 1	•	•	٠		•		466	467		515	521	
Columbia    Stage 2	•	•	•				443	517		436	464		
NBLr1   EBL   EBT   EBR   WBL   WBT   WBR   SBLr1													
1 NBLn1 EBL EBT EBR WBL WBT WBRSBLn1 222 1077 - 1041 - 334 0.188 0.035 - 0.017 - 0.243 24.9 8.5 0 - 8.5 0 - 19.2 C A A A A - A A - 0.0 0.7 0.1 - 0.1 - 0.9	Approach	EB			WB			NB			SB		
C NBLn1 EBL EBT EBR WBL WBT WBRSBLn1  222 1077 - 1041 - 334  0.188 0.035 - 0.017 - 0.243  24.9 8.5 0 - 8.5 0 - 19.2  C A A A A A A C A  0.7 0.1 - 0.1 - 0.9	HCM Control Delay, s	9.0			0.3			24.9			19.2		
t NBLn1 EBL EBT EBR WBL WBT WBR SBI 222 1077 - 1041	HCM LOS							S			S		
NBLn1 EBL EBR WBL WBT WBR SBR   222 1077   1041													
222 1077 - 1041 0.188 0.035 - 0.0177 0.017 0.017 0.017 0.017 0.017 0.1 0.1 0.1 0.1 0.1 0.1 0.1	Minor Lane/Major Mvmt	NBLn1	EBL	EBT			WBR SBLn	1					
0.188 0.035 · · · 0.017 · · · 0.1 24.9 8.5 0 · 8.5 0 · · 1 C A A · · A A · · · O.7 0.1 · · · · 0.1	Capacity (veh/h)	222	1077	٠	- 1041	•	- 33	4					
24.9 8.5 0 - 8.5 0 - 1 C A A - A A - O.1 - 0.7 0.1	HCM Lane V/C Ratio	0.188	0.035	•	- 0.017	•	- 0.24	3					
C A A - A A - O.7 0.7 0.1 0.1	HCM Control Delay (s)	24.9	8.5	0				2					
0.7 0.1 - 0.1	HCM Lane LOS	ပ	A	V	A			c					
	HCM 95th %tile Q(veh)	0.7	0.1	٠	- 0.1	'	- 0	6					

3/10/2015 Lanes, Volumes, Timings 38: County Line Rd & N Ithan Ave

	<b>←</b>	*_	>	<b>→</b>	<b>\</b>	4	
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	
Lane Configurations	*			€	>		
Volume (vph)	264	115	179	483	112	61	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ŧ	0.959				0.952		
Fit Protected				0.987	696.0		
Satd. Flow (prot)	1804	0	0	1857	1735	0	
Flt Permitted				0.987	696.0		
Satd. Flow (perm)	1804	0	0	1857	1735	0	
Link Speed (mph)	30			30	30		
Link Distance (ft)	295			1901	824		
Travel Time (s)	6.7			43.2	18.7		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Adj. Flow (vph)	281	122	190	514	119	92	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	403	0	0	704	184	0	
Enter Blocked Intersection	%	S	9N	8	2	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			0	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		6	12		15	6	
Sign Control	Free			Stop	Stop		
Intersection Summary							
Area Type: 0	Other						
Control Type: Unsignalized							
Intersection Capacity Utilization 76.2% Analysis Period (min) 15	on 76.2%			<u> </u>	J Level o	ICU Level of Service D	
or family policy reinfamily							

ICU Level of Service C No No Right 159 1.00 0 1.00 NWH 23 1900 0.082 0.994 1649 30 30 2014 45.8 0.94 193 No 12 0 1.00 15 Stop No Right 302 321 1.00 286 296 1900 1.00 0.932 0.976 1711 30 295 6.7 0.94 00 No 12 0 10 10 10 1.00 15 Free Lanes, Volumes, Timings 2: County Line Rd & N Ithan Ave 270 0 No No Left Right 22 0 36 1900 1.00 0.94 1.00 ۲ Area Type:
Control Type: Unsignalized
Intersection Capacity Utilization 70.3%
Analysis Period (min) 15 218 218 1100 0.981 0.959 1763 0.959 1763 30 973 22.1 1 232 1.01 15 Stop FIT How (prot)

Said. Flow (prot)

FIT Permitted
Said. Flow (prot)

FIT Permitted
Said. Flow (perm)
Link Speed (mph)
Link Speed (mph)
Link Distance (f)
Travel Time (s)
Peak Hour Factor
Heavy Vehicles (%)
Bus Blockages (#In/)
Adj. Flow (vph)
Shared Lane Traffic (%)
Lane Group Flow (vph)
Finter Blocked Intersection
Median World (f)
Link Offsel(f)
Crosswalk Width(f)
Link Offsel(f)
Crosswalk Width(f)
Link Offsel(f)
Finter Speed (mph)
Sign Control Lane Configurations Volume (vph) Ideal Flow (vphpl) Lane Util. Factor

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EX pm Baseline

HCM 2010 TWSC 53: County Line Rd & Lowrys Ln

HCM 2010 TWSC 52: Airdale Rd & County Line Rd

ntersection								
nt Delay, s/veh	1.5							
Movement	EBI	FBR	_	NBI	NBT	SBT	SBR	
/ol. veh/h	16	18			179	153		
Conflicting Peds, #/hr	0	0			0	0		
Sign Control	Stop	Stop	_		Free	Free	F	
RT Channelized		None			None		None	
Storage Length	0							
Veh in Median Storage, #	0				0	0		
Grade, %	0				0	0		
Peak Hour Factor	%	96		%	96	96		
Heavy Vehicles, %	0 !	0		0	0	0		
Avmt Flow	17	19			186	159	127	
Major/Minor	Minor2		Major1	or1		Major2		
Conflicting Flow All	516	223		286	0	'	0	
Stage 1	223	•						
Stage 2	293							
Critical Hdwy	6.4	6.2		4.1				
Critical Hdwy Stg 1	5.4					•		
Critical Hdwy Stg 2	5.4	•						
Follow-up Hdwy	3.5	3.3		2.2		•		
Pot Cap-1 Maneuver	523	822	-	1288				
Stage 1	819	•						
Stage 2	762	٠						
Platoon blocked, %						•		
Mov Cap-1 Maneuver	466	822	-	1288				
Mov Cap-2 Maneuver	466	٠				,		
Stage 1	819							
Stage 2	727							
Approach	EB			NB		SB		
HCM Control Delay, s	11.1			1.8		0		
HCM LOS	Ω							
Minor Lono Major Mami	IGIN	NDT FDI M	o Too	CDD				
III TOT Larrenviajor IVIVIII		NBI EBLIII		DK DK				
capacity (ven/n)	8871	- 630						
HCM Lane V/C Ratio	0.041	_						
HCM Control Delay (s)	6:/	F	٠	,				
HCM Lane LOS	A	A B						
HCM 95th %tile Q(veh)	0.1	- 0.2						

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(pm Baseline	
EX pm Baseline	

#/hr 166 211 338 16 12 166 211 338 16 12 167 0 0 0 0 0 0 0 0 0 17 None	Int Delay, s/veh 3.	3.5						
FBL EBT   WBT WBR SBLIT								
146   211   338   16   12   12   12   12   10   10   10   10	Movement	EBL	EBT		WBT	WBR	SBL	SBR
Per Free Free Free Stop  9e, # - 0	Vol, veh/h	166	211		338	16	12	116
Free Free   Free   Free   Stop	Conflicting Peds, #/hr	0	0		0	0	0	0
9e,# None None None	Sign Control	Free			Free	Free	Stop	Stop
99, # 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT Channelized		None		'	None		None
99.# - 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Storage Length		•		•		0	
Najort   N	Veh in Median Storage, #	ľ	0		0		0	
Majort	Grade, %	•	0		0		0	
1   1   1   1   1   1   1   1   1   1	Peak Hour Factor	86	86		86	86	86	86
169   215   345   16   12     Major1	Heavy Vehicles, %	_	_		<del>-</del>	-	-	-
Majort	Mvmt Flow	169	215		345	16	12	118
Major1								
361 0	Major/Minor	Major1			Major2		Minor2	
Harman EBL EBT WBT WBR SBLn1  S. 2009  1200  120	Conflicting Flow All	361	0		'	0	907	353
Harmonia (12.7)  1.203  2.209  1.203  1.203  1.203  1.203  1.203  1.203  1.203  1.203  1.203  1.203  1.203  1.203  1.203  1.208  1.203	Stage 1	ľ			ľ		353	
Harmonia (A) 11 1203	Stage 2		٠		•		554	
EB WBT WBR SBLn1  1203 -	Critical Hdwy	4.11			ľ		6.41	6.21
1209	Critical Hdwy Stg 1		•		1		5.41	
2.209 3509 1233 307 1233 307 1241	Critical Hdwy Stg 2	ľ	•		ľ		5.41	
uver         1203         .         .         307           %         .	Follow-up Hdwy	2.209	•		1	٠	3.509	3.309
% 7.73 %	Pot Cap-1 Maneuver	1203	•		•		307	693
%	Stage 1				1		713	
%	Stage 2	•	•		•		277	,
Auver 1203 258  auver 258	Platoon blocked, %		•		1			
Ay. S 3.7 0 12.7 12.7 12.7 12.7 12.7 12.7 12.7 12.7	Mov Cap-1 Maneuver	1203	١		•		258	693
Av. S 3.7 0  FB WB  WB  WB  WB  T 00  T 1203 - 598  Ratio 0.141 - 0.218  Ray (s) 8:5 0 - 12.7	Mov Cap-2 Maneuver	•	•		1		258	
EB   WB   WB   WB   WB   WB   WB   WB	Stage 1		•		•		713	
EB   WB   S   12   12   12   12   13   14   15   15   15   15   15   15   15	Stage 2		•			٠	485	
Abvmt   EBL   EBT   WBT   WBR SBLn1	Approach	EB			WB		SB	
rMvmt EBL EBT WBT WBR SBLn1 1203 - 598 alto 0.141 - 0.218 ay (s) 8.5 0 - 12.7	HCM Control Delay, s	3.7			0		12.7	
rMvmt EBL EBT WBT WBR SB 1203 0 Ratio 0.141 0 ay (s) 8.5 0	HCM LOS						В	
r Mvmt EBL EBT WBT WBR SB 1203 0. Ratio 0.141 0. Ray (s) 8.5 0								
1203	Minor Lane/Major Mvmt	EBL	EBT					
0.141 8.5 0	Capacity (veh/h)	1203		598				
8.5 0 - 1	HCM Lane V/C Ratio	0.141	•	0.218				
	HCM Control Delay (s)	8.5	0	٠				
. A A	HCM Lane LOS	A	A	. B				
	10 M OEth 0/ tilo O/ toh)	L						

HCM 2010 TWSC 43: County Line Rd & Roberts Rd

nt Delay, s/veh	,												
Movement	EBL	EBT	EBR		WBL \	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
/ol, veh/h	36	25	-		6	25	11	4	501	28	11	641	29
Conflicting Peds, #/hr	0	0	0		0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop		Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized			None				None			None		ľ	None
Storage Length	•	•	٠		٠	٠			•	٠		•	ľ
Veh in Median Storage, #		0			٠	0			0			0	ľ
Grade, %	•	0	٠		٠	0	٠	•	0	٠		0	ľ
Peak Hour Factor	95	95	95		32	95	95	95		95	95	95	95
Heavy Vehicles, %	<del>-</del>	<del></del>	<del>-</del>		<del></del>	<del></del>	<del></del>		τ-	<del></del>	_		_
//wmt Flow	38	26	-		6	56	12	4	527	29	12	675	62
Major/Minor	Minor2			Σ	Minor1			Major1			Major2		
Conflicting Flow All	1014	1294	368		925	1311	278	737	c	c	557	c	
Stage 1	729	729			551	551						'	ľ
Stage 2	285	292	٠		374	760	٠		•	٠		•	ľ
Critical Hdwy	7.52	6.52	6.92		7.52	6.52	6.92	4.12	•	٠	4.12	ľ	ľ
Critical Hdwy Stg 1	6.52	5.52	٠		6.52	5.52	٠		•	٠		•	
Critical Hdwy Stg 2	6.52	5.52	٠		6.52	5.52	,		•	•		•	
ollow-up Hdwy	3.51	4.01	3.31		3.51	4.01	3.31	2.21	1	,	2.21	1	,
Pot Cap-1 Maneuver	194	163	632		225	159	722	871	•	٠	1017	•	
Stage 1	383	429	•		489	216	ì		1	•	•	1	,
Stage 2	701	209	٠		622	415	,		'	٠	•	'	
Platoon blocked, %									•			•	ľ
Nov Cap-1 Maneuver	163	159	632		192	155	722	871	•	٠	1017	•	ľ
Mov Cap-2 Maneuver	163	159	•		192	155	٠		•	٠	•		'
Stage 1	380	420	٠		486	512			•				
Stage 2	920	202			270	407							·
pproach	EB				WB			NB			SB		
HCM Control Delay, s	41.1				28.3			0.1			0.2		
HCM LOS	ш				Q								
Winor Lane/Major Mvmt	NBL	NBT	NBR E	NBR EBLn1WBLn1		SBL	SBT	SBR					
Capacity (veh/h)	871	•	•			1017	,						
HCM Lane V/C Ratio	0.005		٠			0.011	٠						
HCM Control Delay (s)	9.2	0	٠	41.1	28.3	9.8	0.1						
HCM Lane LOS	A	V	٠	ш	Ω	V	A						
HCM 95th %tile Q(veh)	0	ľ	'	9.	6.0	0							

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	Φ
HCM 2010 TWSC	61: Dwy/Aldwyn Ln & S Ithan Ave

3/10/2015

Int Delay, s/veh	7.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	34	130	2	51	267	21	8		37	4	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0		0	0	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	٠	•	None		•	None		'	None		'	None
Storage Length		1			•							
Veh in Median Storage, #		0			0			0			0	
Grade, %	•	0				,					0	
Peak Hour Factor	91	91	91	91	91	91	91	91		91	91	91
Heavy Vehicles, %	2	2	2	2		2	2	2	2	2	2	
Mvmt Flow	37	143	2	29	293	23	6			4	0	
Maior/Minor	Major1			Maior2			Minor1			Minor2		
Conflicting Flow All	316	0	0	148	0	0	644	649	146	629	640	305
Stage 1				ľ	ľ		220	220	٠	417	417	
Stage 2				,			424	429	٠	242	223	
Critical Hdwy	4.12	,		4.12			7.12		6.22	7.12	6.52	6.22
Critical Hdwy Stg 1		1			,		6.12	5.52		6.12	5.52	
Critical Hdwy Stg 2	•	•	٠		•		6.12			6.12	5.52	
Follow-up Hdwy	2.218	1		2.218		,	3.518	4	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1244	•		1434			386		901	377	393	735
Stage 1		•			'		782			613	291	
Stage 2		•	٠		•		809	584		762	719	
Platoon blocked, %		1			•							
Mov Cap-1 Maneuver	1244		٠	1434		٠	356		106	336	362	735
Mov Cap-2 Maneuver	•	•			•		356			336	362	
Stage 1		'			'		757		٠	263	263	
Stage 2		•					268	226		701	969	
Approach	2			dW			dN			g		
Apploacii	, נים			7						20 1		
HCM Control Delay, s	<u>o</u> .			7			10.9			C. I.		
HCM LOS							æ			20		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR WBL	WBT	WBR SBLn1	Ln1					
Capacity (veh/h)	199		٠	- 1434		,	574					
HCM Lane V/C Ratio	0.079	0.03		- 0.039	,	- 0.0	0.033					
HCM Control Delay (s)	10.9		0	9.7 -		,	11.5					
HCM Lane LOS	В	A	V	Α .	Α.		Ω					
	0	,										

Synchro 8 Report	Page 1
EX pm Baseline	

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

Comparison													
1800   1800	-ane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
12   227   848   85   222   4   11   970   1   13   3     10   10   11   11   14   10   12   12   12   12   10     10   10   11   11   11   11	ane Configurations		je sa	‡		*-		p z	₩				
1800   1800	olume (vph)	2	227	848	82	222	4	=	970	_	13	3	20
10	eal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
1	ine Width (ft)	10	10	=	=	14	10	12	12	12	12	10	10
1	.ade (%)			3%					-5%				
1 1 1 1 0 2 2 5 1.00 0.95 1.00 0.95 1.00 0.95 0.95 0.95 1.00 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0	orage Length (ft)		300		0			75		0			0
0.95	orage Lanes		<del></del>		<del></del>			<del></del>		0			0
0.956 1.00 0.95 0.95 1.00 0.95 1.00 0.95 0.95 0.95 0.95 0.95 0.950	iper Length (ft)		22					25					25
0.956   0.850   0.956   0.998   0.998   0.998   0.995   0.99	ne Util. Factor	0.95	1.00	0.95	0.95	1:00	0.95	1.00	0.95	0.95	0.95	1.00	1.00
0.950 0.0757 0.0				986.0		0.850			0.998				
0 1497 3058 0 1531 0 1445 3283 0 0 0 0 0 0 0 0 18 3088 0 1531 0 488 3283 0 0 0 0 0 0 0 18 3088 0 1531 0 488 3283 0 0 0 0 0 0 0 18 3088 0 1531 0 488 3283 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Protected		0.950					0.950					
0.075	td. Flow (prot)	0	1497	3058	0	1531	0	1645	3283	0	0	0	0
0 118 3058 0 1531 0 488 3283 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Permitted		0.075					0.282					
1	td. Flow (perm)	0	118	3058	0	1531	0	488	3283	0	0	0	0
35 37 38 38 39 112 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	tht Turn on Red					Yes					Yes		
35 10.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	td. Flow (RTOR)					202							
10.96   0.96	k Speed (mph)			32					35				
11.2 11.2 11.2 11.2 11.2 11.2 11.2 11.3 11.3	k Distance (ff)			577					1609				
0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	wel Time (s)			11.2					31.3				
5%         5%<	ak Hour Factor	90 0	96 0	900	96 0	96 0	96 0	960	960	960	960	960	960
2 236 883 89 237 4 11 1010 17 14 33  0 238 972 0 231 4 11 1010 17 14 3  No N	avy Vehicles (%)	5 %	2 %	2.5	200	20%	200	2,62	2,5	2%	200	2.72	200
0 238 972 0 231 0 15 1025 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	i Flow (vnh)	600	236	883	8	231	4	= 2	1010	6	14	8	52
0 238 972 0 231 0 15 1025 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ared Lane Traffic (%)		3	3	6	2			2		:	•	2
No	ne Group Flow (vph)	C	238	67.6	C	231	C	75	1025	C	C	C	C
Left Left Left Right Right Left Left Left Right Right Left Left Left Sight Right Left Left Left Sight Right Left Left Left Sight Right Left Left Left Left Left Thru 1.19 1.14 1.10 1.16 1.06 1.06 1.06 1.06 1.18 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ter Blocked Intersection	N	N	N	8	S	N	2	2	N	N	N	N
1.19   1.19   1.14   1.11   1.16   1.06   1.06   1.18   1.19   1.15   1.16   1.06   1.06   1.18   1.19   1.14   1.14   1.01   1.16   1.06   1.06   1.06   1.18   1.19   1.15   1.19   1.14   1.14   1.01   1.16   1.06   1.06   1.18   1.19   1.15   1.19   1.15   1.19   1.15   1.19   1.15   1.19   1.15	ne Alignment	₽ He	₩ He	₽ He	Right	Right	- Hell	₽ He	He He	Right	Right	E E	left
1.19   1.19   1.14   1.11   1.16   1.06   1.06   1.06   1.18   1.18   1.19   1.14   1.11   1.10   1.16   1.06   1.06   1.06   1.18   1.19   1.14   1.14   1.01   1.16   1.06   1.06   1.06   1.06   1.18   1.19   1.14   1.14   1.01   1.16   1.06   1.06   1.16   1.18   1.19   1.19   1.14   1.14   1.14   1.16	dian Width/ft)	Ž	Ĭ	12	High.	an Givi	2		12	ii Givi	ii.		
1.19   1.14   1.14   1.10   1.16   1.06   1.06   1.06   1.18   1.19   1.14   1.14   1.11   1.16   1.06   1.06   1.06   1.06   1.18   1.19   1.19   1.14   1.14   1.11   1.16   1.06   1.06   1.06   1.06   1.18   1.19   1.10	Color Widelign			4 0					7 0				
1.19   1.19   1.14   1.14   1.01   1.16   1.06   1.06   1.06   1.06   1.18   1   1   1   1   1   1   1   1   1	is on setting			> 5					<b>O</b> §				
1.19 1.19 1.14 1.14 1.01 1.16 1.06 1.06 1.06 1.106 1.18 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	osswaik widin(it)			2					2				
1.17 1.17 1.14 1.17 1.10 1.10 1.10 1.10 1.10 1.10 1.10	o way Leit Tulli Lalle	1	1	1 14	1 1 4	5	1 16	1 04	1 04	1 0 4	1 04	1 10	1
1	auway raciol		. 14	<u>+</u>	- - - -	5.	 0 f	00.1	00.1	00.1	00.1	<u>.</u>	
Left Thru Right Left Left Thru Left 1 1 1 2 3 37 37 2 0 20 37 37 37 0 20 37 37 37 20 0 0 37 37 37 0 20 37 37 37 0 20 37 37 37 0 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	rning speed (mpn)	2	2 1	,	δ.	<b>5</b> (	Ω,	2		7	6	2 1	2 '
Left Left Thru Right Left Left Thru Left Color State S	mber of Detectors	-	-	-		0	-	-	-			-	
20 37 37 0 20 37 37 20 0 -3 -3 -3 0 0 0 37 37 20 0 -3 -3 -3 0 0 0 3 -3 -3 0 0 0 -3 -3 0 0 0 0 0 0 0 0 0 0 0 0 0 00 00 00 00 0	tector Template	Left	Left	Thru		Right	Left	Left	Thru			Left	Left
0 -3 -3 -9 0 0 -3 -3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ading Detector (ft)	70	37	37		0	20	37	37			70	20
0         -3         -3         -3         -3         -3         -3         -3         -3         -9         -0         -3         -3         -0 </td <td>illing Detector (ft)</td> <td>0</td> <td>ς'n</td> <td>ကု</td> <td></td> <td>0</td> <td>0</td> <td>ကု</td> <td>ç,</td> <td></td> <td></td> <td>0</td> <td>0</td>	illing Detector (ft)	0	ς'n	ကု		0	0	ကု	ç,			0	0
20 40 40 37 20 40 40 20 CI+EX	tector 1 Position(ft)	0	ς'n	ņ		0	0	ņ	ς'n			0	0
CI+EX	tector 1 Size(ft)	70	40	40		37	70	40	40			20	20
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	tector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+Ex
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	tector 1 Channel												
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	tector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	tector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
pm+pt pm+pt NA Perm Perm Perm NA Perm Perm Perm Perm Perm Perm Perm Perm	tector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
5 5 2 6 6 10 2 2 2 6 6 10 5 5 2 2 6 6 6 10 30 30 150 150 150 150 30	rn Type	pm+pt	pm+pt	NA		Perm	Perm	Perm	NA			Perm	Perm
2 2 2 6 6 10 5 5 2 2 6 6 6 10 30 30 150 150 150 150 30 7	otected Phases	2	2	2					9				
30 30 150 150 150 150 150 30	rmitted Phases	2	2			2	9	9				10	10
30 30 150 150 150 150 30	tector Phase	2	2	2		2	9	9	9			10	10
30 30 150 150 150 150 30	vitch Phase												
	nimim Initial (c)	c	c										

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3ase 23 am 9/15/2014 Baseline

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0.950 1573 0.595 985 0.96 5% 8 -3 CI+Ex 28 No Left 1800 0 No No Left 20 0 0 20 CI+Ex 0.0 0.0 0.0 3.0 1.00 No No Right 1800 0 2 0.96 5% 9 1.00 1.14 4 No Right 0 51 1800 11 1.00 0.96 5% 53 1.14 Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave 37 -3 -3 -3 -40 CI+Ex 196 11800 3% 1575 40 1336 22.8 0.96 5% 204 266 No No 12 12 0 0.0 0.0 NA 8 3.0 1575 1 Left 37 37 -3 40 CI+Ex 250 25 1.00 0.950 1604 0.179 302 0.96 192 No Left 0.0 1 Left 20 0 0 0 20 CI+Ex 0.0 0.0 0.0 pm+pt 1.00 0.96 5% 192 No o 3.0 184 1800 12 • Right 0 12 1800 10 0 2 0.96 5% 12 1.00 1.15 No Right 1800 0 1.00 0.96 5% 3 1.15 37 -3 -3 40 CI+Ex 1.00 4 - 08 - 4 25 597 16.3 0.96 5% 0.0 0.0 NA 9 6 3.0 0 1418 No Right 1800 0.96 5% 8 1.18 1 37 37 -3 -3 -40 CI+Ex **4** 0 00 0 5 % 5 % 1 1.00 0.983 0.958 1499 0.742 25 492 13.4 0.96 5% 0 1.18 0.0 0.0 NA 10 3.0 Grade (%)
Storage Length (ft)
Storage Length (ft)
Storage Length (ft)
Lane Util. Factor
Fit
Fit Permitted
Satd. Flow (prod)
Right Turn on Red
Satd Flow (perm)
Right Turn on Red
Satd Flow (RTOR)
Link Speed (mpt)
Link Distance (ft)
Travel Time (s)
Ag. Flow (vpt)
Shared Lane Tactor
Heavy Vehicles (%)
Ad. Flow (vpt)
Shared Lane Tactor
Heavy Vehicles (%)
Crosswalk Width(ft)
Link Offset(ft)
Crosswalk Width(ft)
Link Offset(ft)
Two way Left Turn Lane
Headway Factor
Turnin Speed (mpt)
Number of Delectors Detector Template Leading Detector (ft) Trailing Detector (ft) Detector 1 Position(ft) Detector 1 Size(ft) Detector 1 Channel
Detector 1 Extend (s)
Detector 1 Queue (s)
Detector 1 Delay (s) Ideal Flow (vphpf) Lane Width (ft) Minimum Initial (s) Protected Phases Detector 1 Type Volume (vph)

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

Lane Configurations   Packers   Pack		157 1800 10 0 0 1.00 0 0 0 0 0 0 0 0 0 0 0
		157 1800 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
		1800 10 0 0 0 0 0 0 0 0 5% 5% 164
		10 0 0 0 0 0 0 5% 164
. 9 - 1 - 6 - 8 - 8		0 1.00 0 0 0 0.96 5% 164
		0 0 0 0 0.96 5.% 164
		1.00 0 0 0 0.96 5% 164
		1.00 0 0 0.96 5% 164
		1,00 0 0 0,96 5% 164
		0 0 0.96 5% 164
		0 0 0.96 5% 164
		0 0 0.96 5% 164
		0 0.96 5% 164
		0 0.96 5.% 164 0
		0.96 5% 164 0
		0.96 5% 164
		0.96 5% 164 0
		0.96 5% 164 0
		0.96 5.% 164 0
	J	0.96 5% 164 0
or		5% 164 0
Heavy Vehicles (%) 5%		164
		C
affic (%)		0
Lane Group Flow (vph) 305		
loi		No
.ane Alignment Left		Right
Median Width(ft) 12		
	_	
Crosswalk Width(ft) 10	_	
Two way Left Turn Lane		
Headway Factor 1.12		1.12
Furning Speed (mph)		6
Number of Detectors 1		
Detector Template Thru	_	
_	_	
	~	
(#)	~	
Q.	_	
Detector 1 Type CI+Ex	Ų	
<u> </u>	_	
Delay (s)	_	
Turn Type NA	_	
Protected Phases 4	_	
Permitted Phases		
Detector Phase 4	_	
Minimum Initial (s) 3.0		

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/9/2015

ame Group         EBL         EBL         EBL         EBL         EBL         EBL         BBL         MBL         M	EB12         EB1         EB1         EBR         EBR2         WBL         WBL         WBT         WBR         NBL2         NBL2 </th <th></th> <th>^</th> <th>ኘ</th> <th>†</th> <th><u>/-</u></th> <th>ſ*</th> <th><b>&gt;</b></th> <th>Ļ</th> <th>ţ</th> <th>1</th> <th><b>»</b>J</th> <th>•</th> <th>•</th>		^	ኘ	†	<u>/-</u>	ſ*	<b>&gt;</b>	Ļ	ţ	1	<b>»</b> J	•	•
130 13.0 21.0 21.0 21.0 21.0 21.0 13.0 13.0 13.0 25.0 28.0 78.0 53.0 53.0 53.0 15.0 70.0 15.6 25.0 78.0 78.0 53.0 53.0 15.0 70.0 19.0 72.0 72.0 47.0 47.0 47.0 47.0 47.0 47.0 47.0 47	130 13.0 21.0 21.0 21.0 21.0 21.0 13.0 13.0 13.0 25.0 28.0 78.0 78.0 53.0 53.0 53.0 15.0 15.6% 48.8% 48.8% 33.1% 33.1% 33.1% 9.4% 9.1 19.0 19.0 72.0 72.0 47.0 47.0 47.0 47.0 9.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	ane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
25.0 25.0 78.0 78.0 53.0 53.0 53.0 15.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17	25.0 25.0 78.0 78.0 53.0 53.0 53.0 15.0 115.0 115.6% 18.6% 18.8% 48.8% 48.8% 33.1% 33.1% 33.1% 94.% 94.8 94.8 94.8 94.8 94.8 94.8 94.8 94.8	inimum Split (s)	13.0	13.0	21.0		21.0	21.0	21.0	21.0			13.0	13.0
15.6%   15.6%   48.8%   33.1%   33.1%   33.1%   34.4%   9,4.4%   9,1.5%   15.6%   15.6%   15.6%   15.6%   15.6%   15.6%   15.6%   15.0%   15	15.6%   15.6%   48.8%   33.1%   33.1%   33.1%   94.4%   9.1%	otal Split (s)	25.0	25.0	78.0		78.0	53.0	53.0	53.0			15.0	15.0
19.0 19.0 72.0 72.0 47.0 47.0 97.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	19.0 19.0 72.0 72.0 47.0 47.0 97.0 97.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	otal Split (%)	15.6%	15.6%	48.8%		48.8%	33.1%	33.1%	33.1%			9.4%	9.4%
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Maximum Green (s)	19.0	19.0	72.0		72.0	47.0	47.0	47.0			0.6	0.6
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	(ellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
0.5   0.5   0.5   0.5   0.5	Lead Lead	II-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
6.5 6.5 6.5 6.5 6.5 Lag Lag Lag  3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0  None None Max Nane None None None None None 1.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	6.5 6.5 6.5 6.5 6.5 6.5 Lag	ost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				
Lead   Lead   Lead   Lag   L	Lead   Lead   Lead   Leag   Lag	otal Lost Time (s)		6.5	6.5		6.5		6.5	6.5				
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	-ead/Lag	read	Lead				Lag	Lag	Lag			Lag	Lag
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 None None Max Nax None None None None None None None None	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 None None Max Nax None None None None None None None None	ead-Lag Optimize?												
None None Max None None None None 17.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	None None Max None None None None None 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0	ehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	Recall Mode	None	None	Max		Max	None	None	None			None	None
20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	Valk Time (s)			7.0		7.0	7.0	7.0	7.0				
71.6 71.6 71.6 46.6 46.6 47.6 47.6 47.6 47.6 47.6 47	71.6 71.6 71.6 46.6 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	lash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
71.6 71.6 74.6 46.6	71.6 71.6 71.6 46.6	edestrian Calls (#/hr)			0		0	0	0	0				
0.47 0.47 0.31 0.31 0.31 0.32 0.30 0.30 0.30 0.30 0.30 0.30 0.30	047 047 031 031 031 032 0.08 0.28 0.10 0.10 0.00 0.00 0.00 0.00 0.00 0.0	ct Effct Green (s)		71.6	71.6		71.6		46.6	46.6				
1.07 0.68 0.28 0.10 1.12.8 34.9 5.7 42.6 1.0 0.0 0.0 0.0 0.0 1.12.8 34.9 5.7 42.6 1.2 C A D D D D D D D D D D D D D D D D D D	107 0.68 0.28 0.10 1.13 34.9 5.7 42.6 1.10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	ctuated g/C Ratio		0.47	0.47		0.47		0.31	0.31				
121.8 34.9 5.7 42.6 8 0.0 0.0 0.0 0.0 0.0 121.8 34.9 5.7 42.6 8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	121.8 34.9 5.7 42.6 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	c Ratio		1.07	0.68		0.28		0.10	1.02				
121.8 34.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	121.8 34.9 6.7 42.6 1	ontrol Delay		121.8	34.9		2.7		42.6	84.7				
121.8 34.9 5.7 42.6 F C A D 44.6 D adiated Intersection LOS: E IOU.2% ICU Level of Service G	121.8 34.9 5.7 42.6 F C A D A44.6 D direct direct Theresection LOS: E TOU Level of Service G	ueue Delay		0.0	0.0		0.0		0.0	0.0				
ter  dinated  Intersection LOS: E  IOU Level of Service G	ter  and the control of the control	otal Delay		121.8	34.9		2.7		42.6	84.7				
ofinated Intersection LOS: E ICU Level of Service G	ter  dinated Intersection LOS: E ICU Level of Service G	SC		ш	O		V		۵	ш.				
ler dinated 1107.9%	Defr dinated 107.9%	pproach Delay			44.6					84.1				
ler dinated 1107.9%	er dinated	pproach LOS			Ω					ш.				
ner dinated 1107.9%	dinated	itersection Summary												
dinated 1107.9%	dinated 107.9%	rea Type:	Other											
dinated 1107.9%	dinated 1107.9%	ycle Length: 160												
dinated	dinated	ctuated Cycle Length: 1.	52.2											
dinated	dinated	latural Cycle: 150												
107.9%	1107.9%	ontrol Type: Actuated-U	ncoordinated											
1107.9%	1107.9%	laximum v/c Ratio: 1.07												
		tersection Signal Delay:	70.4			Ξ	tersection	1 LOS: Ε						
	nalysis Period (min) 15	itersection Capacity Utili	zation 107.9%	.0		೨	:U Level	of Service	g					

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave



Base 23 am 9/15/2014 Baseline

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Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

NBT         NBR         SBT         SBR         NBC         NEL         NEL         NET         NBC           13.0         2.0         10.0		<b>←</b>	*_	<b>→</b>	¬₄	•	•	<b>~</b>	×	•	4	•	<b>\</b>
(s) 13.0 13.0 13.0 13.0 13.0 13.0 13.0 13.0	Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
(s) 9.4% 8.1% 10.6% 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0	Minimum Split (s)	13.0		13.0			13.0	13.0	13.0			13.0	13.0
(s) 9,4% 8,1% 10,6% 10,6% 33 3,0 3,0 10,0 11,0 11,0 11,0 11,0 11,0 11	Total Split (s)	15.0		13.0			17.0	17.0	54.0			37.0	37.0
(s) 900 700 110 11.0  (s) 30 30 40 40 4.0  30 30 3.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	Total Split (%)	6.4%		8.1%			%9:01	10.6%	33.8%			23.1%	23.1%
(\$) 3.0 3.0 4.0 4.0 3.0 3.0 3.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Maximum Green (s)	0.6		7.0			11.0	11.0	48.0			31.0	31.0
(s) 3.0 2.0 2.0 2.0 (s) 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	Yellow Time (s)	3.0		3.0			4.0	4.0	4.0			4.0	4.0
(\$) 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	All-Red Time (s)	3.0		3.0			2.0	2.0	2.0			2.0	2.0
6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	Lost Time Adjust (s)	0.5		0.5				0.5	0.5				0.5
(s) 3.0 3.0 3.0 3.0 3.0 (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Total Lost Time (s)	6.5		6.5				6.5	6.5				6.5
(s) 3.0 3.0 3.0 3.0 3.0 (h) None None None None None None None None	Lead/Lag	Lag		Lead			Lead	Lead				Lag	Lag
(s) 3.0 3.0 3.0 3.0 3.0 (hore None None None None None None None Non	Lead-Lag Optimize?												
(m) 8.5 6.1 47.6 7.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Vehicle Extension (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0
9) (hr) 8.5 6.1 47.6 0.06 0.04 0.31 0.07 0.29 1.04 1.04 0.00 0.0 0.00 174.4 86.1 171.5 F F F F F F F F F F F F F F F F F F F	Recall Mode	None		None			None	None	None			None	None
) 85 6.1 47.6 0.31 0.00 0.00 0.00 0.31 1.04 1.14.4 86.1 1.21.5 F F F F F F F F F F F F F F F F F F F	Walk Time (s)								7.0				
(hr) 8.5 6.1 47.6 (1.04	Flash Dont Walk (s)								25.0				
8.5 6.1 47.6 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	Pedestrian Calls (#/hr)								0				
atio 0.06 0.04 0.31 0.97 0.29 1.104 174.4 86.1 121.5 0.0 0.0 0.0 174.4 86.1 121.5 F F F F F F F F F F F F F F F F F F F	Act Effct Green (s)	8.5		6.1				47.6	47.6				30.6
0.97 0.29 1.04 1744 86.1 121.5 0.0 0.0 0.0 0.0 1744 86.1 121.5 F F F F F F F F F F F F F F F F F F F	Actuated g/C Ratio	90:0		0.04				0.31	0.31				0.20
174.4 86.1 121.5 0.0 0.0 0.0 174.4 86.1 121.5 F F F F F F F F F F F F F F F F F F F	v/c Ratio	0.97		0.29				1.04	0.54				0.14
0.0 0.0 0.0 0.0 0.0 0.0 174.4 86.1 121.5 F F F F F F F F F F F F F F F F F F F	Control Delay	174.4		86.1				121.5	49.2				54.5
174.4 86.1 121.5 F F F F F F F F F F F F F F F F F F F	Queue Delay	0.0		0.0				0.0	0.0				0.0
F F F F F F F F F F F F F F F F F F F	Total Delay	174.4		86.1				121.5	49.2				54.5
y 174.4 86.1 F F F mmarv	FOS	ш		ш				ш	Ω				D
Approach LOS F F E Intersection Summary	Approach Delay	174.4		86.1					79.5				
Intersection Summary	Approach LOS	ш		ш					ш				
	Intersection Summary												

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/9/2015

Lane Group	SWT	SWR
Minimum Split (s)	13.0	
Total Split (s)	37.0	
Total Split (%)	23.1%	
Maximum Green (s)	31.0	
Yellow Time (s)	4.0	
All-Red Time (s)	2.0	
Lost Time Adjust (s)	0.5	
Total Lost Time (s)	6.5	
Lead/Lag	Lag	
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)	30.6	
Actuated g/C Ratio	0.20	
v/c Ratio	1.00	
Control Delay	111.2	
Queue Delay	0.0	
Total Delay	111.2	
FOS	ш	
Approach Delay	106.5	
Approach LOS	ш	
Interconflor Cummers		

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Base 23 am 9/15/2014 Baseline

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Queues 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

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Lane Group	EBL	EBT	EBR2	WBL	WBT	NBT	SBT	NEL	NET	SWL	SWT	
Lane Group Flow (vph)	238	972	231	15	1025	63	16	192	266	28	305	
v/c Ratio	1.07	89.0	0.28	0.10	1.02	0.97	0.29	1.04	0.54	0.14	1.00	
Control Delay	121.8	34.9	5.7	42.6	84.7	174.4	86.1	121.5	49.2	54.5	111.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	121.8	34.9	5.7	42.6	84.7	174.4	86.1	121.5	49.2	54.5	111.2	
Queue Length 50th (ft)	~200	362	14	10	514	19	15	~143	208	22	293	
Queue Length 95th (ft)	#428	513	17	33	#767	#178	44	#317	338	22	#546	
Internal Link Dist (ft)		497			1529	412	217		1256		3088	
Turn Bay Length (ft)	300			75				200		150		
Base Capacity (vph)	223	1439	827	149	1005	99	09	184	492	197	302	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.07	89.0	0.28	0.10	1.02	0.97	0.27	1.04	0.54	0.14	1.00	
Interception Summary												

- Volume exceeds papelly queue is theoretically infinite.
- Volume exceeds papelly 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.

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

3/9/2015

3/9/2015

95 11 941 1800 1800 1800 111 11 11 0.95 0.95 0.95 0 0.9328 0 0.942 0 0.944 0 0.943 0 0.944 0 0 0 0 0.944 0 0 0 0 0.944 0 0 0 0 0.944 0 0 0 0 0 0.944 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
pt) 1800 1800 1801 891 891 891 891 891 891 891 891 891 89	
pl) 1800 1800 1800 1800 1800 1800 1800 180	4
m) 3196 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	1800
ru 0.95 0.95 0.95 0.95 0.95 0.99 0.99 0.99	12
0.986  (m) 3196 0 0 9298  (m) 3196 0 0 3238  (ed 2338  (ed 3313 765 0 0 3053  (ed 3313 765 0 0 3053  (ed 3313 765 0 0 3053  (ed 313 765 0 0 1069  (ed 313 765 0 0 1069  (fill 111 112 1112 1112 1112  (fill 3 1 0 3 37  (fill 3 1 0 3 37  (fill 3 0 0 3 37  (fill 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.00
(mp) 3196 0 0 3238 (edd 23 23 23 23 23 23 23 23 23 23 24 24 24 24 24 24 24 24 24 24 24 24 24	
(m) 3196 0 0 3238  (ed	
March   Marc	0
m) 3196 0 0 3053 N) 35 765 N) 1609 2 3 35 N1 1609 1285 Not 1010 103 12 1077 M (vbh) 1113 0 0 1089 Not 1010 103 12 1077 M (vbh) 1113 0 0 1089 Not 1010 103 12 1077 M (vbh) 10 10 103 Not 112 112 112 Not 113 10 10 10 Not 114 115 115 Not 115 115 115 Not 116 116 Not 116 117 Not 117 117 117 Not 118 118 Not 118 118 Not 118 119 Not 118 1	
100   100	0
0R) 23 35 35 35 35 36 36 36 36 36 36 36 36 36 36 36 36 36	Yes
(mph) 35 35 35 36 36 36 36 36 36 36 36 36 36 36 36 36	
1609   1286   1286   1287   1287   1287   1010   103   12   1077   1010   103   12   1077   1010	
affic (%)  w (vph) III3 0 0 1089 Intersection No	
antic (%) w (yph) 1113 0 0 1079 w (yph) 1113 0 0 1089 w (yph) 1113 0 0 1089 w (yph) 1113 0 0 1089 w (yph) 112 12 12 12 12 12 12 112 112 112 112	
affic (%)  w (ych) w (ych) 1113 0 0 108  w (ych) 1113 0 0 108  w (ych) 112 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.92
affic (%)  w (ych) 1113 0 0 1089  lersection No	4
w (vph) 1113 0 1089  nlersection No	
Intersection No No No No No No No I I I I I I I I I	0
Left Right Left Left   Left	No
12   12   12   12   12   12   13   14   15   15   15   15   15   15   15	Right
mun Lane  mun La	,
h(f) 10 10 10 10 10 10 10 10 10 10 10 10 10	
um Lane (mpf) (mpf	
(mph) 9 15 1.12 1.12 1.12 1.12 1.12 1.12 1.12 1	
(mpt) 9 15 also 1 1 1 also 1 2 2 37 ac (f) 37 20 37 ac (f) -3 0 -3 ac (f) 40 20 40 ac (f) 40 20 40 ac (f) 40 20 40 ac (f) 40 00 00 ac (f) 40 00 00 ac (f) 60 00 00 ac (f) 60 00 00 ac (f) 70 00 00 ac (f) 80 00 00 ac (f) 80 00 00 ac (f) 80 00 00	1.07
ade Thru Left Thru 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6
ate Thru Left Thru or (f) 37 20 37 70 (f) 37 100 (f) 3 1	
rr (ff) 37 20 37 (ff) 37 (ff) 3 37 (	
r(f) -3 0 -3 (f) (f) (f) -4 0 -3 (f) (f) (f) -4 0 -3 (f) -4 0 (f) -3 (f) -4 0 (f) -4	
ind(f) 3 0 3 (f) 40 20 44 ind (s) 0.0 0.0 0.0 ind (s) 0.0 0.0 0.0 0.0 0.0 ind (s) 0.0 0.0 0.0 0.0 0.0 0.0 ind (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	
(ff) 40 20 40  Inel (s) 0.0 0.0 0.0  0.0 0.0 0.0 0.0  Inel (s) 0.0 0.0 0.0 0.0 0.0  Inel (s) 0.0 0.0 0.0 0.0 0.0 0.0  Inel (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0  Inel (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  Inel (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	
and Cl+Ex Cl	
nnel nnel nnel nnel (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	
nd (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	
y (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	
y (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	
Ses 2 6 6 6 6 6 7 100 10.0 5) 32.0 32.0 32.0	
es 2 6 6 6 6 6 6 8 9 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10	
es 2 6 6 6 (8 10 10.0 10.0 10.0 10.0 10.0 10.0 10.0	
2 6 6 ((s) 10.0 10.0 10.0 (s) 21.0 21.0 21.0 22.0 32.0 32.0 32.0 32.0 32.0 32.0 32	
(s) 10.0 10.0 10.0 s) 21.0 21.0 21.0 32.0 32.0 32.0	
(s) 10.0 10.0 10.0 s) 21.0 21.0 21.0 21.0 32.0 32.0	
s) 21.0 21.0 21.0 32.0 32.0	
32.0 32.0 32.0	
53.3% 53.3% 53.3% 4	
n (s) 27.0 27.0 2	
3.0	

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Base 23 am 9/15/2014 Baseline

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Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

Queues 11: Chapel Dr & Lancaster Ave

3/9/2015

ane Group					_
-Red Time (s)	EBT EBR	WBL	WBT	NBL	NBR
	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.5		0.5	0.5	
otal Lost Time (s)	5.5		2.5	5.5	
Lead/Lag					
Lead-Lag Optimize?					
/ehicle Extension (s)	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	
Walk Time (s)	10.0	10.0	10.0	7.0	
-Tash Dont Walk (s)	0:0	0.0	0.0	16.0	
Pedestrian Calls (#/hr)	0	0	0	0	
Act Effet Green (s)	56.5		299	9.9	
Actuated g/C Ratio	0.94		0.94	0.09	
v/c Ratio	0.37		0.38	0.00	
Control Delay	1.6		3.3	22.5	
Queue Delay	0:0		0.0	0.0	
otal Delay	1.6		3.3	22.5	
SO.	⋖		A	ပ	
Approach Delay	1.6		3.3	22.5	
Approach LOS	A		V	ပ	
ntersection Summary					
Area Type:	Other				
Cycle Length: 60					
Actuated Cycle Length: 60					
Offset. 55 (92%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow	d to phase 2:EBT a	Ind 6:WBT	L, Start of	Yellow	
Natural Cycle: 60					
Control Type: Actuated-Coordinated	rdinated				
Maximum v/c Ratio: 0.38					
Intersection Signal Delay: 2.5	5		III	Intersection LOS: A	LOS: A
ntersection Capacity Utilization 49.6%	tion 49.6%		⊇	U Level or	CU Level of Service A

Intersection Summary motore is metered by upstream signal.

Control Delay
Queue Delay
Queue Delay
Total Delay
Total Delay
Queue Length 50th (ft)
Queue Length 95th (ft)
Internal Link Disk (ft)
Turn Bay Length (ft)
Base Capacity (oph)
Base Capacity (oph)
Slarvalion Cap Reducin
Spillback Cap Reducin
Storiage Cap Reducin
Reduced vic Ratio

NBL 14 0.09 22.5 0.0 22.5 3 3 18 18

EBT WBT 1113 1089 0.37 0.38 1.6 3.3 0.0 0.0 102 m330 1629 1205

Lane Group Lane Group Flow (vph) v/c Ratio

Splits and Phases: 11: Chapel Dr & Lancaster Ave

Base 23 am 9/15/2014 Baseline Synchro 8 Report Page 3

Synchro 8 Report Page 2

Base 23 am 9/15/2014 Baseline

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

									-	-	-	0
ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	je-	<b>₩</b>		r	<b>₩</b>		je.	æ,		je-	æ,	
Volume (vph)	16	809	36	137	867	45	87	179	9/	26	221	49
deal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		%0			3%			1%			%0	
Storage Length (ft)	140		0	20		0	105		0	99		0
Storage Lanes	-		0	-		0	-		0	<del>-</del>		0
Taper Length (ft)	22			22			25			25		
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
T.		0.994			0.993			0.955			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	3022	0	1497	2973	0	1512	1520	0	1520	1557	0
FIt Permitted	0.166			0.185			0.306			0.339		
Satd. Flow (perm)	266	3022	0	292	2973	0	487	1520	0	542	1557	0
Right Turn on Red			8			8			N N			No
Satd. Flow (RTOR)												
Link Speed (mph)		32			32			25			25	
ink Distance (ft)		1285			2035			183			973	
ravel Time (s)		25.0			39.6			2.0			26.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	16	857	38	146	922	48	93	190	81	28	235	52
Shared Lane Traffic (%)												
ane Group Flow (vph)	46	895	0	146	026	0	93	271	0	28	287	0
Enter Blocked Intersection	9 8	No	No No	9	9 8	9	9	9 8	No	9	No No	No
-ane Alignment Median Width(ft)	Left	Left 10	Right	Left	Left 10	Right	ret	Left 10	Right	Left	10	Right
ink Offset(ft)		0			0			0			0	
Crosswalk Width (ft)		10			01			10			10	
wo way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Furning Speed (mph)	15		6	15		6	15		6	15		6
Number of Detectors	-	0		-	0		-	-		-	-	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	37	0		37	0		37	37		37	37	
railing Detector (ft)	ς'n	0		ကု	0		ς'n	ڊ- -		٠,	ڊ <u>-</u>	
Detector 1 Position(ft)	ς-	0		ņ	0		5-	ç,		٣-	٠-	
Detector 1 Size(ft)	40	9		40	9		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	Cl+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0:0	0.0		0.0	0.0		0:0	0.0		0.0	0:0	
Turn Type	pm+pt	NA O		pm+pt	NA.		Perm	NA		Perm	₹.	
Protected Phases	Ω (	7		-	٥		•	œ			4	
Permitted Phases	2			9			∞			4		
Detector Phase	വ	2		-	9		∞	∞		4	4	
Switch Phase												
Minimum Initial (s)	3.0	34.0		3.0	34.0		3.0	3.0		3.0	3.0	

Lanes, Volumes, Timings

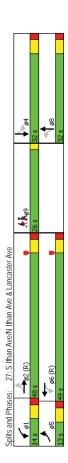
27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lane Group
Lane Configurations
Volume (vph)
Ideal Flow (vphp)
Lane With (t)
Crade (%)
Storage Length (ft)
Storage Langth

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(%) (%) (%) (%) (%) (%) (%) (%) (%) (%)	
(%) section section (%) (%) (%) (%) (%) (%) (%) (%) (%) (%)	
(%) section (%) (m) (m) (m) (s) (s) (s) (s) (s) (s) (s) (s) (s) (s	
(%) section (m)	
section (%)  Lane (1) (1) (2) (2) (2) (3) (4) (5) (6) (7) (8) (9) (9) (9) (1) (1) (1) (1) (1) (1) (1) (2) (1) (2) (3) (4) (4) (5) (6) (7) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	
(%) section section (%) (%) (%) (%) (%) (%) (%) (%) (%) (%)	
(%) (%) (%) (%) (%) (%) (%) (%) (%) (%)	
(c)	
(c (%) (vph) // section // Lane (f)	
(cf. %) (cf. %	
(c)	
(%) (vph) (rsection (rsection (r)	
(c) (%) (c) (c) (%) (c)	
(%) (%) (%) (%) (%) (%) (%) (%) (%) (%)	
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	Synchro 8 Report
Base 23 am 9/15/2014 Baseline	

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lane Group		١	†	>	-	ļ	1	•	<b>—</b>	•	۶	<b>→</b>	•
13.0 40.0 13.0 40.0 13.0 13.0 13.0 13.0 13.0 13.0 13.0 1	ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
13.0	Ainimum Split (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	
10.8% 40.0% 11.7% 40.8% 26.7% 26.7% 26.7% 26.7% 26.7% 26.7% 26.0 26.0 26.0 26.0 26.0 26.0 26.0 26.0	otal Split (s)	13.0	48.0		14.0	49.0		32.0	32.0		32.0	32.0	
7.0 42.0 8.0 43.0 26.0 26.0 26.0 26.0 20.0 20.0 20.0 20	otal Split (%)	10.8%	40.0%		11.7%	40.8%		26.7%	26.7%		26.7%	26.7%	
40 40 40 40 40 40 40 40 40 40 40 40 60 60 60 60 60 60 60 60 60 60 60 60 60	faximum Green (s)	7.0	42.0		8.0	43.0		26.0	26.0		26.0	26.0	
2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	ellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
0.5   0.5   0.5   0.5   0.5   0.5   0.5     1.636   1.636   1.636   1.636   1.636   1.636     1.637   1.637   1.637   1.637   1.637     1.637   1.637   1.637   1.637   1.637     1.637   1.637   1.637   1.637   1.637     1.637   1.637   1.637   1.637   1.637     1.637   1.637   1.637   1.637   1.637     1.637   1.637   1.637   1.637   1.637     1.637   1.637   1.637   1.637   1.637     1.637   1.637   1.637   1.637   1.637   1.637     1.637   1.637   1.637   1.637     1.637   1.637   1.637   1.637     1.637   1.637   1.637   1.637     1.637   1.637   1.637   1.637     1.637   1.637   1.637   1.637     1.637   1.637   1.637   1.637     1.637	II-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
1,00     1	ost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lead   Lag   Lead   Lag   Lead   Lag   S.0   S	otal Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
(a) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	ead/Lag	Lead	Lag		Lead	Lag							
30 30 30 30 30 30 30 3.0 3.0 3.0 3.0     None C-Max None C-Max None None None None C-Max None C-Max None None None None None None None None	ead-Lag Optimize?												
None C-Max   None C-Max   None None None None None None   None	ehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
http://dx.com/misses/mi	ecall Mode	None	C-Max		None	C-Max		None	None		None	None	
hth)  54.2 47.8 56.4 48.9 24.4 24.4 24.4  0.45 0.40 0.47 0.41 0.20 0.20 0.20  0.52 0.74 0.69 0.80 0.95 0.88 0.25  0.52 0.74 0.69 0.80 0.95 0.88 0.25  0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0  29.1 36.6 31.1 31.8 125.0 74.5 46.3  C D C C F F E D  The Conditional of All of Master Intersection  10.05  Delay, 45.5 Intersection LOS: D  P Intersection LOS: D  P Intersection C Service D  11.1 11.1 11.1 11.1 11.1 11.1 11.1 1	/alk Time (s)												
hty)  54.2 47.8 56.4 48.9 24.4 24.4 24.4 24.4  0.45 0.40 0.47 0.41 0.20 0.20 0.20  0.52 0.74 0.69 0.80 0.95 0.88 0.25  29.1 36.6 31.1 31.8 125.0 74.5 46.3  29.1 36.6 0.0 0.0 0.0 0.0 0.0 0.0  29.1 36.6 31.1 31.8 125.0 74.5 46.3  C	lash Dont Walk (s)												
54.2 47.8 56.4 48.9 24.4 24.4 24.4 24.4 24.4 24.4 24.4 24	edestrian Calls (#/hr)												
0.45 0.40 0.47 0.41 0.20 0.20 0.20 0.25 0.25 0.74 0.69 0.80 0.05 0.88 0.25 0.74 0.69 0.80 0.05 0.88 0.25 0.74 0.69 0.80 0.05 0.88 0.25 0.74 0.69 0.80 0.05 0.88 0.25 0.74 0.60 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	ct Effct Green (s)	54.2	47.8		56.4	48.9		24.4	24.4		24.4	24.4	
0.52 0.74 0.69 0.80 0.95 0.88 0.25 2.91 36.6 31.1 31.8 125.0 74.5 46.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	ctuated g/C Ratio	0.45	0.40		0.47	0.41		0.20	0.20		0.20	0.20	
29.1 36.6 31.1 31.8 125.0 74.5 46.3 46.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	c Ratio	0.52	0.74		69:0	0.80		0.95	0.88		0.25	0.91	
00 00 00 00 00 00 00 00 00 00 00 00 00	ontrol Delay	29.1	36.6		31.1	31.8		125.0	74.5		46.3	79.1	
29.1 36.6 31.1 31.8 125.0 74.5 46.3  C D C C F E D  C C D C C F E D  C C C C F F E D  C C C C F F E D  C C C C F F E D  C C C C F F E D  C C C C F F E D  C C C C F F E D  C C C C F F E D  C C C C F F E D  C C C C C F F E D  C C C C C C C C C C C C C C C C C C	ueue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
C D C C F E D  35.9 31.7 87.4 D  C F  many  Other  20  Length: 1.20  Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  140: 0.95  Intersection LOS: D  Intersection LOS: D  Intersection 1.08: B  Intersection LOS: D  Intersection 1.08: B  Intersection LOS: D  Intersection 1.08: B  Intersection LOS: D  Intersection LOS: D  Intersection LOS: D	otal Delay	29.1	36.6		31.1	31.8		125.0	74.5		46.3	79.1	
many  Other  Other  One ength: 120  ength: 120  elefrenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  itio. 95  into 0.95  Intersection LOS: D  intersection 13:5%  Intersection LOS: D	OS SO	S	۵		O	ပ		ш	ш		۵	ш	
tersection Summary rea Type: rea Type: yel Length: 120 fiset 0 (%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection fiset 0 (%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection antural Cycle and the confinated aximum vic Ratio: 0.35 fiersection Signal Delay, 45.5 fiersection Signal Delay, 45.5 ICU Level of Service D advisit page 45.5 ICU Level of Service D	pproach Delay		35.9			31.7			87.4			76.2	
rea Type: Yele Laght: 20 Yele Laght: 120 Iffset 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Alural Cycle: 105 Annual	pproach LOS		۵			U			ш			Ш	
rea Type: Yoyle Length: 120 Yoyle Length: 120 Iffset Civile Length: 120 Iffset D (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Intersection Actualed-Coordinated aximum Vic Ratio: 0.55 Intersection Signal Delay: 45.5 Intersection LOS: D Intersection Signal Delay: 45.5 ICU Level of Service D Index Proposed (min.) 18.5% ICU Level of Service D	itersection Summary												
ycle Length: 120  Clusted Cycle Length: 120  Clusted Cycle Length: 120  Alta I Oyle: 105  atural Oyle: 105  ontrol Type: Actuated-Coordinated  aximum vic Ratio: 0.95  Intersection Signal Delay, 45.5  Intersection Capacity Utilization 78.5%  ICU Level of Service D	rea Type:	Other											
ctuated Cycle Length: 120 alival Cycles, Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection alival Cycle: 105 alival Cycle: 105 aximum v/c Ratio: 0.95 Intersection Signal Delay, 45.5 Intersection LOS: D Intersection Signal Delay, 45.5 ICU Level of Service D	ycle Length: 120												
fifset 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection alural Cycle 105 ontor 1 yes. Actualed-Coordinated aximum Vic Ratio: 0.55 letsection Signal Delay. 45.5 Intersection LOS: D Intersection Signal Delay. 45.6 ICU Level of Service D INDIA Alura Service D	ctuated Cycle Length: 120	_											
	iffset: 0 (0%), Referenced	to phase 2:	EBTL and	6:WBTL,	Start of	Yellow, N	laster Int	ersection					
	atural Cycle: 105	potonibac											
	Jaximum v/c Ratio: 0 95	n all lated											
	toronal Market Signal Dolon A	<u> </u>			2	roitocoro	00.00						
	nersection Canacity Hilliza	5.5 tion 78 5%			= ⊆	I I evel (	f Service	_					
	nalysis Period (min) 15	0.00			2		5	د					



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Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/9/2015

3/9/2015

Lane Group	60
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	0.6
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Oueue Delay	
Total Delay	
SOT	
Approach Delay	
Approach LOS	
Intersection Summary	

Base 23 am 9/15/2014 Baseline Synchro 8 Report Page 4

	3/9/2
Queues	27: S Ithan Ave/N Ithan Ave & Lancaster Ave

	1	†	<b>&gt;</b>	ţ	•	•	ၨ	<b>→</b>	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	46	895	146	970	93	271	78	287	
v/c Ratio	0.52	0.74	69.0	0.80	0.95	0.88	0.25	0.91	
Control Delay	29.1	36.6	31.1	31.8	125.0	74.5	46.3	79.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	29.1	36.6	31.1	31.8	125.0	74.5	46.3	79.1	
Queue Length 50th (ft)	42	336	99	368	71	203	18	216	
Queue Length 95th (ft)	85	#415	m#105	#201	#178	#347	48	#372	
Internal Link Dist (ff)		1205		1955		103		893	
Turn Bay Length (ft)	140		0/		105		9		
Base Capacity (vph)	188	1204	212	1212	103	323	115	330	
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	0.52	0.74	69:0	0.80	0.00	0.84	0.24	0.87	
:									

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

Queue shown is maximum after two cycles.

The colume for 95th percentile queue is metered by upstream signal.

Intersection Summary

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

Queue shown is maximum after two cycles.

Synchro 8 Report Page 1

Base 23 am 9/15/2014 Baseline

Synchro 8 Report Page 5

Base 23 am 9/15/2014 Baseline

HCM 2010 Signalized Intersection Summary 51: Lowrys Ln & Lancaster Ave

Movement												
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			<del>(</del>			4			4	
Volume (veh/h)	19	1069	20	17	1098	23	48	105	39	22	72	20
Number	2	2	12	-	9	16	co	00	18	7	4	14
	0	0	0	0	0	0	0	0	0	0	0	0
(Tdo	1:00		1.00	1.00		1.00	1.00		1.00	1.00		1:00
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
_	0081	1140	0081	1//3	17.71	1//3	1900	1845	0061	1881	182/	
Adj No. of Labes	8 0	6411	7 0	<u>o</u> c	101	67	75.0	2 -	7 0	47		77
	0 03	0.03	0 03	0 03	0.03	0 03	003	003	0 03	0 03	003	0 03
h. %	, m	2 60	2 60	2 60	2 60	2 60	, c	5 6	, c	2 60	, c	3.5
Cap. veh/h	75	2080	36	72	2053	43	122	155	21	101	185	47
breen	1.00	1.00	1.00	0.65	0.65	0.65	0.15	0.15	0.15	0.15	0.15	0.15
	19	3193	19	16	3151	99	313	1045	346	195	1246	314
Grp Volume(v), veh/h	617	0	574	989	0	288	207	0	0	123	0	0
, ll	1693	0	1580	1678	0	1555	1705	0	0	1755	0	0
2 Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	12.7	3.2	0.0	0.0	0.0	0.0	0.0
r(g_c), s	0.0	0.0	0.0	12.3	0.0	12.7	7.0	0.0	0.0	3.8	0.0	0.0
	0.03		0.04	0.03		0.04	0.25		0.20	0.20		0.18
, veh/h	1165	0	1029	1155	0	1013	328	0	0	332	0	0
	0.53	0.00	0.56	0.55	0.00	0.58	0.63	0.00	0.00	0.37	0.00	0.00
	1165	0 0	6701	132	0 0	1013	470	0 0	0 0	430	0 0	0 0
0	2.00	2.00	2.00	00.1	1.00	00.1	1.00	1.00	1.00	1.00	1.00	1.00
	0.67	0.00	0.61	9.0	0.00	0.1	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), S/ven	0.0	0.0	0.0	υ -	0:0	7.0	7.4.7	0.0	0.0	23.4	0.0	0.0
nd Delay (uz), sven	- 6	0.0	3 5	<u>.</u> c	0.0	4.2	0.2	0.0	0.0		0.0	0.0
Illual Q Delay(us), sivell	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solle BackOld(-20105 %), VelVIII	0.3	0.0	1.0	0.0	0:0	0.0	5.5	0.0	0.0	V. 1. V	0.0	0.0
Lifety Delay(u), s/veri	- ⊲	0.0	5. ⊲	Α.Α	0.0	0.0 A	70.7 C	0.0	0.0	Z4.1	0.0	0.0
Approach Vol. web/h		1101			1224			207			123	
Approach Delay, stych		12			8.0			76.7			24.1	
Approach LOS		۷			A			O			U	
Timor	-	C	c	_	ננ	4	7	α				
Accioned Pho	-	2 0	0	4	0	9		α				
Phs Diretion (G+V+Dc) s		15.6		11/1		AF 6		14.4				
Change Period (V+Rc) s		0.54				0.64		- 6				
Max Green Setting (Gmax). s		36.0		13.0		36.0		13.0				
Max Q Clear Time (q. c+l1), s		2.0		2.8		14.7		9.0				
Green Ext Time (p_c), s		14.1		0.7		11.4		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			7.2									
HCM 2010 LOS			⋖									

Base 23 am 9/15/2014 Baseline Synchro 8 Report Page 2

3/9/2015 321 0 0 0 1.14 367 367 1.14 129.0 0.0 129.0 ~246 #416 329 0.53 25.4 0.0 25.4 140 224 715 0 0 0.53 621 237 0.91 63.6 0.0 63.6 98 #231 90 260 Volume exceeds capacity, queue is theoretically infinite.

Oueue shown is maximum after two cycles.

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

Oueue shown is maximum after two cycles. 732 732 1.12 103.0 0.0 103.0 ~485 #705 652 40 0.34 30.5 0.0 30.5 48 65 118 0 0 0 0 0.34 50 184 801 0 0 0 0 0 0 0 0 0 0 768 0.96 46.1 0.0 46.1 392 #655 601 Queues 16: Sproul Rd & Conestoga Rd 166 0.90 64.6 0.0 64.6 50 #169 Total Delay

Queue Length 50th (ft)

Queue Length 55th (tt)

Lunal Link Dist (tt)

Turn Bay Length (tt)

Base Capacity (vph)

Sarvation Cap Reduch

Soriage Cap Reduch

Soriage Cap Reduch

Soriage Cap Reduch

Reduced v/c Ratio Lane Group Lane Group Flow (vph) v/c Ratio Control Delay Queue Delay

Base 23 am 9/15/2014 Baseline Synchro 8 Report Page 1

HCM 2010 Signalized Intersection Summary 16: Sproul Rd & Conestoga Rd

Queues 25: S Ithan Ave & Conestoga Rd

3/9/2015

ions  pbT)  pbT)  if  freehvin  cor  veh, %	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	139 14	WBL 98	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
	560 4 0 1.00 1748 615 615 3 3 874	139	<b>%</b>	æ		<b>#</b>	2			4	
	560 4 0 1.00 1748 615 1 0.91	139	36				2				
	1.00 1748 615 0.91 3	14	3	809	28	216	27.1	28	22	202	75
	1.00 1748 615 1 0.91 3		33	00	92	-	9	16	2	2	12
	1.00 1748 615 1 0.91 3	0	0	0	0	0	0	0	0	0	0
	1.00 1748 615 1 0.91 3	1.00	1.00		1.00	1.00		1.00	1.00		1.00
	615 615 1 0.91 3 3	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	615 1 0.91 3 3	1800	1791	1791	1845	1739	1739	1791	1809	1756	1809
	0.91 3 874	0	40	899	0	237	298	31	63	222	82
	0.91	0	-	<del>-</del>	0	<del>-</del>	_	0	0	<del></del>	0
	3 874	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
	874	3	3	co	co	3	3	3	3	3	3
		0	267	657	0	309	277	09	94	235	8
	0.50	0.00	0.37	0.37	0.00	0.07	0.37	0.37	0.23	0.23	0.23
Sat Flow, veh/h 1664	1748	0	816	1791	0	1656	1549	161	200	1009	348
Grp Volume(v), veh/h 166	615	0	40	899	0	237	0	329	367	0	0
/ln 1	1748	0	816	1791	0	1656	0	1710	1557	0	0
	24.4	0.0	3.6	33.0	0.0	6.5	0.0	13.5	16.2	0.0	0.0
Cycle O Clear(g_c), s 5.4	24.4	0.0	16.0	33.0	0.0	6.5	0.0	13.5	21.0	0.0	0.0
		0.00	1.00		0.00	1.00		0.09	0.17		0.22
ane Grp Cap(c), veh/h 200	874	0	267	657	0	309	0	637	410	0	0
	0.70	0.00	0.15	1.02	0.00	0.77	0.00	0.52	0.89	00:00	0.00
Avail Cap(c_a), veh/h 200	874	0	267	657	0	309	0	637	410	0	0
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
Jpstream Filter(I) 1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
۲,	17.4	0.0	28.2	28.5	0.0	26.5	0.0	22.0	34.4	0.0	0.0
ncr Delay (d2), s/veh 24.3	4.7	0.0	1.2	39.5	0.0	11.1	0.0	0.7	21.4	0.0	0.0
Ę.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0
%ile BackOfQ(-26165%),veh/ln 3.7	12.8	0.0	6:0	23.4	0.0	3.9	0.0	6.4	11.5	0.0	0.0
-nGrp Delay(d),s/veh 45.6	22.1	0.0	29.4	0.89	0.0	37.6	0.0	22.7	22.8	0.0	0:0
nGrp LOS D	O		ပ	ıL		Ω		ပ	ш		
Approach Vol, veh/h	781			708			999			367	
Approach Delay, s/veh	27.1			9.59			28.9			55.8	
Approach LOS	ပ			ш			ပ			ш	
Limer 1	2	3	4	2	9	7	∞				
4ssigned Phs 1	2		4		9	7	∞				
G+Y+Rc), s	27.0		50.5		39.5	12.0	38.5				
	5.5		2.0		5.5	2.0	2.0				
	21.5		45.5		34.0	7.0	33.5				
Max Q Clear Time (g_c+I1), s 8.5	23.0		26.4		15.5	7.4	35.0				
Green Ext Time (p_c), s 0.0	0.0		8.5		2.4	0.0	0.0				
Intersection Summary											
HCM 2010 Ctrl Delay		43.2									
HCM 2010 LOS		0									

Control Delay
Oueue Delay
Total Delay
Oueue Length 50th (ft)
Oueue Length 95th (ft)
Internal Link Dist (ft)
Tun Bay Length (tp)
Base Capacity (vph)
Slarvation Cap Reduch
Spillback Cap Reduch
Sorage Cap Reduch
Reduced v/c Ration

316 0.84 37.4 0.0 37.4 76 #157

227 227 0.68 31.5 0.0 31.5 73 72 717

696 726 1.11 0.77 90.2 18.2 0.0 0.0 90.2 18.2 -318 191 #428 269 1194 2907

Lane Group Lane Group Flow (vph) v/c Ratio

Volume exceeds capacity, queue is theoretically infinite.

Oueue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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Base 23 am 9/15/2014 Baseline

HCM 2010 Signalized Intersection Summary 25: S Ithan Ave & Conestoga Rd

Queues 33: Williams Rd/Garrett Ave & Conestoga Rd

3/9/2015

 EBT
 WBT
 NET
 SWT

 537
 492
 24
 63

 0.35
 0.31
 0.14
 0.41

 4.4
 4.1
 29.9
 37.1

 0.0
 0.0
 0.0
 0.0

 4.4
 4.1
 29.9
 37.1

 85
 7.4
 10
 26

 130
 114
 29
 59

 139
 1273
 368
 1816

Lane Group
Lane Group Flow (vph)
vc Ratio
Control Delay
Control Delay
Queue Delay
Queue Length (tit)
Cueue Length (50th (fit)
Cueue Length (50th (fit)
Cueue Length (tit)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Storage Cap Reductn
Reduced vic Ratio

Intersection Summary

Charles   Char		4	<b>†</b>	<i>&gt;</i>	<b>/</b>	ţ	4	•	•	•	٠	<b>→</b>	•
167   345   2   2   458   129   14   158   12   63   53   53   120   1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
167 395 2 2 458 129 14 158 12 63 53 1 1 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0	-ane Configurations		4			4			4			4	
1 6 16 5 2 12 7 4 14 3 8 8 1 100 100 100 100 100 100 100 100 1	Volume (veh/h)	167	395	2	2	458	129	14	158	12	63	53	140
1.00	Number	-	9	16	2	2	12	7	4	14	e	∞	18
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	nitial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
1854 1783 1854 17473 149 170 140 100 100 100 100 1854 1783 1855 1763 1763 1763 1763 1763 1763 1763 1763	Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
1854 1783 1854 1764 1696 1764 1763 1695 1763 1844 1773 1 206 488 2 2 5 56 159 17 195 15 18 184 1773 1 6 0.81 0.81 0.81 0.81 0.81 0.81 0.81 0.81	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
266 488 2 2 566 159 17 195 15 78 65  0 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4dj Sat Flow, veh/h/In	1854	1783	1854	1764	1696	1764	1763	1695	1763	1844	1773	1844
0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj Flow Rate, veh/h	506	488	2	2	299	159	17	195	15	78	99	173
6 081 081 081 081 081 081 081 081 081 081	Adj No. of Lanes	0	-	0	0	-	0	0	-	0	0	-	0
6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
225 445 2 60 714 200 77 341 25 142 94 266 0.56 0.56 0.56 0.56 0.56 0.59 0.33 0.23 0.23 0.23 267 0.05 0.05 0.05 0.05 0.05 0.05 102 10 296 10.28 0.0 0 726 0 0 0 1668 0 0 1567 0 12.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
0.56 0.56 0.56 0.56 0.56 0.56 0.25 0.23 0.23 0.23 0.23 0.23 0.23 0.24 0.25 0.26 0.26 0.26 0.26 0.25 0.25 0.23 0.23 0.23 0.23 0.23 0.24 0.25 0.26 0.26 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25	Cap, veh/h	225	445	2	09	714	200	11	341	25	142	94	195
265 800 3 1 1282 360 55 1502 110 296 414  1068 0 0 1642 0 0 1642 0 0 1648 0 0 1548 0  1122 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1648 0  0.33 5 0.0 0.0 213 0.0 0.0 73 0.0 0.0 11.5 0.0  0.30 0.00 0.00 0.00 0.00 0.00 0.01 0.0 0.0	Arrive On Green	0.56	0.56	0.56	0.56	0.56	0.56	0.23	0.23	0.23	0.23	0.23	0.23
1068	Sat Flow, veh/h	265	800	33	<del>-</del>	1282	360	22	1502	110	296	414	828
No.   1068	Grp Volume(v), veh/h	969	0	0	726	0	0	227	0	0	316	0	0
122   00   00   00   00   00   00   00	3rp Sat Flow(s),veh/h/ln	1068	0	0	1642	0	0	1668	0	0	1567	0	0
s 335 00 00 213 00 00 73 0.0 0.0 11.5 0.0 0.0 0.3 0.3 0.0 0.0 0.0 0.0 0.0 0.0	2 Serve(g_s), s	12.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0
0.30	Cycle Q Clear(g_c), s	33.5	0.0	0.0	21.3	0.0	0.0	7.3	0.0	0.0	11.5	0.0	0.0
http: 672 0 0 974 0 0 443 0 0 6 439 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Prop In Lane	0.30		0.00	0.00		0.22	0.07		0.07	0.25		0.55
1.04 0.00 0.075 0.00 0.51 0.00 0.07 0.00 0.51 0.00 0.00 0.73 0.00 0.00 0.75 0.00 0.00 0.51 0.00 0.00 0.73 0.00 0.00 0.00 0.00 0.00	ane Grp Cap(c), veh/h	672	0	0	974	0	0	443	0	0	430	0	0
h	//C Ratio(X)	1.04	0.00	0.00	0.75	0.00	0.00	0.51	0.00	0.00	0.73	0.00	0.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	<pre>\vail Cap(c_a), veh/h</pre>	672	0	0	974	0	0	492	0	0	475	0	0
1,00 0,00 0,00 1,00 0,00 1,00 0,00 0,00	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
veh 155 0.0 0.0 106 0.0 208 0.0 0.0 22.3 0.0  1 44.1 0.0 0.0 3.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0  258), veh/in 19:3 0.0 0.0 10:3 0.0 0.0 0.0 0.0 0.0 0.0  1 596 0.0 0.0 138 0.0 0.0 1.7 0.0 0.0 5.6 0.0  2 596 138 0.0 0.0 21.7 0.0 0.0 27.6 0.0  2 696 138 0.0 0.0 21.7 0.0 0.0 27.6 0.0  3 726 227 2316  3 4 5 6 7 8  8 8  8 21.7 2 27  2 14 6 8  8 8  8 22.7 27  2 1.6 0.0 0.0  2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Jpstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
At 1 00 00 32 00 09 00 05 53 00 00 00 00 00 00 00 00 00 00 00 00 00	Jniform Delay (d), s/veh	15.5	0.0	0.0	10.6	0.0	0.0	20.8	0.0	0.0	22.3	0.0	0.0
Columbia	ncr Delay (d2), s/veh	44.1	0.0	0.0	3.2	0.0	0.0	6.0	0.0	0.0	5.3	0.0	0.0
8%) veh/ln 193 0.0 0.0 10.3 0.0 0.0 3.5 0.0 0.0 5.6 0.0 1 1	nitial 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
The Syb 0.0 0.0 138 0.0 0.0 21.7 0.0 0.0 27.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	%ile BackOfQ(-26165%),veh/ln	19.3	0.0	0.0	10.3	0.0	0.0	3.5	0.0	0.0	9.9	0.0	0.0
F 696 726 CC	nGrp Delay(d),s/veh	9.69	0.0	0.0	13.8	0.0	0.0	21.7	0.0	0.0	27.6	0.0	0.0
He 696 726 227  F E 138 21.7  1 2 3 4 5 6 7 8  Re), S 400 202 400 202  Collis 340 60 60 6.0  Collis 233 9.3 35.5 13.5  N 332  L Collis 5.3 1.3 0.0 0.6  N 332	nGrp LOS	Н			В			C			C		
## 59.6 ## 13.8 ## 21.7 ## 51.	Approach Vol, veh/h		969			726			227			316	
F B C C   F B C C   F B C C   F B C C   F B C C   F B C C   F B C C   F B C C C C C C C C C C C C C C C C C C	Approach Delay, s/veh		9.69			13.8			21.7			27.6	
1 2 3 4 5 6 7 2 4 6 6 400 202 40.0 5 0 60 60 340 160 34.0 233 93 35.5 5 3 1.3 0.0	Approach LOS		ш			В			ပ			ပ	
2 4 6 400 202 400 5 60 60 60 60 340 160 34.0 5 53 1.3 0.0	limer	<del>-</del>	2	က	4	2	9	7	8				
400 202 400 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Assigned Phs		2		4		9		8				
6.0 6.0 6.0 34.0 16.0 34.0 23.3 9.3 35.5 5.3 1.3 0.0 33.2 C	Phs Duration (G+Y+Rc), s		40.0		20.2		40.0		20.2				
34.0 16.0 34.0 23.3 9.3 35.5 5.5 5.3 1.3 0.0 33.2 C.	Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
23.3 9.3 35.5 5.3 1.3 0.0 33.2 C	Max Green Setting (Gmax), s		34.0		16.0		34.0		16.0				
s 5.3 1.3 0.0 33.2 C	Max Q Clear Time (g_c+I1), s		23.3		9.3		35.5		13.5				
			5.3		1.3		0.0		9.0				
	ntersection Summary												
	HCM 2010 Ctrl Delay			33.2									
	HCM 2010 LOS			O									

Base 23 am 9/15/2014 Baseline	Synchro 8 Report
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Synchro 8 Report Page 2

Base 23 am 9/15/2014 Baseline

HCM 2010 Signalized Intersection Summary 33: Williams Rd/Garrett Ave & Conestoga Rd

Queues 3: County Line Rd & Spring Mill Rd

3/9/2015

## EBI EBI EBI    26	MBT WBT 4 424 424 424 424 424 424 424 424 424	1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	NET   NET	NER 9 18 18 0 1.00 1.00 1.00 1.00 0.08 0 0.005 706 706 0.00 0.00 0.00 0.00 0.00 0.00 0	SWL 15 7 7 0 1.00 1.00 1.78 178 178 0 0 0 86 0.005 325 325 325 1485 1.8	SWT 4 4 4 0 0 0 1 1.00 1 1728 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	38 38 14 100 1.00 1.00 1.728 43 0.08 0.08 0.054 0.00
26 445 1 26 445 1 27 12 12 12 28 145 100 29 100 20 100 20 100 20 100 20 100 20 100 20 100 20 100 20 100 20 100 20 100 20 100 20 100 20 100 20 100 20 100 20 100 20			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9 1100 1100 1100 1100 0 0 0 0 37 0005 706 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	15 7 0 1.00 1.00 1.72 17 17 0 0 0 86 0.05 86 0.05 86 1.485 1.485	1.00 1.00 1.728 3 3 1 1 0.08 8 0 0 0 0 0 0 0 0 0	38 38 11.00 11.00 17.28 43 0 0 0 0 0 0.05 10.14 0 0 0
26 445 11 5 12 10 0 0 1 11.00 1.00 1.00 11.00 1.00 1.0			1 1 2 0 0	100 1.00 1.00 1.00 1.00 1.00 1.00 0.08 0.08	15 7 7 7 1.00 1.00 1.728 1.728 0 0 0 0 86 0.05 3.25 63 1.485 1.8	3 1728 1728 3 1 0.88 0 0 0 0 147	38 14 100 1.00 1.00 0 0 0 0 0 0 0 0 0 0 0 0
5 2 12 0 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0 0 8 0.88 0.88 0 0 0 0 0 0 0 0			1 2 0 0 0	180 1.00 1.00 1.00 1.00 0.08 0.08 0.05 706 0.00 0.00	7 0 1.00 1728 1728 0 0 0 86 0.05 325 63 63	1.00 1.00 1.00 1.00 0.08 0.05 147	11.00 1.00 1.00 1.00 0.088 0.05 1.014 0.05 0.00
1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				1.00 1.00 1.00 1.00 0 0 0 0 0.05 706 0 0 0 0 0 0	0 1.00 1.00 1.00 1.00 0 0 0 0 0 0 0 0 1.0	1.00 1728 3 1 0.08 0 0.05 147	1.00 1.00 1.00 1.00 0.08 0.05 1.014 0.05
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00			0 0 0	1.00 1.00 1.00 1.00 0.08 0.05 7.06 0.00 0.00	1.00 1728 1728 0 0 0 86 0.05 325 63 1485 1.8	1.00 1728 3 3 1 0 0 8 0.05 147	1.00 1.00 1.00 0 0 0 0 0 0 0 0 0 0 0 0 0
1872 1872 1872 1872 1872 1872 1872 1872				1800 100 0.088 0.05 706 0.00 0.00	1728 1728 0 0 0 86 0.05 325 63 1485	1728 3 1 0 0 8 0.05 147	1728 43 0 0 0 54 0.05 1014 0 0
30 506 1 0 1 0 0 88 0.88 0.88 0 9 3 1331 3 0.75 0.75 0.75 48 1775 3 537 0 0 66 0.0 0.00 66 0.0 0.00 66 0.0 0.00 1427 0 0 1427 0 0 1427 0 0 1427 0 0 150 0.00 100 0.00 1100				10 0.08 0.05 706 0.00 0.00	17 0 0.088 0 86 0.05 325 63 1485	0.05 0.05 147	0 0 0 54 0.05 1014 0 0
eh, % 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.				0.088 0 37 0.05 706 0 0 0.0	0 0 86 0.05 325 63 1485	0.05 147 0	0.088 0.05 0.05 1014 0
eh, % 0.88 0.88 0.88 eh, % 0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				0.05 706 0 0 0 0 0 0 0 0.00	0 86 0.05 325 43 1485 1.8	0.05 0.05 147	0.05 1014 0.00 0
eh, % 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			0 0	0 0.05 706 0 0 0.0	0.05 0.05 325 63 1485 1.8	0 8 0.05 147 0	0.05 1014 0 0 0
93 1331 3 3 et/h 2 et/h 537 0 0 0 et/h/h 1826 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				37 0.05 706 0 0 0.0	86 0.05 325 63 1485 1.8	0.05	0.05
erlyln 537 0 0 0 erlylyln 1826 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		) i		0.05 0.0 0.0 0.0	0.05 325 63 1485 1.8	0.05	0.00
48 1775 3  vehl/ln 537 0 0 11  c), s 66 00 00 01  c), vehl/ln 1427 0 0 11  vehl/ln 10 100 000 000  l) skeh 2.9 0.0 0.0  skeh 0.8 0.0 0.0  skeh 3.6 0.0 0.0			50	0.0	325 63 1485 1.8	147	0.0
celly			0 0	0.0	63 1485 1.8	0	0.0
Color of the color			0 0	0.0	1485	•	0.0
0,5 6,6 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0				0.0	1.8	0	0.0
1-0), s 66 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0				0.0		0.0	
0.06 0.00 0.00 0.00 0.00 0.00 0.00 0.00					2.7	0.0	0.0
3), veh/h 1427 0 0 1, veh/h 1427 0 0 0 1, veh/h 29 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0				0.42	0.27		0.68
0.38 0.00 0.00 C veh/h 1427 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				0	148	0	0
veh/h 1427 0 0 1- atio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0			0	0.00	0.43	0.00	0.00
ailio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0		0 301		0	280	0	0
(i) (i) 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0				1.00	1.00	1.00	1.00
0, s/veh 2.9 0.0 0.0 3/veh 0.8 0.0 0.0 0.0 3/veh 0.0 0.0 0.0 0.0 0.0 26165%),veh/ln 3.6 0.0 0.0 0.0 s/veh A 3.7 3.7 3.7 3.6 0.0 0.0 3.6 0.0 0.0 0.0 3.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0	0.00 1.00	٥	0.00	1.00	0.00	0.00
siveh 0.8 0.0 0.0 3l.Sveh 0.0 0.0 0.0 2616598,vehlin 3.6 0.0 0.0 5.veh A 537 6.Vehlin 3.6 0.0 0.0 7.sveh A 537 7.sveh A A				0.0	30.9	0.0	0.0
33,5/veh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.				0.0	2.8	0.0	0.0
26165%),veh/ln 3.6 0.0 0.0 s/veh A 537 537 5.8 veh A 1 2 3 5.8 veh A 2 3 5.8 veh A 4 5.8 veh A 5 5				0.0	0.0	0.0	0.0
s/veh 36 0.0 0.0  A 0.0 0.0  Fel/In 537  F. s/veh A A A A A A A A A A A A A A A A A A A		0.0 0.4		0.0	1.3	0.0	0.0
A 537 , sveh A A 1 2 3	0.0	0.0 30.6	0.0	0.0	33.6	0.0	0.0
Felvih 537 7, sveh 3.6 1 2 3	<b>—</b>	0			ပ		
, s/veh 3.6 A A 1 2 3	492		24			63	
1 2 3	3.4		30.6			33.6	
1 2 3	٧		O			ပ	
2	1 2	6 7	7 8				
C L	4	9	∞				
ans Duration (G+Y+Rc), s 56.0 10.0	0	26.0	10.0				
	0	0.9	0.9				
50.0	0	50.0	10.0				
.11), s 8.6	7	7.9	2.9				
Green Ext Time (p_c), s 4.7 0.1		4.7	0.5				
ntersection Summary							
Delay 5							
Setup							

- 14	NBI	356	0.74	1.00	27.5		27.5	107	100	#263 187 #276	1481 1821 1084			650 547 581	0 0			0	0.66 0.65 0.76		acity one in may be longer
	-					0.0					3088 14			694 6	С		0		0.57 0		eds canacit
	Lane Group	Lane Group Flow (vph)	v/c Ratio	We Ivalia	Control Delay	Queue Delay	Total Delay	Output Longth FOth (#)	Onene Length 50th (II)	Queue Length 95th (ft)	Internal Link Dist (ft)	T D L. (4)	I urn bay Lengin (II)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Can Doducth	Spillbach Cap Incurcial	Storage Cap Reductin	Reduced v/c Ratio	Intersection Summary	# 95th percentile volume exceeds capacity guere may be longer

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Base 23 am 9/15/2014 Baseline

HCM 2010 Signalized Intersection Summary 3: County Line Rd & Spring Mill Rd

FBL   FBT   FBR   WBL   WBT   WBR   WBL   WBT	•	4	†	<u> </u>	<b>\</b>	ļ	4	•	<b>←</b>	•	۶	<b>→</b>	•
## Comparison of the compariso	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
35 283 61 63 269 79 41 253 45  0 0 0 0 0 0 0 0 0  1.00 1.00 1.00 1.00	Lane Configurations		4			€			4			4	
5	Volume (veh/h)	32	283	19	63	569	79	41	253	45	33	333	54
0	Number	2	2	12	-	9	16	33	00	18	7	4	14
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		0	0	0	0	0	0	0	0	0	0	0	0
100 100 100 100 100 100 100 100 100 100		1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
1800   1630   1800   1731   1800   1800   1731   1800   1830   1801   1800   1831   1800   1801   1801   1801   1801   1802   1802   1803		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
37 298 64 66 283 83 43 266 47 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	•	1800	1630	1800	1800	1731	1800	1800	1731	1800	1800	1731	1800
0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	Adj Flow Rate, veh/h	37	298	64	99	283	83	43	266	47	35	351	57
6 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95		0	-	0	0	-	0	0	-	0	0	-	0
6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
100 6.00 122 143 550 149 98 374 62   100 6.00 152 143 550 149 98 374 62   100 6.05 0.55 0.55 0.30 0.30 0.30   133 246 1111 301 111 1266 209 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.	%	4	4	4	4	4	4	4	4	4	4	4	4
0.50 0.50 0.50 0.50 0.50 0.50 0.30 0.30		100	009	122	143	220	149	86	374	62	84	408	63
Table   Tabl		0.50	0.50	0.50	0.50	0.50	0.50	0.30	0.30	0.30	0.30	0.30	0.30
10		73	1213	246	154	1111	301	111	1266	500	73	1381	215
Min   1532   0   1566   0   0   1586   0   0     100   0.00   0.04   0.00   0.00   0.00     100   0.00   0.04   0.00   0.00   0.00     100   0.00   0.01   0.00   0.00     100   0.00   0.00   0.00   0.00     100   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00     100   1.00   0.00   1.00   1.00   1.00     110   0.00   0.00   0.00   1.00   0.00     110   0.00   0.00   0.00   1.00   0.00     110   0.00   0.00   0.00     110   0.00   0.00   0.00     110   0.00   0.00   0.00   0.00     110   0.00   0.00   0.00   0.00     110   0.00   0.00   0.00   0.00     110   0.00   0.00   0.00   0.00     110   0.00   0.00   0.00   0.00     110   0.00   0.00   0.00   0.00     110   0.00   0.00   0.00   0.00     110   0.00   0.00   0.00     110   0.00   0.00   0.00   0.00     110   0.00   0.00   0.00   0.00     110   0.00   0.00   0.00   0.00     110   0.00   0.00   0.00   0.00     110   0.00   0.00   0.00   0.00     110   0.00   0.00   0.00   0.00     110   0.00   0.00   0.00   0.00     110   0.00   0.00   0.00     110   0.00   0.00   0.00     110   0.00   0.00   0.00     110   0.00   0.00   0.00     110   0.00   0.00     110   0.00   0.00   0.00		366	0	0	432	0	0	326	0	0	443	0	0
10.0	, ll	1532	0	0	1566	0	0	1586	0	0	1669	0	0
105 0.0 0.0 10.9 0.0 12.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0
0.09 0.16 0.15 0.19 0.12 0.13 0.13 0.13 0.14 0.15 0.19 0.15 0.19 0.15 0.19 0.15 0.19 0.15 0.19 0.10 0.00 0.00 0.00 0.00 0.00 0.00		10.5	0.0	0.0	10.9	0.0	0.0	12.3	0.0	0.0	15.7	0.0	0.0
822 0 0 842 0 0 633 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.09		0.16	0.15		0.19	0.12		0.13	0.08		0.13
0.49 0.00 0.00 0.51 0.00 0.60 0.60 0.00 0.00 0.00 0.00 0.0		822	0	0	842	0	0	533	0	0	522	0	0
822 0 0 842 0 0 663 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.49	0.00	0.00	0.51	0.00	0.00	0.67	0.00	0.00	0.80	0.00	0.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	822	0	0	842	0	0	663	0	0	069	0	0
0.52 0.00 0.00 1.00 0.00 0.00 1.00 0.00 0.0		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1106 00 00 107 00 0196 00 00 1010 00 00 00 00 00 00 00 00 00 0		0.52	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
111 00 00 22 00 00 10 00 00 00 00 00 00 00 00 00 00	eh	10.6	0.0	0.0	10.7	0.0	0.0	19.6	0.0	0.0	20.9	0.0	0.0
00 00 00 00 00 00 00 00 00 00 00 00 00	Incr Delay (d2), s/veh	<del>[</del> -	0.0	0.0	2.2	0.0	0.0	1.0	0.0	0.0	4.2	0.0	0.0
11.6 0.0 0.0 5.4 0.0 0.0 5.6 0.0 0.0 0.0 1.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 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
11.6	%ile BackOfQ(-26165%),veh/ln	4.8	0.0	0:0	5.4	0.0	0.0	9.6	0.0	0.0	7.8	0.0	0.0
B	LnGrp Delay(d),s/veh	11.6	0.0	0.0	12.9	0:0	0.0	20.6	0.0	0.0	25.0	0.0	0.0
399 432 11.6 12.9 12.9 12.9 12.9 12.9 12.9 12.9 12.9	LnGrp LOS	В			В			O			O		
11.6 12.9 B B B 2 4 5 6 7 2 4 6 6 37.2 24.8 37.2 6 0 6.0 6.0 6.0 26.0 24.0 26.0 12.5 17.7 12.9 3.1 17.6 B	Approach Vol, veh/h		366			432			356			443	
1 2 3 4 5 6 7 2 4 5 6 7 37.2 248 37.2 60 6.0 6.0 260 240 260 112.5 17.7 12.9 3.1 17.6 B	Approach Delay, s/veh		11.6			12.9			20.6			25.0	
1 2 3 4 5 6 7 2 4 6 6 37.2 248 37.2 60 60 6.0 260 240 260 12.5 17.7 12.9 3.1 17.6 B	Approach LOS		В			B			ပ			S	
2 4 6 37.2 248 37.2 6.0 6.0 6.0 26.0 24.0 26.0 12.5 17.7 12.9 3.1 1.1 3.0	Timer	<del></del>	2	က	4	2	9	7	8				
37.2 24.8 37.2 60 6.0 6.0 260 24.0 26.0 12.5 17.7 12.9 3.1 1.1 3.0 17.6 8	Assigned Phs		2		4		9		8				
6.0 6.0 6.0 2.60 240 26.0 7.1 12.5 17.7 12.9 7.1 3.1 1.1 3.0 17.6 B	Phs Duration (G+Y+Rc), s		37.2		24.8		37.2		24.8				
26.0 24.0 26.0 12.5 17.7 12.9 3.1 1.1 3.0 17.6 B	Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
12.5 17.7 12.9 3.1 1.1 3.0 17.6 8	Max Green Setting (Gmax), s		26.0		24.0		26.0		24.0				
3.1 1.1 17.6 B	Max Q Clear Time (g_c+11), s		12.5		17.7		12.9		14.3				
17	Green Ext Time (p_c), s		3.1		=======================================		3.0		1.4				
17	Intersection Summary												
	HCM 2010 Ctrl Delay			17.6									
	HCM 2010 LOS			В									

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HCM 2010 TWSC 79: Garrett Rd & Lancaster Ave

3/9/2015

3/9/2015

Int Delay, siveh 3.9  Movement 105  Movement 105  Conflicitip Peds, #/hr 0  Sign Control Free  RT Channelized  Storage Length  Grade, % -3  Peak Hour Factor 6/7  Heavy Vehicles, % -3  Peak Hour Factor 6/7  Majort/Minor 0  Stage 1  Stage	EBR 25 25 25 None None 0 37	WBL WB3 20 1130 20 1130 67 Free Free 67 66 67 68 68 68 68 68 68 68 68 68 68 68 68 68 6	WBT 1136 0 Free 0 0 0 0 1696	NBL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NBR 26 0 Stop None 0 67 67 67 67 67 67 67 67 67 67 67 0 0 0 0
1105 hr 1105 0 99e, # 0 0 11649 Majort 0 0 0			PBT 336 1386 000 000 000 000 000 000 000 000 000 0	NBL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NBR 26 26 26 20 Stop None 0 0 57 67 67 67 67 67 67 67 67 67 67 6843 65.9 6.9 6.9
Pr Free 67 67 67 67 67 67 67 67 67 67 67 67 67			136 136 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NBL 0 0 Slop - - 0 0 0 0 0 0 0 0 2575 2575 1668 907 6.8 5.8 5.8	NBR 26 26 26 26 26 0 Stop None 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1105 1105 1106			136 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 Stop	26 0 Stop None 0 - - 67 67 67 67 67 67 69 69
199. # 67 67 67 67 67 67 67 67 67 67 67 67 67			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Stop 67 67 67 68 868 907 68 858 558 558 558 558 558 558 558 558	Slop None None 0 0 67 67 67 67 67 69 6.9
Free			one one 67 67 67 67 67 67 67 67 67 67 67 67 67	Stop	Stop None 0 0 67 67 67 67 67 67 67 67 67
			one 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		None 0 0 0 0 0 39 39 843 6.9 6.9
16e, #			673 896 696 696	Minor1  25.75  16.88  907  6.8  5.8	67
10 Maj			0 67 69 696 	0 67 67 0 0 0 0 2575 1668 907 6.8 5.8 5.8	67 67 843 843 6.9 6.9 6.9
Maji Maji			67 67 696 696 696	0 67 0 0 0 2575 1668 907 6.8 5.8 5.8	67 0 0 39 843 - - 6.9
Maj			67 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	67 0 0 0 0 2575 1668 907 6.8 5.8	67 0 39 843 
164 (			969	0 0 0 2575 1668 907 6.8 5.8	0 39 843 6.9
1649 Major			969	Minor1 2575 1668 907 6.8 5.8 5.8	39 843 6.9
Major		lajor2 1687 - 4.1 - 2.2	0	Minor1 2575 1668 907 6.8 5.8	843 - - 6.9
5		1687 4.1 	0 ' ' ' '	2575 1668 907 6.8 5.8	843 - - 6.9
75	,	4.1	,	1668 907 6.8 5.8	6.9
<i>T</i> .		4.1		907 6.8 5.8 5.8	- 6.9
<i>7</i> 5		4.1		6.8 8.8 8.8	6.9
ži.		2.2		77 77 20 00	
ž.		2.2		8 5	
ъ.		2.2		;	
				3.5	3.3
		384		22	311
				141	
				359	
Platoon blocked, %					
Mov Cap-1 Maneuver		384		22	311
Mov Cap-2 Maneuver			,	22	
Stage 1				141	
Stage 2				359	
Approach EB		WB		NB	
HCM Control Delay, s 0		7.4		18.2	
HCM LOS				O	
Minor Lane/Major Mvmt NBLn1 EBT	EBR WBL	WBT			
Capacity (veh/h) 311 -	- 384	١.			
Ratio 0.	- 0.078				
	- 15.2	7.3			
	ں	⋖			
HCM 95th %tile Q(veh) 0.4 -	- 0.3	,			

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HCM 2010 TWSC 15: Conestoga Rd & Spring Mill Rd

ntersection									
nt Delay, sheh 0.2	2								
Movement	EBL	EBT		W	WBT W	WBR	SWL	SWR	
/ol, veh/h	2	646		7	700	3	4	80	
Conflicting Peds, #/hr	0	0			0	0	0	0	
Sign Control	Free	Free Free		Ē	Free Fi	Free	Stop	Stop	
RT Channelized	'	None			- None	ne		None	
Storage Length	•				,		0		
Veh in Median Storage, #	•	0			0	,	0		
Grade, %	•	0			0	,	0		
Peak Hour Factor	88	98			98	98	98	98	
Heavy Vehicles, %	4	4		,	4	4	4	4	
Wvmt Flow	2	751		bo	814	m	2	6	
Major/Minor	Major1			Major2	72		Minor2		
Conflicting Flow All	817	0			١,	0	1572	816	
Stage 1							816		
Stage 2							756		
Critical Holwy	4.14						6.44	6.24	
Critical Hdwy Stg 1	•					,	5.44		
Critical Holwy Stg 2	•						5.44		
-ollow-up Hdwy	2.236				ï	,	3.536	3.336	
ot Cap-1 Maneuver	802					,	120	374	
Stage 1							431		
Stage 2							460		
Platoon blocked, %									
Mov Cap-1 Maneuver	802						120	374	
Mov Cap-2 Maneuver							120		
Stage 1	•					,	431		
Stage 2	•				ì	ì	458		
Approach	EB			>	WB		MS		
HCM Control Delay, s	0				0		22.6		
HCM LOS							O		
Ainer Lance Major Mant	d	FDT	DOW TOW	WDDCWI 191					
VIII La renviaĵu Invili	CDL			SWLIII					
Capacity (veh/h)	802	٠		219					
HCM Lane V/C Ratio	0.003			- 0.064					
HCM Control Delay (s)	9.5	0		- 22.6					
HCM Lane LOS	A	V		ن.					
				)					

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Base 23 am 9/15/2014 Baseline	

Novement   EBI EBI   EBI   WBI   WBI   WBI   WBI   NBI   NBI   NBI   NBI   SBI   S													
Peds. #In													
Peds, #Mr   Free   Fr		00											
Pects, #fhr 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Movement	EB	FBT	FBR	WBI		WBR	NBI	NBT	NBR	SBI	SBT	SBR
Peds, #fhr   0	Vol, veh/h	48	429	14	6		5	13			2	15	
Precedent   Prec	Conflicting Peds, #/hr	0	0	0	0		0	0			0	0	
elized None None None None None None	Sign Control	Free	Free	Free	Free			Stop			Stop		
Companiest	RT Channelized	•	•	None		'	None		•	None		•	None
dian Storage, # . 0 0 0 0 0 0 0 0 0 0 0 0	Storage Length	•				1		•					
Fector 80 80 80 80 80 80 80 80 80 80 80 80 80	Veh in Median Storage, #	٠	0						0			0	
Factor   80 80 80 80 80 80 80 80 80 80 80 80 80	Grade, %	•	0	,	•		,	•			•	0	
Majort   Majort   Majort   Minort   M	Peak Hour Factor	80	8	80	80		80	80			80	80	
Major   Major   Major   Minor   Mino	Heavy Vehicles, %	3	3	3	3	3		3			3	3	
Minor   Major   Major   Minor   Mino	Mvmt Flow	09	536	18	7	218		16			2	19	105
Majort													
Flow All   \$84	Major/Minor	Major1			Major2			Minor1			Minor2		
Part	Conflicting Flow All	584	0	0	554		0	1330			1284	1277	581
Pe2	Stage 1	•	•					999			603	603	
wwy y	Stage 2	•				1		999			681	674	
wy Sig1	Critical Hdwy	4.13	٠		4.13			7.13			7.13	6.53	6.23
wy Stg 2	Critical Hdwy Stg 1					,		6.13			6.13	5.53	
Helway 2.227 - 2.227 - 3.527 4.027 3.327 3.527 4.027 4	Critical Hdwy Stg 2							6.13			6.13	5.53	
Maneuver   986     1011     131   167   536   141     981	Follow-up Hdwy	2.227			2.227			3.527		3	3.527	4.027	3
10   10   10   10   10   10   10   10	Pot Cap-1 Maneuver	986			1011			131			141	166	512
Pe 2	Stage 1							448			484	487	
Docked, %          1011          87         150         536         115           Maneuver <t< td=""><td>Stage 2</td><td></td><td>٠</td><td></td><td>·</td><td></td><td></td><td>448</td><td></td><td></td><td>439</td><td>452</td><td></td></t<>	Stage 2		٠		·			448			439	452	
Maneuver 986 - 1011 - 87 150 536 115  2 Maneuver	Platoon blocked, %					1							
Maneuver   1.0   Maneuver   1.1   1.2   Maneuver   1.2   1.1   1.2   Maneuver   1.2   1.2   Maneuver   1.2   1.2   Maneuver   1.3   1.2   1.3   1.3   Maneuver   1.3	Mov Cap-1 Maneuver	986	•		1011			87			115	149	512
Pe   1	Mov Cap-2 Maneuver	•	•		•			87			115	149	
EB	Stage 1	•	•			•		409			441	479	
NB   NB   NB   NB   NB   NB   NB   NB	Stage 2							337			373	412	
rol Delay, s 0.9 0.2 41.2  F = Major Mvmt NBLn1 EBL EBT EBR WBL WBT WBR.SBLn1  verM) 147 986 - 1011 - 358  v.V.C. Ratio 0.332 0.061 - 0.011 - 0.353  rol Delay (S) F A A A A C C													
0.9 0.2 41.2 E	Approach	EB			WB			NB			SB		
F NBL11 EBL EBT EBR WBL WGT WBRSBLn1  147 986 - 1011 - 358  0.332 0.061 - 0.011 - 0.353  41.2 89 0 - 86 0 - 204  F A A A A - 204	HCM Control Delay, s	0.9			0.2			41.2			20.4		
147 986 - 1011 0.332 0.061 - 0.0011 0.112 8.9 0 - 86 0 - 1 F F F F F F F F F F F F F F F F F F	HCM LOS							ш			O		
147 986 1011	Minor Lane/Major Mvmt		EBI		BR WBL	WBT	WBR SB	E.					
0.332 0.061 - 0.011 - 0 41.2 8.9 0 - 8.6 0 - 0	Capacity (veh/h)	147	986		- 1011			358					
41.2 8.9 0 - 8.6 0 -	HCM Lane V/C Ratio	0.332	0.061		- 0.011		. 0	353					
- Ф Ф - Ф Д	HCM Control Delay (s)	41.2	8.9	0	- 8.6		,	20.4					
	001												

Lanes, Volumes, Timings 38: County Line Rd & N Ithan Ave

	-	*_	<u>*</u>	<b>→</b>	<b>\</b>	4	
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	
Lane Configurations	*			₩	>		
Volume (vph)	349	112	169	303	157	102	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.967				0.947		
FIt Protected				0.982	0.971		
Satd. Flow (prot)	1801	0	0	1829	1713	0	
Flt Permitted				0.982	0.971		
Satd. Flow (perm)	1801	0	0	1829	1713	0	
-ink Speed (mph)	30			30	30		
Link Distance (ft)	295			1901	824		
Fravel Time (s)	6.7			43.2	18.7		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	
4dj. Flow (vph)	384	123	186	333	173	112	
Shared Lane Traffic (%)							
-ane Group Flow (vph)	203	0	0	519	285	0	
Enter Blocked Intersection	No	9	No	9	9	No	
-ane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			0	12		
_ink Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		6	15		15	6	
Sign Control	Free			Stop	Stop		
ntersection Summary							
Area Type: 0	Other						
Control Type: Unsignalized							
Intersection Capacity Utilization 75.4%	ion 75.4%			⊇	U Level o	ICU Level of Service D	
Analysis Period (min) 15							

Lanes, Volumes, Timings 2: County Line Rd & N Ithan Ave

3/9/2015

Lane Group         EBL         EBR         SBL         SBR         NWR           Lane Configurations         W         Y         Y         Y           Valoume (pph)         206         15         143         339         38         258           Ideal Flow (vph)         1900         1900         1900         1900         1900         1900           Lane Util. Factor         0.991         0.905         0.882         1         1.00         1.0		^	۲	#	*	6	/	
22.1 6.7 15. 143 339 1900 1900 1900 1900 1900 1900 1900	Lane Group	EBL	EBR	SBL	SBR	NWL	NWR	
206 15 143 339 1900 1900 1900 1900 1900 1900 1900 190	Lane Configurations	>		>		>		
1900 1900 1900 1900 1900 1900 1900 1900	Volume (vph)	206	15	143	339	38	258	
100 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Ideal Flow (vphpf)	1900	1900	1900	1900	1900	1900	
0.991 0.905 0.985	Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
0,955 0,985 1763 0 1660 0 0,955 0,985 1763 0 1660 0 0,955 0,985 1763 0 1660 0 0 1660 0 0,94 0,94 0,94 0,94 0,94 0,94 0,94 0	£	0.991		0.905		0.882		
1763 0 1660 0 1763 0 1660 1 1763 0 1985 0 1985 0 1985 0 1980 0 19	Fit Protected	0.955		0.985		0.994		
0.955 0.985 1763 0.985 1763 0.985 1764 0.99 1765 0.99 17	Satd. Flow (prot)	1763	0	1660	0	1633	0	
1763 0 1660 0 973 295 22.1 6.7 295 22.1 6.7 295 22.1 6.7 295 22.1 6.7 361 22 361 22 22 12 22 12 0 0 0 10 100 100 100 10	Flt Permitted	0.955		0.985		0.994		
30 30 30 30 30 32 22.1 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7	Satd. Flow (perm)	1763	0	1660	0	1633	0	
973 295 22.1 6.7 0.94 0.94 0.94 219 16 152 361 218 0 513 0 00 No No No No 122 12 22 12 22 12 0 0 0 1.00 1.00 1.00 1.50 1.50 28d COher  Solop Free Coher  Coh	Link Speed (mph)	30		30		30		
22.1 6.7 6.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0	Link Distance (ft)	973		295		2020		
094 094 094 094 094 094 094 094 094 094	Travel Time (s)	22.1		6.7		45.9		
219 16 152 361  235 0 513 0  on No No No No No No No 12  22 12  23 12  0 0 0  10 10 10 100  15 9 15 9  Stop Free  Cother  and a stop of the stop of th	Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
on No	Adj. Flow (vph)	219	16	152	361	40	274	
ection No	Shared Lane Traffic (%)							
section No No No No No No No Section Left Right Left Right Left Right Left Right Left Right 12 12 12 10 10 10 10 10 10 10 10 10 10 10 10 10	Lane Group Flow (vph)	235	0	513	0	314	0	
Left Right Left Right 2 12 2 12 2 12 3 0 0 3 0 3 0 3 0 3 0 3 0 4 0 5 0 5 0 6 0 6 0 7 0 7 0 6 0 7 0 7 0 8 0 7 0 8 0 8 0 8 0 8 0 8 0 8 0 8 0 8 0 8 0 8	Enter Blocked Intersection	9	No	No	No	N <sub>o</sub>	No	
22 12 12 12 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lane Alignment	Left	Right	Left	Right	Left	Right	
ane 10 10 10 10 10 10 10 100 100 100 100 1	Median Width(ft)	22		12		12		
ane 10 10 10 10 10 100 1.00 1.00 1.00 1.00	Link Offset(ft)	0		0		0		
if Tun Lane actor 1.00 1.00 1.00 actor 1.00 1.00 1.00 actor 1.00 1.00 Is 9 15 9 Il Stop Free Summary Other e: Unsignalized e: Unsignalized	Crosswalk Width(ft)	10		10		10		
actor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Sed (mph) 15 9 15 9 9 15 9 9 15 9 9 15 9 9 15 9 9 15 9 9 15 9 9 15 9 9 15 9 9 15 9 9 15 9 9 15 9 9 15 9 9 15 9 9 15 9 9 15 9 9 9 15 9 9 9 9	Two way Left Turn Lane							
eed (mph) 15 9 15 9 I Slop Free Summary Other c. Unsignalized Capacit Utilization 622%	Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Stop Free Summary Other  Cunsignalized Capacity Utilization 622%	Turning Speed (mph)	15	6	15	6	15	6	
Summary Other e: Unsignalized Caaacilv Utilization 69.2%	Sign Control	Stop		Free		Stop		
Other e: Unsignalized Capacity Utilization 69.2%	Intersection Summary							
		Other						
	Control Type: Unsignalized							
	Intersection Capacity Utilizat	tion 69.2%			_	D AVA	f Service C	

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	Synchro 8 Report	Page 1

HCM 2010 TWSC 53: County Line Rd & Lowrys Ln

acito concie								
Intersection 3.7	_							
Movement	EBL	EBR		NBL	NBT	SBT	SBR	
Vol, veh/h	62	82		26	241	152	31	
Conflicting Peds, #/hr	0	0		0	0	0	0	
Sign Control	Stop	Stop		Free	Free	Free	Free	
RT Channelized	٠	None		-	None		None	
Storage Length	0	•		٠		•	٠	
Veh in Median Storage, #	0			٠	0	0		
Grade, %	0	•			0	0	٠	
Peak Hour Factor	87	87		87	87	87	87	
Heavy Vehicles, %	0	0		0	0	0	0	
Mvmt Flow	71	94		89	7.12	175	36	
Major/Minor	Minor2		Z	Major1		Major2		
Conflicting Flow All	909	193		210	0		0	
Stage 1	193							
Stage 2	413					•		
Critical Hdwy	6.4	6.2		4.1				
Critical Hdwy Stg 1	5.4	1		·		•	,	
Critical Hdwy Stg 2	5.4	•						
Follow-up Hdwy	3.5	3.3		2.2		•	,	
Pot Cap-1 Maneuver	463	854		1373				
Stage 1	845	•		ì		•	,	
Stage 2	672							
Platoon blocked, %						•	٠	
Mov Cap-1 Maneuver	436	854		1373				
Mov Cap-2 Maneuver	436	•		ì		•	,	
Stage 1	845	•		٠		•		
Stage 2	632	•		٠		•		
Approach	EB			NB		SB		
HCM Control Delay, s	13.2			1.5		0		
HCM LOS	В							
Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR				
Capacity (veh/h)	1373	- 604						
HCM Lane V/C Ratio	0.049	- 0.274	٠					
HCM Control Delay (s)	7.8	13		٠				
HCM Lane LOS	A	A B	٠	ŀ				
HCM 95th %tile Q(veh)	0.2	- 1.	•					

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HCM 2010 TWSC 52: Airdale Rd & County Line Rd

3/9/2015

Movement   EBI   EBI   EBI   Vol. vehin   206   223   233	Ψ	WBT WBR 291 21 0 0 0 Free Free - None 0 0 0 0 0 1 1 1 331 24 Major2	SBL 15 0 Slop 0 0 0 0 0 0 17 17 17 17 17 17 17 17 17 17 17 17 17	SBR 99 99 90 810p None	
EBI EB 206 22 2076 22 1090,# - Non Majort 4.11 4.11 2.209 1.209 1.209 1.209 1.209 1.209 1.209 1.209 1.209 1.209 1.209 1.209 1.209 1.209 1.209 1.209 1.209 1.209 1.209	Ψ		SBL 15 0 0 0 0 0 0 0 0 0 17 17 17 17 17 17 23	SBR 99 99 90 Slop None	
ge, #	Ψ		Slop 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	99 0 Slop None - - 1 112 343	
96.# - Non  Major1	W		Stop 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	343 343 343 343 343 343 343 343	
9e,# - Non- Majort 234 25 - 234 25 - 1209 -	W		Stop	Stop None None 1 1 112 343	
9e,#	×		Slop	Stop None None 112 112 343	
. Non			0 0 0 88 1 1 17 17 1065 343	None	
96,#			0 0 0 88 8 1 17 17 1065 343		
99,#			0 0 88 1 1 17 17 1065 343	88 88 1 112 343	
88 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Ш		0 88 1 17 17 1065 343 722	343	Ш
88 8 8 234 25 234 25 355 4 4.11 4.11 - 1209 - 1209	Ш		88 1 17 1065 343 722	88 11 112 343 	ш
Major1 234 25 355 4.11 4.11 2.209 12.09 12.09 12.09 12.09 1.209 1.	Ш		1 17 1065 343 722	343	Ш
234 25 35 4 25 35 4 11 4 11 4 11 4 11 4 11 4 11 4 11	Ш		17 Minor2 1065 343 722	343	
Major1 355 - 1 4.11 4.11 - 2.209 1.2	Ш		Minor2 1065 343 722	343	
4.11 4.11 4.11 4.11 4.11 1.209			1065 343 722	343	
355 - 4.11 - 4.11 - 1209 1209	0 - 1 -	0 ' '	1065 343 722	343	
4.11 4.11 2.209 1209 1209 6 1 7 1209 6 1 8 4.2			343	7	
4.11 2.209 1.209 1.209 1.209 1.209 1.209 1.208 2			722	- 50	
2.209 2.209 1209 1209 14 1209 15 EB				10.7	
2.209 1.209 1.209 1.009 1.109			6.41	0.71	
2.209 1209 1209 1209 1 1209 1 1209 1 1208			5.41	·	
2 209 1 209 1 1 209 1 1 1 209 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			5.41		
1209 			3.509	3.309	
1209 			248	702	
1209 			721		
1209 - - - - - - - - - - - - - - - - - - -			483		
1209 					
EB 4.2			192	702	
EB			192	•	
			721		
			374		
		WB	SB		
		0	14.2		
HCM LOS			В		
Minor Lane/Major Mvmt EBL EBT	T WBT WBR SBLn1				
	520				
0.	0.249				
ay (s) 8.7	0 14.2				
۷	A B				
HCM 95th %tile Q(veh) 0.7					

HCM Lane LOS	A	⋖	ì	ì	В		
HCM 95th %tile Q(veh)	0.7				<b>-</b>		
Base 23 am 9/15/2014 Baseline	e.					S	Synchro 8 Report
							- of n

HCM 2010 TWSC 43: County Line Rd & Roberts Rd

EBL EBT EBR WBL  6 101 8 2  6 101 8 2  6 101 8 2  0 0 0 0  Slop Slop Slop								
## 101 8 2  68 101 8 2  0 0 0 0 0  Stop Stop Stop Stop  None  None  None								
8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	WBL	WBT WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stop Stop Stop Stop Stop Stop Stop Stop		24 6	14	627	25	∞	479	38
Stop Stop Stop Stop Stop Stop Stop Stop		0 0	0	0	0	0	0	0
## None	Stop	Stop Stop	Free	Free	Free	Free	Free	Free
88 88 88 88 88 88 88 88 88 88 88 88 88					None			None
98 8 88 88 88 88 88 88 88 88 88 88 88 88			٠	٠		٠	1	
10   1   1   1   1   1   1   1   1   1		0	•	0		•	0	ľ
Nimora   N		- 0		0		•	0	
77   115   9   2   2   2   2   2   2   2   2   2		88 88	88	88	88	88	88	88
Minor   Mino		2 2	2	2	2	2	2	2
Minoria Minoria Minoria 986 1357 294 1107 584 684 759 402 773 - 348 759 654 654 654 654 654 654 654 654 654 654			16	712	28	6	544	43
Minor   Minor   Minor     986   1357   294   1107     986   1357   294   1107     584   584   674   754     6.54   5.54   6.94   7.54     6.54   5.54   6.94   7.54     6.54   5.54   6.54   5.54     6.54   5.54   6.54     6.54   5.54   6.54     6.54   5.54   6.54     6.54   5.54   6.54     6.54   5.54   6.54     6.54   6.54   7.54     6.54   6.54   7.54     6.54   6.54   7.54     6.54   6.54   7.54     6.54   6.54   7.54     6.54   6.54   7.54     6.54   7.54   7.54     6.54   7.54   7.54     6.54   7.54   7.54     6.54   7.54     7.54   7.54								
986 1357 294 1107 986 1357 294 1107 402 1759 348 7.54 6.54 6.94 7.54 6.54 5.54 - 6.54 3.52 40.2 3.32 3.52 202 148 702 165 596 407 - 6.54 596 407 - 6.54 142 702 52 164 142 702 702 164 142 702 164 142	Minor1		Major1			Major2		
584 584		1365 370	288	0	0	741	0	0
402 773 - 348     554 654 694 754 654 655 654 654 654 654 654 654 654 6	- 759	759 -	٠				٠	
7.54 6.54 6.94 7.54 6.54 6.54 6.54 6.54 6.54 6.54 6.54 6	- 348	- 909	٠	٠		٠	1	ľ
6.54 5.54 - 6.54 3.52 4.02 3.32 3.52 2.02 148 702 165 2.02 148 702 165 2.03 496 - 346 2.04 412 702 54 1.64 142 - 52 4.52 48 - 52 4.52 48 - 52 4.52 48 - 476 4.64 88 3.55 5.34 396 - 476 4.64 88 3.55 5.34 396 - 156 146 6.88 8		6.54 6.94	4.14			4.14	'	ľ
6.54 5.54 6.54 3.52 4.02 3.32 3.52 4.02 3.32 3.52 4.02 3.32 3.52 4.02 3.55 4.05 4.07 - 6.41 1.64 142 - 6.41 1.64 142 - 5.2 1.64 142 - 5.2 1.64 142 - 5.2 1.64 142 - 5.2 1.64 142 - 5.2 1.64 142 - 5.2 1.64 142 - 6.41 1.64 142 - 5.2 1.65 4.88 - 3.5 1.65 4.88 - 3.5 1.65 4.88 - 1.5 1.65 4.76	- 6.54	5.54 -	٠	٠		٠	1	
3.52		5.54 -	•	٠			1	ľ
202 148 702 165 165 165 165 146 142 164 142 164 142 165 166 166 142 165 166 166 166 166 166 166 166 166 166	.,	4.02 3.32	2.22	٠		2.22	•	ľ
465 496 - 365   365   564   142   142   144   142   144   142   144   145   146   145   146   145   146		146 627	983	٠		862		
164   142   702   52     164   142       164   142       164   142       164   142       252   488       534   396       164   476   476     225       176   147     186   NBR EBLITWBLIT     187   NBR EBLITWBLIT     188       156   146   146     188       188   101   -     188   188   188       188   188   188       188   188       188   188       188   188       188   188       188   188       188   188       188   188       188   188       188   188       188   188       188   188       188   188       188   188       188   188       188   188       188   188	- 365	413 -					•	
164   142   702   52     164   142   702   52     164   142   702   52     452   488   - 355     534   396   - 476     EB   WB     225.9   37.6     7   1   NBL   NBR EBLITWBLN1     983   - 156   146     983   - 156   146     983   - 1289   37.6     87   01   - 22.5   37.6     87   01   - 22.5   37.6     87   01   - 22.5   37.6     87   01   - 22.5   37.6     87   01   - 22.5   37.6     87   01   - 22.5   37.6     87   01   - 22.5   37.6     87   01   - 22.5   37.6     87   01   - 22.5   37.6     87   01   - 22.5   37.6     87   01   - 22.5   37.6     87   01   - 22.5   37.6     87   01   - 22.5   37.6     88   01   - 22.5   37.6     88   01   - 22.5   37.6     88   01   - 22.5   37.6     88   01   - 22.5   37.6     89   01   - 22.5   37.6     80   01   - 22.5     80   01   - 22.5     80   01   - 22.5	- 641	485 -				٠	٠	
164   142   702   52   164   142   142   142   152   164   142   152   164   142   165   164   142   164   142   164   142   164   142   164   142   164   143   164   144   164   144   164   144   164   144   164   144   164   144   164   144   164   144   164   144   164   144   164   144   164   144   164   144   164   144   164   144   164   144   164				٠			1	Ċ
164 142 - 52 452 488 - 355 434 396 - 476 EB WB 225.9 37.6 F E E E NBE BLITWBLIT 933 - 156 146 0.016 - 125.9 37.6 87 0.1 - 225.9 37.6 A A A F E		140 627	983	٠		862	•	•
452 488 - 355     534 396 - 476     EB	- 52	140 -		•		•	•	
EB		401 -		٠		•	•	•
EB   WB   S7.6	- 476	477	•			•	1	
EB   WB   S7.6								
225.9 37.6 F E F E F F F F F F F F F F F F F F F	WB		NB			SB		
NBL NBT NBREBLITWBLIT    NBL NBT NBREBLITWBLIT    983 156 146   0.016 1589 0.249   8.7 0.1 - 2.25,9 37,6	37.6		0.3			0.2		
NBL NBT NBREBLITWBLn1   983 - 156 146   0.016 - 1.289 3.74   8.7	Ш							
NBL NBT NBREBLITWBLIN   983 - 156 146   0.016 - 1.128 0.249   8.7 0.1 - 2.25 9.346   A A - F F F								
983 - 156 146 0.016 - 1.289 0.249 8.7 0.1 - 225.9 37.6 A A - F E	BR EBLn1WBLn1	SBL SBT S	SBR					
0.016 - 1.289 0.249 8.7 0.1 - 225.9 37.6 A A - F E		862 -						
8.7 0.1 - 225.9 A A - F	1.289 0.249	0.011 -						
A A - F	225.9	9.2 0.1						
	ш.	A						
12	- 12 0.9							

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Base 23 am 9/15/2014 Baseline	

HCM 2010 TWSC 61: Dwy/Aldwyn Ln & S Ithan Ave

3/9/2015

Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	363	6	16	195	13	7	-	12	17	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized		•	None		•	None			None			None
Storage Length	•	•			•					•		
Veh in Median Storage, #		0			0			0			0	
Grade, %	•	0			0		•	0	٠	•	0	
Peak Hour Factor	81	8	81	81	81	81	8	8	8	8	8	200
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	
Mvmt Flow	7	448	1	20	241	16	6	-	15	21	0	
MojorMainor	Moior			Major			Minord	П		Cyclina	П	
Majornalio	INIAJUI I	•		INIAJUIZ			INIIINI			IVIIIIOIIZ		ľ
Conflicting Flow All	257	0	0	426	0	0	802	772	424	772	769	249
Stage 1	•	•			•		476	476		288	788	
Stage 2	•	•			•		326	296		484	481	
Critical Hdwy	4.14	•		4.14	'		7.14	6.54	6.24	7.14	6.54	6.24
Critical Hdwy Stg 1	•	•		•	1		6.14	5.54		6.14	5.54	
Critical Hdwy Stg 2		٠			•		6.14	5.54		6.14	5.54	
Follow-up Hdwy	2.236	•		2.236	•		3.536	4.036	3.336	3.536	4.036	3.336
Pot Cap-1 Maneuver	1296	•		1092	•		300	328	602	314	329	785
Stage 1	•	•		•	1		299	553		715	929	
Stage 2	•	'			•		682	999		290	220	
Platoon blocked, %		•			•							
Mov Cap-1 Maneuver	1296	1		1092	1		265	318	602	298	319	785
Mov Cap-2 Maneuver	•	•		•	•		265	318		298	319	
Stage 1		٠			•		290	547		707	929	
Stage 2	•	•		•	•		604	651		239	244	
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			9.0			14.5			12.5		
HCM LOS							Ω			മ		
Minor Lane/Major Mvmt	NBLn1	EBE	EBT E	EBR WBL	WBT	WBR SBLn1	_					
Capacity (veh/h)	404	1296	١.	- 1092	ľ	- 579	6					
HCM Lane V/C Ratio		0.000		- 0.018	•	- 0.166	2					
HCM Control Delay (s)	14.5	7.8	0	- 8.4	0	- 12.5	2					
HCM Lane LOS	В	V	A	. A	A		В					
HCM 95th %tile Q(veh)	0.2	0		- 0.1	•	9.0	2					

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

ane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
ane Configurations		je s	*		*		je s	₩.				4
Volume (vph)	4	252	766	31	285	2	23	863	33	7	53	0
deal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
ane Width (#)	10	10	= 3	Ξ	14	10	12	12	12	10	10	10
Grade (%)		000	3%	•			ŀ	%Z-			•	%
Storage Length (#)		300		0			75				0	
storage Lanes		- 1		-			- ;				0 [	
aper Length (ft)		52	i c		1	i.	25	ı		1	25	1
ane Util. Factor	0.95	1:00	0.95	0.95	00.1	0.95	1.00	0.95	0.95	1.00	1.00	1.00
T			0.995		0.850			0.994				0.975
It Protected		0.950					0.950					0.961
Satd. Flow (prot)	0	1541	3177	0	1576	0	1693	3366	0	0	0	1536
It Permitted		0.105					0.179					0.752
Satd. Flow (perm)	0	170	3177	0	1576	0	319	3366	0	0	0	1202
Right Turn on Red					Yes				Yes			
satd. Flow (RTOR)					221			196				
ink Speed (mph)			32					32				25
ink Distance (ft)			277					1609				492
ravel Time (s)			11.2					31.3				13.4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	260	1028	32	294	2	24	890	34	7	22	0
Shared Lane Traffic (%)												
ane Group Flow (vph)	0	264	1060	0	294	0	56	924	0	0	0	76
Enter Blocked Intersection	N <sub>o</sub>	9	No	9	2	2	2	2	9	8	No.	S
ane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Left	Left	Left
Median Width(ft)			12					12				0
ink Offset(ft)			0					0				0
Crosswalk Width(ft)			10					10				10
wo way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.18	1.18	1.18
urning Speed (mph)	12	15		6	6	15	15		6	15	15	
Number of Detectors	-	<del></del>	<del></del>		_	<del>-</del>	_	<del></del>		<del>-</del>	_	
Detector Template	Left	Left	Thru		Right	Left	Left	Thru		Left	Left	Thru
eading Detector (ft)	70	37	37		37	20	37	37		20	20	37
railing Detector (ft)	0	ņ	ς'n		ς'n	0	ς'n	۴-		0	0	ς̈
Detector 1 Position(fl)	0	ကု	ကု		c٠	0	ကု	ကု		0	0	ç,
Detector 1 Size(ft)	70	40	40		40	70	40	40		70	20	40
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Extend (s)	00	0.0	00		0	00	0	0.0		0	0	0.0
Defector 1 Onene (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	00	0.0	0.0		00	0.0	0.0	0.0		0.0	0.0	0.0
Turn Tyne	pm+mt	pm+mt	NA		Perm	Perm	Perm	NA		Perm	Perm	NA
Protected Phases	_ 10	, LC	2					9				10
Permitted Phases	2	2			2	9	9			10	10	
Detector Phase	2	2	2		2	9	9	9		10	10	10
Switch Phase	c	c	0		, L	, ,	, ,	-		c	c	c
William IIIIIal (S)	3.0	3.0	0.01		0.0	0.01	0.0	0.0		0.0	0.0	
											9	,

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0 No Right 1.14 1800 71 Thru 37 -3 -3 -40 CI+Ex 40 1336 22.8 0.97 118 114 114 11 3% 1640 0.0 0.0 NA 8 0.950 1651 0.114 198 0.97 25 Left 8 o 0.0 0.0 0.0 pm+pt 193 1.00 199 0 1.00 1.15 1.00 1 37 -3 -3 40 CI+Ex 1800 10 -3% 25 597 16.3 0.97 1.00 0.879 0.995 1462 0.983 0.0 0.0 NA 9 0 0 Left 8 o 0.97 0.0 0.0 Perm 1.15 15 16 16 20 0 0 0 20 20 CI+Ex 0.0 0.0 0.0 1800 0 0 1.00 ٤ 0.97 1.00 100 0 1.18 1.00 Fit Protected Said. Flow (prot)
Fit Permitted Said. Flow (prot)
Fit Permitted Said. Flow (prom)
Right Tum on Red Said. Flow (RTOR)
Link Speed (mph)
Link Distance (f)
Teavel Time (s)
Peak Hour Factor
Adi. Flow (ph)
Shared Lane Trafific (%s)
Lane Group Flow (rph)
Shared Lane Trafific (%s)
Lane Group Flow (rph)
Chow (ph)
Chow ( Leading Detector (ft)
Trailing Detector (ft)
Detector 1 Position(ft)
Detector 1 Type
Detector 1 Type
Detector 1 Chamel
Detector 1 Chamel
Detector 1 Chamel
Detector 1 Detector 5 Detector 1 Turning Speed (mph)
Number of Detectors
Detector Template Lanes onfigurations Volume (vph) Grade (%)
Storage Length (ft)
Storage Lanes
Taper Length (ft)
Lane Util. Factor Turn Type Protected Phases Ideal Flow (vphpf) Lane Width (ft)

3.0

3.0

3.0

3.0

3.0

3.0

Switch Phase Minimum Initial (s)

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

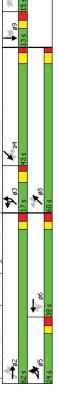
Lane Group SWI2  Lane Configurations 39  Volume (yph) 1800  deal Flow (yph) 1800  Grade (%) 1805  Storage Length (ft) 1805  Storage Length (ft) 1905  Taper Length (ft) 100  Fir It Protected 1005  Staft Flow (pot) 0  Staft Flow (pot) 0  Staft Flow (pot) 0  Staft Flow (pot) 0		SWL	SWT	CMP		
				SVVIV	SWR2	
		K.	£			
		6	168	238	_	
-		1800	1800	1800	1800	
Ш	10	10	10	10	10	
			-1%			
		120		0		
		-		0		
		22				
		00.1	00.1	1:00	1.00	
			0.912			
		0.950				
Permitted	0	1619	1555	0	0	
		999.0				
	0 11	1139	1555	0	0	
Right Turn on Red					No	
Satd. Flow (RTOR)						
Link Speed (mph)			22			
Link Distance (ft)			3168			
Fravel Time (s)			86.4			
Peak Hour Factor 0.97		0.97	0.97	0.97	76.0	
	40	6	173	245	-	
affic (%)						
	0	49	419	0	0	
Enter Blocked Intersection No		No	No No	9	No	
		Left	Left	Right	Right	
Wedian Width(ft)			12			
Link Offset(ft)			0			
Crosswalk Width(ft)			10			
n Lane						
<u>-</u> -		1.12	1.12	1.12	1.12	
	15	٠ ب		6	6	
S			-			
		l et	Thru			
	20	37	37			
	0	رې ا	ņ			
(H)	0	: ټ	<u>ښ</u> :			
û			9 1			
Detector 1 Type CI+Ex		CI+EX (	CI+Ex			
		0.0	0.0			
		0.0	0.0			
Delay (s)		0.0	0.0			
Turn Type Perm		Perm	Y N			
Protected Phases			4			
S	4	4				
ē	4	4	4			
_		3.0	3.0			
Minimum Split (s) 13.0		13.0	13.0			

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/10/2015

Lane Group         EBL         EBL         EBL           Total Splif (s)         24.0         24.0         24.0         6.2.0           Total Splif (s)         14.0%         16.0%         16.0%         41.3%           Maximum Green (s)         3.0         3.0         3.0         3.0           Vellow Time (s)         3.0         3.0         3.0         3.0         3.0           Alred Time (s)         3.0         8.0         8.5         6.5 <td< th=""><th>4</th><th>62.0 38.0 62.0 38.0 41.3% 25.3% 56.0 32.0 3.0 3.0 0.5 6.5</th><th>WBL2 WBL 38.0 38.0 32.0 32.0 32.0 32.0 3.0 3.0 6.5 Lag Lag 6.5</th><th>WBT WBR2 38.0 25.3% 32.0 3.0 3.0 0.5</th><th>S C</th><th>15.0</th><th>15.0 10.0%</th></td<>	4	62.0 38.0 62.0 38.0 41.3% 25.3% 56.0 32.0 3.0 3.0 0.5 6.5	WBL2 WBL 38.0 38.0 32.0 32.0 32.0 32.0 3.0 3.0 6.5 Lag Lag 6.5	WBT WBR2 38.0 25.3% 32.0 3.0 3.0 0.5	S C	15.0	15.0 10.0%
24.0 24.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	4		25 N	38.0 25.3% 32.0 3.0 3.0 0.5	15.0		15.0
160% 160% 180 180 180 180 180 180 180 180 180 180	4		25 N	25.3% 32.0 3.0 3.0 0.5	10.0%		10.0%
18.0 18.0 18.0 18.0 3.0 3.0 3.0 3.0 3.0 0.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6			`` z	32.0 3.0 3.0 0.5	0.6		
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0			z	3.0 3.0 0.5		0.6	0.6
3.0 3.0 3.0 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0			Z	3.0	3.0	3.0	3.0
0.5 0.5 0.5 0.5 0.38 0.38 0.38 0.38 0.38 0.38 0.39 0.39 0.39 0.39 0.39 0.39 0.39 0.39	_ ( 2, (		Z	0.5	3.0	3.0	3.0
6.5 10 3.0 10 0.0 11.5 11.9 11.	2 (1 11)		Z				0.5
S) 10 Cliffer   Lead Lincoordinated   Lead	_ (	La	Z	6.5			6.5
s) 3.0 3.0 1.0 1.1 1.1 5 (1.1 5 (2.1 1.1 5 (	_ (\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			Lag	Lag	Lag	Lag
s) 3.0 3.0 hone In 1.15 (1.15	_ (\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \						
ht) 55.6 E 0.38 (0.115	_ (\			3.0	3.0	3.0	3.0
hy) 55.6 E 0.38 (C 11.15 C 0.00 141.9 E F F F F F F F F F F F F F F F F F F	(4 1)			None	None	None	None
hr) S5.6 0.38 1.15 14.19 0.0 141.9 F F 141.9 141.9 141.9 141.9				7.0			
hr) 55.6 0.38 0.38 1.15 141.9 0.0 141.9 F F		20.0 20.		20.0			
55.6 0.38 1.15 1.41.9 0.0 1.41.9 F Gliber Other			0 0	0			
0.38 1.15 141.9 0.0 141.9 F E gth: 144.8 sied-Uncoordinated		55.6	31.6	31.6			8.5
1.15 141.9 0.0 0.0 141.9 F F Gglh: 144.8		0.38	0.22	0.22			90.0
141.9 0.0 141.9 0.0 141.9 F F 50 e-engith: 144.8 50 c.tualed-Uncoordinated		0.40	0.38	1.04			1.09
0.0 141.9 E F F F C Other 50 Length: 144.8 50 Cutaled-Uncoordinated		10.5	9.89	84.5			192.2
mary P 141.9  To Other  Length: 144.8  50  Cualted-Uncoordinated		0.0	0.0	0.0			0.0
mary Other Other Centry 1448 So Cutated-Uncoordinated		10.5	9.89	84.5			192.2
omary Other 50 engih: 144.8 50 cutaled-Uncoordinated	F D	В	ш	ı			ш
Approach LOS  Intersection Summary Area Type: Oycle Length: 150 Actuated Cycle Length: 144.8 Natural Cycle: 150 Control Type: Actuated-Uncoordinated	58.3			84.0			192.2
Intersection Summary Area Type: Oycle Length: 150 Actuated Cycle Length: 144.8 Natural Cycle: 150 Control Type: Actuated-Uncoordinated	ш			LL.			ш
Area Type: Other Cycle Length: 150 Actuated Cycle Length: 144.8 Natura Cycle: 150 Control Type: Actuated-Uncoordinated							
Cycle Length. 150 Aduated Cycle Length: 144.8 Natura Cycle: 150 Control Type: Actualed-Uncoordinated							
Actualed Cycle Length: 144.8 Natural Cycle: 150 Control Type: Actualed-Uncoordinated							
Natural Cycle: 150 Confrol Type: Actuated-Uncoordinated							
Control Type: Actuated-Uncoordinated							
Maximum v/c Ratio: 1.15							
Intersection Signal Delay: 78.6	Ħ	Intersection LOS: E	ш				
Intersection Capacity Utilization 116.9%	OI	ICU Level of Service H	vice H				
Analysis Period (min) 15							

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave



NB 23 pm 97/6/2014 Baseline

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

	*_	•	<b>*</b>	۶	<b>→</b>	_	•	₹	*	×	*	4
Lane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2
Total Split (s)			13.0	13.0	13.0			17.0	17.0	0.09		
Total Split (%)			8.7%	8.7%	8.7%			11.3%	11.3%	40.0%		
Maximum Green (s)			7.0	7.0	7.0			11.0	11.0	54.0		
Yellow Time (s)			3.0	3.0	3.0			4.0	4.0	4.0		
All-Red Time (s)			3.0	3.0	3.0			2.0	2.0	2.0		
Lost Time Adjust (s)					0.5				0.5	0.5		
Total Lost Time (s)					6.5				6.5	6.9		
Lead/Lag			Lead	Lead	Lead			Lead	Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0			3.0	3.0	3.0		
Recall Mode			None	None	None			None	None	None		
Walk Time (s)										7.0		
Flash Dont Walk (s)										25.0		
Pedestrian Calls (#/hr)										0		
Act Effct Green (s)					6.1				53.6	53.6		
Actuated g/C Ratio					0.04				0.37	0.37		
v/c Ratio					0.32				1.12	0.23		
Control Delay					83.2				136.3	33.8		
Queue Delay					0.0				0.0	0.0		
Total Delay					83.2				136.3	33.8		
SOT					ш				ш	ပ		
Approach Delay					83.2					94.0		
Approach LOS					ш					ш		
Intersection Summary												

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave SWT 43.0 28.7% 37.0 4.0 2.0 0.5 6.5 Lag SWL2 SWL 3
43.0 43.0
28.7% 28.7% 28.7% 24.7
4.0 4.0
2.0 2.0
2.0 2.0
6.5
Lag Lag Lag 3.0 None Total Spill (s)
Total Spill (s)
Total Spill (s)
Total Spill (%)
Waximum Geen (s)
Vellow Time (s)
Lost Time Adjust (s)
Lost Time Adjust (s)
Lead-Lag Optimize?
Lead-Lag Optimize?
Verbide Extension (s)
Recall Mode
Walk Time (s)
Pelestrian Calls (#Int)
Ad Efft Green (s)
Actualed g/C Ratio
W Ratio
Control Delay
Control Delay
Control Delay
LL OS
Approach Delay
Approach Delay
Approach Delay 3/10/2015

36.6 0.25 1.07 115.3 0.0 F

36.6 0.25 0.17 46.1 46.1

3/10/2015

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NB 23 pm 9/16/2014 Base	

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Queues 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

	ሻ	<b>†</b>	۴	Ļ	ţ	<b>←</b>	<b>→</b>	•	×	<b>\</b>	×	
Lane Group	EBL	EBT	EBR2	WBL	WBT	NBT	SBT	NEL	NET	SWL	SWT	
Lane Group Flow (vph)	264	1060	294	26	924	76	19	199	140	49	419	
v/c Ratio	1.15	0.87	0.40	0.38	1.04	1.09	0.32	1.12	0.23	0.17	1.07	
Control Delay	141.9	50.8	10.5	9.89	84.5	192.2	83.2	136.3	33.8	46.1	115.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	141.9	50.8	10.5	9.89	84.5	192.2	83.2	136.3	33.8	46.1	115.3	
Queue Length 50th (ft)	~266	514	47	22	-442	~82	18	~171	96	38	~466	
Queue Length 95th (ft)	#455	#627	125	28	#581	#197	48	#341	153	77	#683	
Internal Link Dist (ft)		497			1529	412	517		1256		3088	
Turn Bay Length (ft)	300			72				200		150		
Base Capacity (vph)	230	1220	741	69	988	70	99	178	909	287	392	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.15	0.87	0.40	0.38	1.04	1.09	0.30	1.12	0.23	0.17	1.07	
Proceeding Cummery												

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

- Volume exceeds capacity, queue is theoretically infinite.

- Volume schown is maximum after two cycles.

- Oueue shown is maximum after two cycles.

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

3/10/2015

3/10/2015

•	NBR		19	1800	12	1.00			0		0	Yes				0.92	21		0	No Pick	אוקווו				1.07	6																					
•	NBL	>	82	1800	12	1.00	0.975	0.961	1653	0.961	1653	i	21	319	8.7	0.92	92		113	9 <u>-</u>	12 Cell	<u> </u>	10		1.07	15	-	Left	37	، د	40	CI+Ex		0.0	0.0	0.0	Prot	8		80		4.0	28.0	28.0	46.7%	23.0	3.0
ţ	WBT	₹.	826	1800	=	0.95		0.999	3238	906.0	2937		L	1291	25.1	0.92	868		920	0 2	13 Fell	2 0	10		1.12		, i	Thru	37	٠ در	40	CI+EX		0.0	0.0	0.0	NA	9		9		10.0	21.0			27.0	3.0
<b>&gt;</b>	WBL		20	1800	=======================================	0.95			0		0					0.92	22		0	9 -	E				1.12	15		Left	20		20 0	CI+EX		0.0	0.0	0.0	Perm		9	9		10.0	21.0	32.0	53.3%	27.0	3.0
<i>&gt;</i>	EBR		122	1800	=	0.95			0		0	Yes				0.92	133		0	9 <del>1</del>	Rigill				1.12	6																					
†	EBT	<b>₩</b>	1125	1800	=	0.95	0.985		3193		3193		25	1609	31.3	0.92	1223		1356	2 -	13 Fell	<u> </u>	10		1.12		,— i	Thru	37	٠ در	40	CI+Ex		0.0	0.0	0.0	NA	2		2		10.0	21.0	32.0	53.3%	27.0	3.0
	Lane Group	Lane Configurations	Volume (vph)	Ideal Flow (vphpf)	Lane Width (ft)	Lane Util. Factor	Ft	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Right Turn on Red	Satd. Flow (RTOR)	Link Speed (mpn) Link Distance (ft)	Travel Time (s)	Peak Hour Factor	Adj. Flow (vph)	Shared Lane Traffic (%)	Lane Group Flow (vph)	Enter Blocked Intersection	Modian Width(#)	link Offset(ft)	Crosswalk Width(ft)	Two way Left Turn Lane	Headway Factor	Turning Speed (mph)	Number of Detectors	Detector Template	Leading Detector (#)	Detector 1 Position(#)	Detector 1 Fisher (ft)	Detector 1 Type	Detector 1 Channel	Detector 1 Extend (s)	Detector 1 Queue (s)	Detector 1 Delay (s)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)

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NB 23 pm 9/16/2014 Baseline

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

Queues 11: Chapel Dr & Lancaster Ave

3/10/2015

Altered Charles   Control   Contro	EBT EBR WBI WBT  2.0 2.0 2.0 2.0 2.0  2.0 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5	Allered Time (s)	2.0 2.0 2.0 C-Max C-h 10.0 1 4 4 4 4 6 C C C C C C C C C C C C C C C		NBR
2.0 2.0 2.0 2.0 2.0 2.0 0.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5	2.0 2.0 2.0 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0	All-Red Time (s) 2.0  Lost Time Adjust (s) 0.5  Lotal Lost Time (s) 5.5  Lead'u.8  Lead-Lag Optimize? 3.0  Recall Mode C-Max  Walk Time (s) 10.0  Flash Dorn Walk (s) 0.0  Flash Dorn Walk (s) 0.0  Act Effet Green (s) 4.3  Act Effet Green (s) 4.3  Act Leff Green (s) 6.7  Act Left Green (s) 6.7	400	2.0 0.5 0.5 3.0 3.0 None 7.0 16.0 8.5 0.14 0.45 2.48	
9 0.5 0.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5	0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	Lost Time Adjust (s) 0.5 Total Lost Time (s) 5.5 Total Lost Time (s) 5.5 Total Lost Time (s) 6.7 Vehicle Extension (s) 3.0 Recal Mode C-Max Vehicle Extension (s) 7-Max Act Effet Green (s) 0.0 Pedestrian Calls (#In) 0.0 Flash Dont Walk (s) 0.0 Pedestrian Calls (#In) 0.0 Flash Dont Walk (s) 0.0 Flash Dont Use (#In) 0.5 Act Effet Green (s) 4.3	9 4 9 0	0.5 3.0 None 7.0 16.0 0 8.5 0.14 0.45 0.0	
5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5	5.5 5.5 5.5  3.0 3.0 3.0  C-Max C-Ma	rotal Lost Time (s) 5.5  Leaduag Optimize? 3.0  Recall Mode C-Max Wark Time (s) 10.0  Recall Mode C-Max Wark Time (s) 10.0  Pedestrian Calls (#/n) 0  Red Effic Green (s) 43.8  Act Effic Green (s) 0.73  Vic Ratio 0.73  Vic Ratio 0.73  Vic Ratio 0.57  Ooutiol Delay 6.7  Ooutiol Delay 6.7  Approach Delay 6.7  Approach Delay 6.7  Approach Delay 6.7  Approach LOS A  Approach LOS A  Approach LOS A  Actual Type: Other  Cycle Length: 60  Charles Codio Chiese Codinated  Control Type: Control Type: Control Type: Control Type: Control Type: Coding Chiese Coding Chiese Coding Chiese Coding Chiese Coding Chiese Coding Chiese Coding Control Type: Coding Chiese Coding Control Type: Control Type: Control Type: Control Type: Control Type: Coding Chiese Coding Control Type: Coding Chiese Codin	Ö	3.0 None 7.0 16.0 8.5 0.14 0.0 0.0	
s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	3.0 3.0 3.0 3.0 1.0 10.0 10.0 10.0 10.0	Lead-Lag Optimize?   3.0	Ö	3.0 None 7.0 16.0 0 8.5 0.14 0.45 24.8	
s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	3.0 3.0 3.0 3.0 3.0 C-Max C-Ma	Control Type:   Control Type	Ö	3.0 None 7.0 16.0 0 8.5 0.14 0.45 24.8	
s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	C-Max	Retricle Extension (s)   3.0	Ö	3.0 None 7.0 16.0 0 8.5 0.14 0.45 24.8	
C-Max C-Max C-Max (-Max	C-Max C-Max C-Max I	Recall Mode         C-Max Mark (%)         C-Max Mark (%)         10.0           Flash Dont Walk (%)         0.0<	Ó	None 7.0 16.0 0.14 0.45 24.8	
10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	Walk Time (s)         10.0           Flash Doub Walk (s)         0.0           Pedestran Calls (#fr)         0           Act Eff Green (s)         43.8           Act Lets Green (s)         0.73           Act Lets Green (s)         0.73           Act Lets Green (s)         0.73           Act East on Calls         6.7           Loss         6.7           Loss         A           Approach Delay         6.7           Approach Delay         6.7           Approach Delay         6.7           Approach LOS         A           Actual Type:         Other           Cycle Length: 60         Other           Cycle Length: 60         Other           Cycle Length: 60         Other           Control Type: 60         Other           Control Type: 60         Other           Control Type: 60         Other           Advanced Cycle Length: 60         Other           Control Type: 60         Other           Control Type: 60         Other           Control Type: 60         Other           Control Type: 60         Other           Advanced Cycle Length: 60         Other           Control		7.0 16.0 0 8.5 0.14 0.45 24.8	
hr) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Tash Dont Walk (s)		16.0 0 8.5 0.14 0.45 24.8	
hr) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Pedestrian Calls (#/h") 0  Act Effc Green (\$) 43.8  Act Effc Green (\$) 43.8  Act Effc Green (\$) 0.73  Actualed 9/C Ratio 0.73  Outeu Delay 0.0  Outeu Delay 6.7  OS A A A A A A A A A A A A A A A A A A A		0 8.5 0.14 0.45 24.8	
43.8 43.8 43.8 63.8 63.8 67.3 6.7 3.4 6.7 3.4 A A A A A A A A A A A A A A A A A A A	43.8 43.8 43.8 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73	Act Effet Green (s) 43.8  Actualed g/C Ratio 0.73  Actualed g/C Ratio 0.73  Outro Delay 6.7  Outro Delay 6.7  Outro Delay 6.7  A Approach Delay 6.7  Approach Delay 6.7  Approach LOS A  Approach LOS A  Approach Code Length: 60  Actualed Cycle Length: 60  Actualed C	43.8 0.73 0.43 3.4 0.0 3.4 A	8.5 0.14 0.45 24.8 0.0	
0.73 0.73 0.73 0.73 0.73 0.73 0.45 0.45 0.45 0.45 0.40 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	0.73 0.73 0.73 0.73 0.73 0.658 0.84 0.84 0.84 0.80 0.00 0.00 0.00 0.0	Actuated g/C Ratio 0.73  //C Ratio 0.58  //C Ratio 0.58  //C Ratio 0.58  //C Ratio 0.58  //C Ratio 0.78  //C Ratio 0.78  //C Ratio 0.78  //C Ratio 0.79  //C R	0.73 0.43 3.4 0.0 3.4 A	0.14 0.45 24.8 0.0	
0.58 0.43 6.7 3.4 0.0 6.7 0.0 6.7 3.4 A A A 6.7 3.4 A A A 6.7 3.4 Gulter Other 10.58 2.EBT and 6.WBTL, Start 10.59 6.39	0.58 0.43 0.43 0.67 0.40 0.00 0.00 0.00 0.00 0.00 0.00 0.0	Vic Ratio   0.58	0.43 3.4 0.0 3.4 A	0.45 24.8 0.0	
6.7 3.4 0.0 0.0 0.0 0.0 0.7 3.4 A A A A A A A A A A A A A A A A A A A	6.7 3.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Control Delay 67  Daeue Delay 67  Daeue Delay 67  OS 7  OS 7  A Approach Delay 67  A Approach LOS A  A CALUS A  A CAUSTON CONTROL TOS A	3.4 0.0 3.4 A	24.8	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 6.7 3.4 A A A A A A A A A A A A A A A A A A A	Dueue Delay 0.0  Total Delay 6.7  Total Delay 6.7  A PORT OF A POR	0.0 3.4 A	0:0	
6.7 3.4  A A A A A A A A A A A A A A A A A A A	6.7 3.4 A A A A A A A A A A A A A A A A A A A	OS A PAPER CONTRIBUTION OF A P	3.4 A		
A A A A A A A A A A A A A A A A A A A	6.7 8.4 A A A A A A A A A A A A A A A A A A A	A Approach Delay 6.7 Approach LOS A Parent LOS A A Approach LOS A A Parent LOS A A Adamsary Contraction Summary Other Sycle Length: 60 Actualed Cyste, 60 Fises 2.6 (43%), Referenced to phase 2:EBT Valural Cycle: 60 Control Type Control Type Actualed-Coordinated Assistance of Basic Actualed Cycle: 60 Assistance Coordinated Assistance of Basic Actualed Cycle: 60 Assistance of Basic B	A	24.8	
h	6.7 3.4  A A Other  October  Coordinated 6.83 Zaiton 54.6%	Approach Delay 6.7 Approach LOS A Antersection Summary Area Type: Other Length: 60 Actualed Cycle Length: 60 Actualed Cycle Length: 60 Offset 26 (43%), Referenced to phase 2:EBT Valural Cycle: 60 Assummy Control Type Actualed-Coordinated Assummy Control Type Charles Co		ပ	
A A A Tunary Other 0 Length: 60 ), Referenced to phase 2:EBT and 6:WBTL, Start 5:00 and coordinated auto: 0.58 and Delay: 6.3	A A A Other Other  ced to phase 2:EBT and 6:WBTL, Start coordinated 6.3 zaiton 54.6%	Approach LOS A A natesection Summary Area Type: Actuated Cycle Length: 60 Actuated Cycle Length: 60 Tister 26 (43%), Referenced to phase 2:EBT Valural Cycle: 60 Actuated Cycle: 60 Actuation Cycle: 60 Actuation of Control Type Actuated Coordinated	3.4	24.8	
Area Type:  Other  Othe	Other 0 or other other or other o	Area Type: Other Sycle Length: 60 Sycle Length: 60 Tister So, (43%), Referenced to phase 2:EBT Valural Cycle: 60 Sontrol Type Actualed-Coordinated Assumment of Design of Res	A	ပ	
4rea Type: Other Sycle Length: 60 Actuated Cyde Length: 60 Actuated Cyde Length: 60 Autural Cycle: 60 Autural Cycle: 60 Avaitural Cycle: 63 Avaitural Cycle: 64 Avaitu	Other 0 nced to phase 2:EBT and 6:WBTL, Start coordinated 6.3 zation 54.6%	4rea Type: Other Sycle Length: 60 Actualed Cycle Length: 60 Tifsez Ex (43%), Referenced to phase 2:EBT valural Cycle: 60 Control Type Actualed-Coordinated			
Cycle Length: 60 Actualed Cycle Length: 60 Actualed Cycle Length: 60 All Millster 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow Natural Cycle: 60 Control Type: Actualed-Coordinated Aaximum vic Ratio: 0.58 Asximum vic Ratio: 0.58 Intersection Signal Delay, 6.3	0 need to phase 2:EBT and 6:WBTL, Start coordinated 6.3 zation 54.6%	Cycle Length: 60 Adruated Cydle Length: 60 Adruated Cydle Length: 60 Diffset S. 6 (43%), Referenced to phase 2:EBT Natural Cycle: 60 Control Types Actuated-Coordinated Assistment of Parker, it is			
Actuated Cycle Length: 60 Offset: 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow Natural Cycle: 60 Control Type: Actuated-Coordinated Assimum vic Ratio 0.58 Intersection Signal Delay: 6.3	0 rced to phase 2:EBT and 6:WBTL, Start coordinated : 6.3 zation 54.6%	Actuated Cyde Length: 60 Offset: 26 (43%), Referenced to phase 2:EBT Astural Cycle: 60 Control Type: Actuated-Coordinated Maximum vip Baits, 16			
Offset: 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow Alatural Cycle: 60 Control Type: Actualed-Coordinated Maximum vic Ratio 0.58 Intersection Signal Delay, 6.3	nced to phase 2:EBT and 6:WBTL, Start cordinated 6.3 zation 54.6%	Offset 26 (43%), Referenced to phase 2:EBT Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum vic Date: 0.68			
Natural Cycle: 60 Control Type: Actuated-Coordinated Naximum vic Ratio: 0.58 Intersection Signal Delay, 6.3	6.3 zaiton 54.6%	Natural Cycle: 60 Control Type: Actuated-Coordinated	and 6:WBTL, Start	of Yellow	
	oordinated : 6.3 :zation 54.6%	Control Type: Actuated-Coordinated			
	: 6.3 ization 54.6%	Maximum v/c Datio: 0 58			
	: 6.3 ization 54.6%	MAXIIIIIIIII WE RAIIO. U.SO			
	ization 54.6%	Intersection Signal Delay: 6.3	_	ntersection L(	OS: A
ization 54.6%	0	ntersection Capacity Utilization 54.6%	_	CU Level of S	Service A

Intersection Summary motore is metered by upstream signal.

Control Delay
Oueue Delay
Total Delay
Oueue Length 50th (ft)
Oueue Length 95th (ft)
Internal Link Dist (ft)
Tun Bay Length (tp)
Base Capacity (vph)
Slarvation Cap Reduch
Spillback Cap Reduch
Sorage Cap Reduch
Reduced v/c Ration

NBL 113 0.45 24.8 0.0 24.8 31 67 239

EBT WBT 1356 920 0.58 0.43 6.7 3.4 0.0 0.0 6.7 3.4 111 1 1208 m109 1529 1211

Lane Group Lane Group Flow (vph) v/c Ratio

**√** Splits and Phases: 11: Chapel Dr & Lancaster Ave **♦** 32 s **1 1 1** 

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NB 23 pm 9/16/2014 Baseline

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Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

-ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	je.	<b>₩</b>		r	<b>₩</b>		r	2,		r	£	
Volume (vph)	83	896	94	86	707	32	92	127	78	. 67	240	75
deal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		%0			3%			1%			%0	
Storage Length (ft)	140		0	20		0	105		0	9		0
Storage Lanes	-		0	-		0	-		0	-		0
aper Length (ft)	22			22			25			25		
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
Į.		0.987			0.993			0.943			0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1565	3089	0	1541	3061	0	1557	1545	0	1565	1588	0
It Permitted	0.243			0.107			0.215			0.457		
Satd. Flow (perm)	400	3089	0	174	3061	0	352	1545	0	753	1588	0
Right Turn on Red			2			2			8			8
Satd. Flow (RTOR)												
-ink Speed (mph)		32			32			25			25	
Link Distance (ft)		1291			2034			183			973	
ravel Time (s)		25.1			39.6			2.0			26.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	87	1019	66	103	744	34	89	134	82	71	253	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	1118	0	103	778	0	89	216	0	71	332	0
Enter Blocked Intersection	9N	9	No No	2	9	9	9	2	No No	N <sub>o</sub>	N <sub>o</sub>	S
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			10			10	
_ink Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Furning Speed (mph)	12		6	12		6	12		6	12		6
Number of Detectors		-		-	-			_		-	-	
Detector Template	Left	Thra		Left	Thr		Left	Thru		Fet	Thru	
eading Detector (ft)	37	37		37	37		37	37		37	37	
railing Detector (ft)	ကု	ကု		ကု	ကု		ကု	ကု		ကု	ς'n	
Detector 1 Position(ft)	ကု	ကု		ကု	ကု		ကု	ကု		٠,	ڊ-	
Detector 1 Size(ft)	40	40		40	40		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	Cl+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Furn Type	pm+pt	NA		pm+pt	A		Perm	NA		Perm	¥	
Protected Phases	2	2		<del>-</del>	9			∞			4	
Permitted Phases	2			9			00			4		
Detector Phase	2	2		-	9		∞	∞		4	4	
Switch Phase												
Winimum Initial (s)	30	340		30	340		3	30		2	~	
(ح) السالط السالط (ح)	5	5		0.0	2		5	5		5	5.0	

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Lane Configurations Volume (with)  deal Flow (upby)  deal Flow (upby)  deal Flow (upby)  Grade (%)  Storage Length (ft)  Storage Length (ft)  Storage Length (ft)  File Protected  Start Flow (gran)  File Protected  Start Flow (RTOR)  Link Speed (mph)  Link Obstance (ft)  France Instruct Factor  Ag. Flow (rph)  Enter Blocked Intersection  Lane Alignment  Media with file (%)  Lane Alignment  Media With (ft)  Crosswalk Width (ft)  File Residue)  Crosswalk Width (ft)  Link Orseit (ft)  Detector Template  Leading Detector (ft)  Det	Lane Configurations Volume (vph) Ideal Flow (vphp) Lane Width (f) Grade (%) Storage Length (f) Storage Length (f)		
ε	Volume (vph) Ideal Flow (vphpl) Lane Width (ft) Grade (%) Storage Length (ft) Storage Langth		
5	Ideal Flow (vphpl) Lane Width (ft) Grade (%) Storage Length (ft) Storage Lanes		
ε	Lane Width (ft) Grade (%) Storage Length (ft) Storage Lanes		
ε	Grade (%) Storage Length (ft) Shrade Lanes		
δ	Storage Length (ft)		
5	Storage Lanes		
σ	Collago Editos		
ε	Taper Length (ft)		
5 .	Lane Util. Factor		
5	Ŧ		
ε	Fit Protected		
δ	Satd. Flow (prot)		
δ	Flt Permitted		
δ	Satd. Flow (perm)		
δ	Right Turn on Red		
5	Satd. Flow (RTOR)		
5	Link Speed (mph)		
5	Link Distance (ft)		
5	Travel Time (s)		
δ	Peak Hour Factor		
5	Adj. Flow (vph)		
	Shared Lane Traffic (%)		
	Lane Group Flow (vph)		
2	Enter Blocked Intersection		
e	Lane Alignment		
9	Median Width(ft)		
<u>ө</u>	Link Offset(ft)		
ဗ	Crosswalk Width(ft)		
	Two way Left Turn Lane		
	Headway Factor		
	Turning Speed (mph)		
	Number of Detectors		
	Detector Template		
	Leading Detector (ft)		
	Trailing Detector (ft)		
	Detector 1 Position(ft)		
	Detector 1 Size(ft)		
	Detector 1 lype		
	Detector 1 Channel		
	Detector   Extend (s)		
	Detector 1 Queue (s)		
	Detector 1 Delay (s)		
	Turn Type		
	Protected Phases	6	
	Permitted Phases		
	Detector Phase		
	Switch Phase		
	Minimum Initial (s)	24.0	
	Minimum Split (s)	26.0	

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

EBI         EBT         WBI         WBT         NBT         NBT           14.0         50.0         13.0         49.0         31.0         13.0         49.0         31.0         11.0 <th></th> <th>1</th> <th><b>†</b></th> <th><u>/</u></th> <th><b>&gt;</b></th> <th>ţ</th> <th>4</th> <th>•</th> <th><b>←</b></th> <th>•</th> <th>۶</th> <th><b>→</b></th> <th>•</th>		1	<b>†</b>	<u>/</u>	<b>&gt;</b>	ţ	4	•	<b>←</b>	•	۶	<b>→</b>	•
140 500 130 49.0 31.0 117% 417% 10.8% 40.8% 25.8% 4.0 4.0 4.0 4.0 4.0 2.0 3.0 3.0 3.0 3.0 3.0  None C-Max None C-Max None C-Max None 2.14 45.5 40.8 26.6 144.9 0.0 0.0 0.0 0.0 0.0 2.14 45.5 40.8 26.6 144.9 C D D C C D C C C C	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
11.7% 41.7% 10.8% 40.8% 25.8% 40.9% 40.9% 25.8% 40.440 70 43.0 25.0 20 20 20 20 20 20 20 20 20 20 20 20 20	Total Split (s)	14.0	20.0		13.0	49.0		31.0	31.0		31.0	31.0	
8.0 44.0 7.0 43.0 25.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	Total Split (%)	11.7%	41.7%		10.8%	40.8%		25.8%	25.8%		25.8%	25.8%	
4.0 4.0 4.0 4.0 4.0 4.0 4.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	Maximum Green (s)	8.0	44.0		7.0	43.0		25.0	25.0		25.0	25.0	
20 20 20 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	rellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 lest lead Lag Lead Lag Lag Lag 1.8 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	ost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lead   Lag   Lead   Lag     On (\$)   3.0   3.0   3.0     On (\$)   3.0   3.0   3.0     None   C-Max   None   C-Max   None     (\$)	otal Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.9		6.5	6.5	
(c) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 (c) Mone C-Max None C-M	.ead/Lag	Lead	Lag		Lead	Lag							
k (s) (s) 3.0 3.0 3.0 3.0 3.0 None C-Max None C-Max None (s) (s) 5.58 48.7 54.6 48.1 24.5 atio 0.46 0.41 0.46 0.40 0.20 21.4 45.5 40.8 26.6 144.9 C D 0.0 0.0 0.0 0.0 21.4 45.5 40.8 26.6 144.9 C D C D C C F  Immary  Immary  Other	.ead-Lag Optimize?												
(c) S (d) None C-Max None C-Max None (c) S (d) None C-Max None C-Max None C-Max None S (d)	/ehicle 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	
k (s) (s) 55.8 48.7 54.6 48.1 24.5 (s) 0.46 0.41 0.46 0.40 0.20 alio 0.46 0.41 0.46 0.40 0.20 0.34 0.89 0.67 0.63 0.96 2.14 45.5 40.8 26.6 144.9 C D C C D C C C C C C C C C C C C C C C	Valk Time (s)												
(#fht) 55.8 48.7 54.6 48.1 24.5 5.0 48.0 0.20 0.20 0.34 0.89 0.67 0.63 0.96 0.20 0.34 0.89 0.67 0.63 0.96 0.96 0.00 0.00 0.00 0.00 0.00 0.00	lash Dont Walk (s)												
s) 55.8 48.7 54.6 48.1 24.5 10.0 0.46 0.41 0.46 0.40 0.20 0.20 0.46 0.41 0.46 0.40 0.20 0.20 0.43 0.89 0.64 0.48 26.6 144.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	edestrian Calls (#/hr)												
lo 0.46 0.41 0.46 0.40 0.20 0.34 0.89 0.67 0.63 0.96 0.96 0.96 0.00 0.00 0.00 0.00 0.00	ct Effct Green (s)	55.8	48.7		54.6	48.1		24.5	24.5		24.5	24.5	
0.34 0.89 0.67 0.63 0.96 21.4 45.5 40.8 26.6 144.9 C D D 0 0 0 0 0 0 C D D C F F C D D C F D C D C F D C D C F D C D C F D C D C F D C D C F D C D C F D C D C F D C D C F D C D C F D C D C C F D C D C C D C C C C C C C C C C C C C C	ctuated g/C Ratio	0.46	0.41		0.46	0.40		0.20	0.20		0.20	0.20	
21.4 45.5 40.8 26.6 144.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	/c Ratio	0.34	0.89		0.67	0.63		96.0	69.0		0.46	1.02	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	21.4	45.5		40.8	26.6		144.9	9.99		53.3	103.7	
21.4 45.5 40.8 26.6 144.9 C D D C F A3.7 28.3 D C Many Other	Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
C D D C F 43.7 28.3  mary  Other	otal Delay	21.4	45.5		40.8	26.6		144.9	9.99		53.3	103.7	
43.7 28.3 D C mary Other	SO	S	O		Ω	ပ		ш	ш		Ω	ш	
mary Cother Other	Approach Delay		43.7			28.3			77.7			94.9	
ntersection Summary trea Type: Other Other Type: Length 2.00 The Content 2.00	pproach LOS		O			ပ			ш			Ŀ	
vrea Type: Other Yybe Lengin: 120 even en even even even even even even e	ntersection Summary												
Sycle Length: 120	Area Type:	Other											
ortusted Cycle Length: 120	Sycle Length: 120												
Actualed Cycle Letigii. 120	Actuated Cycle Length: 120	20											

Area Type:
Cycle Length: 120
Actualed Cyde Length: 120
Actualed Cyde Length: 120
Actualed Cyde Length: 120
Control Type: Actualed-Coordinated
Maximum Vic Raio: 1.02
Intersection Signal Delay: 49.7
Intersection Capacity Utilization 80.8%
Control Type: Actualed-Coordinated
Maximum Vic Raio: 1.02
Intersection Capacity Utilization 80.8%
Analysis Period (min) 15

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Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/10/2015

3/10/2015

Lane Group	0.9
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	0.9
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intercoction Cummery	

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	3/10/2015
Queues	27: S Ithan Ave/N Ithan Ave & Lancaster Ave

	1	<b>†</b>	<b>\</b>	ţ	•	<b>←</b>	۶	<b>→</b>	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	87	1118	103	778	89	216	71	332	
v/c Ratio	0.34	0.89	19.0	0.63	96.0	69.0	0.46	1.02	
Control Delay	21.4	45.5	40.8	26.6	144.9	9.99	53.3	103.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.4	45.5	40.8	26.6	144.9	9.99	53.3	103.7	
Queue Length 50th (ft)	36	487	46	203	25	156	49	~274	
Queue Length 95th (ft)	m63	#627	m#105	244	#148	244	66	#458	
Internal Link Dist (ft)		1211		1954		103		893	
Turn Bay Length (ft)	140		0/		105		92		
Base Capacity (vph)	259	1253	153	1226	71	315	153	324	
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/r Ratio	0 34	08.0	140	0.63	0.06	0 40	0.46	103	

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

- Queue shown is maximum after two cycles.

95th percentile volume excepts capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Lane Group         EBI         WBI         NBI         SBI           Lane Group         EBI         WBI         NBI         SBI           Lane Group Flow (vph)         1305         101         273         263           Wc Ratio         0.75         0.61         0.22         0.80           Control Delay         1.20         10.6         20.1         42.3           Couleue Delay         1.20         10.6         20.1         42.3           Queue Delay         1.20         10.6         20.1         42.3           Queue Delay         1.20         10.4         42.3           Queue Delay         1.20         10.4         42.3           Queue Delay         1.20         1.0         0.0           Queue Delay         1.20         1.4         1.8         22         88           Queue Length Schi (ft)         1.954         30.2         274.7         52.0         1.9	51: Lowrys Ln & Lancaster Ave					0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Lane Group         EBI         WBI         NBI         SBI           Lane Group Flow (vph)         1305         1016         77         263           Confol Delay         12.0         10.6         20.1         3.2         0.80           Confol Delay         12.0         10.6         20.1         42.3         0.0         0.0         0.0           Coul Delay         12.0         10.6         20.1         42.3         2.0         1.2		†	ţ	<b>←</b>	<b>→</b>	
Lane Group Flow (vph) 1305 1016 77 263  Lane Group Flow (vph) 1305 1016 77 263  Control Delay 12.0 10.6 20.1 42.3  Cueue Length 95 (t) 12.0 10.6 20.1 42.3  Cueue Length 95 (t) 12.0 10.6 20.1 42.3  Cueue Length 95 (t) 14 118 22 88  Cueue Length 95 (t) 173 52 #190  Internal Link Dist (t) 1954 302 2747 520  Internal Link Dist (t) 1739 1659 386 357  Slavation Cap Reducth 0 0 0 0  Sinrage Cap Reducth 0 0 0 0  Sinrage Cap Reducth 0 0 0 0 0 0  Sinrage Cap Reducth 0 0 0 0 0 0  Sinrage Cap Reducth 0 0 0 0 0 0  Sinrage Cap Reducth 0 0 0 0 0 0 0  Sinrage Cap Reducth 0 0 0 0 0 0 0  Sinrage Cap Reducth 0 0 0 0 0 0 0  Sinrage Cap Reducth 0 0 0 0 0 0 0 0  Sinrage Cap Reducth 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lane Group	EBT	WBT	NBT	SBT	
v/c Ratio         0,75         0,61         0,22         0,80           Outcue Delay         12,0         10,6         20,1         42,3           Outcue Delay         0,0         0,0         0,0         0,0           Total Delay         12,0         10,6         20,1         42,3           Outcue Length 50h (ft)         144         118         22         88           Outcue Length 95h (ft)         173         52         #190           Inra Bay Length (ft)         1954         302         2747         520           Inra Bay Length (ft)         1739         1659         386         357           Sanzation Cap Reductin         0         0         0         0           Singe Cap Red	Lane Group Flow (vph)	1305	1016	77	263	
Control Delay 12.0 10.6 20.1 42.3 Countrol Delay 12.0 10.6 20.1 42.3 Total Delay 12.0 10.6 0.0 0.0 Total Delay 12.0 10.6 0.1 42.3 Cueue Length 50th (tt) 144 118 22 88 Cueue Length 55th (tt) m212 173 52 #190 Internal Link Disk (tt) 1954 302 2747 520 Turn Bay Length (tt) 1739 1659 386 357 Taxan Ban Capacity (vph) 1739 1659 386 357 Taxan Ban Capacity (vph) 1739 1659 386 357 Total Capacity (vph) 1739 1659 386 386 387 Total Capacity (vph) 1739 1659 386 387 Total Capacity (vph) 1739 1659 386 387 Total Capacity (vph) 1739 1659	v/c Ratio	0.75	0.61	0.22	0.80	
Queue Delay         0.0         0.0         0.0           Total Delay         12.0         10.6         20.1         42.3           Queue Length Solh (tt)         144         118         22         88           Queue Length Shi (tt)         173         52         # 190           Internal Link Dist (tt)         1954         302         2747         520           I urn Bay Length (tt)         1954         302         2747         520           Base Capacity (tt)         1739         1659         386         357           Standin Cap Reductin         0         0         0         0           Splilback Cap Reductin         0         0         0         0           Reduced v/c Raito         0         0         0         0           Reduced v/c Raito         0.75         0.61         0.20         0.74           A Shit paccentile volume exceeds capacity, queue may be longer.         Queue shown is maximum after Mor cycles.	Control Delay	12.0	10.6	20.1	42.3	
Total Delay  Total Delay  Total Delay  Queue Length Softh (ft) 12.0 10.6 20.1 42.3  Queue Length Softh (ft) 144 118 22 88  Queue Length Sth (ft) m212 174 52  Immaga Reduction 1954 302 2747 520  Stanvalion Cap Reductin 0 0 0  Spillback Cap Reductin 0 0 0 0 0  Spillback Cap Reductin 0 0 0 0 0  Spillback Cap Reductin 0 0 0 0 0 0  Spillback Cap Reductin 0 0 0 0 0 0 0  Spillback Cap Reductin 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Delay	0.0	0.0	0.0	0.0	
Oueue Length 50th (ft)         144         118         22         88           Oueue Length 75th (ft)         m212         173         52         #190           Internal Link Dist (ft)         1954         302         2747         520           Internal Link Dist (ft)         1789         1659         386         357           Base Capacity (wph)         1739         1659         386         357           Sanvation Cap Reductin         0         0         0         0           Siniback Cap Reductin         0         0         0         0           Siniback Cap Reductin         0         0         0         0           Intersection Summary         # 95th percentile volume exceeds capacity, queue may be longer.           # 95th percentile volume acceeds capacity, queue may be longer.         Oueue syllowin is maximum after two cycles.	Total Delay	12.0	10.6	20.1	42.3	
Queue Length 95th (ft)         m212         173         52         #190           Internal Link Dist (ft)         1954         302         2747         520           Turn Bay Length (ft)         1954         302         2747         520           Base Capacity (sph)         1739         1659         386         357           Starvation Cap Reduch         0         0         0         0           Spillback Cap Reduch         0         0         0         0           Reduced v/c Ratio         0         0         0         0           Reduced v/c Ratio         0.75         0.61         0.20         0.74           Intersection Summary         #         95th percentile voltume exceeds capacity, queue may be longer.           Queue shown is maximum after two cvcless.         Oucheue synowis constitution and account of the constitution of the consti	Queue Length 50th (ft)	144	118	22	88	
Internal Link Dist (ft)         1954         302         2747         520           Turn Bay Length (ft)         Base Capacity (wph)         1739         1659         386         357           Barvalion Cap Reductin         0         0         0         0         0           Spillback Cap Reductin         0         0         0         0         0           Sonage Cap Reductin         0         0         0         0         0           Reduced v/c Ratio         0         0         0         0         0           Reduced v/c Ratio         0         0         0         0         0           Reduced v/c Ratio         0         0         0         0         0           A Shit paccentile voltame exceeds capacity, queue may be longer.         A Shit paccentile voltame acceds capacity, queue may be longer.	Queue Length 95th (ft)	m212	173	25	#190	
Turn Bay Length (t)  Sax Capacity (wh)  Sax Capacit	Internal Link Dist (ft)	1954	302	2747	520	
Base Capacity (vph)         1739         1659         386         357           Sarval on Capa Reductin         0         0         0         0           Spillback Cap Reductin         0         0         0         0           Storage Cap Reductin         0         0         0         0           Reduced vic Railo         0,75         0,61         0,20         0,74           Intersection Summary           A Shi preacted repairly queue may be longer.           Queue shown is maximum after two cycles.	Turn Bay Length (ft)					
Stanvation Cap Reductn         0         0         0           Spillback Cap Reductn         0         0         0         0           Storiage Cap Reductn         0         0         0         0         Reduced vic Railo         0.75         0.61         0.20         0.74         Intersection Summary         # 95th percentile volume exceeds capacity, queue may be longer.           A PSIh percentile volume exceeds capacity, queue may be longer.         Ouese shown is maximum after wo cycles.	Base Capacity (vph)	1739	1659	386	357	
Spillback Cap Reductn         0         0         0           Storage Cap Reductn         0         0         0           Reduced v/c Ratio         0.75         0.61         0.20         0.74           Intersection Summary         # 95th per centile volume exceeds capacity, queue may be longer.         Ouese shown is maximum after wo cycles.	Starvation Cap Reductn	0	0	0	0	
Storage Cap Reducth 0 0 0 0  Reduced v/c Ratio 0.75 0.61 0.20 0.74  Intersection Summary  # Stith percentile volume exceeds capacity, queue may be longer.  Queue shown is maximum after two cycles.	Spillback Cap Reductn	0	0	0	0	
Reduced v/o Ratio 0.75 0.61 0.20 0.74  Intersection Summary # 95th percentile volume exceeds capacity, queue may be longer.  Oueue shown is maximum after two cycles.	Storage Cap Reductn	0	0	0	0	
Intersection Summary # 95th percentile volume exceeds capacity, queue may be longer. Oueue shown is maximum after two cycles.	Reduced v/c Ratio	0.75	0.61	0.20	0.74	
# 95th percentile volume exceeds capacity, queue may be longer.  Oueue shown is maximum after two cycles.	Intersection Summary					
# 95th percentile volume exceeds capacity, queue may be longer.  Queue shown is maximum after two cycles.	( min man man man man man man man man man ma					
Queue shown is maximum after two cycles.	# 95th percentile volume e	exceeds cap	oacity, qu	ene may l	longer.	
	Oueue shown is maximu	m after two	cycloc			

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NB 23 pm 9/16/2014 Baseline

HCM 2010 Signalized Intersection Summary 51: Lowrys Ln & Lancaster Ave

Movement   EBI   EBI   WEI	EBL EBT EBR WBL WBT WBR NBL NBT NBR NB	## EBL EBF WBL WBT WBR NBL NBT NBR SBL    4th		4	†	<u>/</u>	<b>\</b>	ļ	4	•	<b>—</b>	4	٠	<b>→</b>	•
4th	4th 4th 23 15 916 4 4 20 36 15 31 15 916 4 20 36 15 36 15 2 1776 23 15 916 4 20 36 15 36 15 36 15 36 15 36 15 36 15 36 15 36 36 15 3	4th	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
100 100 100 100 100 100 100 100 100 100	1.00	100 100 100 100 100 100 100 100 100 100	Lane Configurations		t,			t,			4			4	
5 2 12 1 6 16 3 8 18 17 1 100 100 100 100 100 100 100 100 10	5 2 12 1 6 16 3 8 18 100 100 100 100 100 100 100 100 11149 0 0 985 1103 0 975 405 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	5 2 12 1 6 16 3 8 18 7 7 1 100 100 100 100 100 100 100 100 1	Volume (veh/h)	2	1176	23	15	916	4	20	36	15	66	71	72
100	100	100	Number	2	2	12	-	9	16	m	∞	18	7	4	14
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
100 100 100 100 100 100 100 100 100 100	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	100 100 100 100 100 100 100 100 100 100	Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
1800   1782   1800   1773   1755   1773   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900	1800 1782 1800 1773 1755 1773 1900 1881 1900 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1800   1782   1800   1773   1755   1773   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900   1881   1900	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
2 1278 25 16 996 4 22 39 16 108 6	2 1278 25 16 996 4 22 39 16 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 1278 25 16 996 4 22 39 16 108 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.	Adj Sat Flow, veh/h/ln	1800	1782	1800	1773	1755	1773	1900	1881	1900	1881	1863	1881
0 0 2 0 0 2 0 0 0 1 0 0 0 0 1 0 0 0 0 0	0 0 2 0 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 0 1 0	0 0 2 0 0 2 0 0 0 1 0 0 0 0 1 0 0 0 0 0	Adj Flow Rate, veh/h	2	1278	22	16	966	4	22	39	16	108	77	78
6 61 2033 40 72 992 092 092 092 092 092 092 092 092 09	6 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	6 61 2033 40 72 1999 8 134 20 692 1992 1992 1992 1992 1993 134 20 72 1999 8 134 20 68 193 130 100 1.00 0.61 0.61 0.61 0.61 0.19 0.19 0.19 0.19 0.19 1.10 1.10 1.1	Adj No. of Lanes	0	2	0	0	2	0	0	-	0	0	-	0
6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	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
100   1.00   1	61 2033	100   100	Percent Heavy Veh, %	_	-	-	-	-	-	-	-	_	-	-	_
1.00 1.00 1.00 0.61 0.61 0.61 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.1	1.00 1.00 1.00 0.61 0.61 0.61 0.19 0.19 0.19 0.68 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.5	1.00 1.00 1.00 0.61 0.61 0.61 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.1	Cap, veh/h	19	2033	40	72	1999	00	134	204	89	193	106	90
1 3326 65 16 3269 13 304 1079 363 574  1	1 3326	1 3326 65 16 3269 13 304 1079 363 574  1	Arrive On Green	1.00	1.00	1.00	0.61	0.61	0.61	0.19	0.19	0.19	0.19	0.19	0.19
Mar.   1781	Mar.   1781   0   620   525   0   491   77   0   0   0   0   0   0   0   0	Mar.   1781   0   620   525   0   491   77   0   0   263   0   1695   1746   0   0   0   1618   0   0   0   0   0   0   0   0   0	Sat Flow, veh/h	1	3326	92	16	3269	13	304	1079	363	574	564	480
1781	1781 0 1610 1703 0 1595 1746 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 1595 1746 0 0 1618 0 104 00 0.0 0.0 72 0 0 104 22 0.0 0.0 72 0 0 104 22 0.0 0.0 72 0 0 975 406 0 0 0 390 0 0 975 492 0 0 473 1.00 1.00 1.00 1.00 0.00 0.0 65 20.6 0.0 0.0 23 0.0 1.9 0.2 0.0 0.0 23 0.0 1.9 0.2 0.0 0.0 23 0.0 84 20.9 0.0 0.0 26.3 0.0 84 20.9 0.0 0.0 26.3 0.0 84 20.9 0.0 10 26.3 0.0 84 20.9 0.0 26.3 0.0 84 20.9 0.0 10 26.3 0.0 84 20.9 0.0 10 26.3 0.0 84 20.9 0.0 10 26.3 0.0 10 10 10 10 10 10 10 10 10 10 10 10 10	Grp Volume(v), veh/h	982	0	620	525	0	491	11	0	0	263	0	0
0.0 0.0 0.0 0.0 0.0 10.4 0.0 0.0 0.0 7.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 10.4 0.0 0.0 0.72 0.0 10.4 2.2 0.0 0.0 9.4 0.0 975 406 0 0.9 390 0.0 0.5 0.19 0.0 0.0 0.0 390 0.0 0.5 0.19 0.0 0.0 0.0 0.0 0.0 1.00 1.00 1.00 1.00	Grp Sat Flow(s),veh/h/ln	1781	0	1610	1703	0	1595	1746	0	0	1618	0	0
0.0 0.0 0.0 10.0 10.4 2.2 0.0 0.0 9.4 0.00 0.00 0.04 0.03 0.01 0.29 0.21 0.41 0.149 0.08 1103 0 975 406 0 0 390 0.60 0.00 0.63 0.48 0.00 0.50 0.19 0.00 0.00 0.67 0.190 0.00 0.00 1.00 1.00 1.00 1.00 1.00	0.0 0.0 0.0 10.0 10.4 22 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 104 2.2 0.0 0.0 9.4 0.01 0.2 0.01 0.41 0 975 406 0 0 390 0.00 0.50 0.19 0.00 0.067 0 0 975 492 0 0 0.0 0.67 0 0 0 1.00 1.00 1.00 1.00 1.00 0.00 1.00 1	O Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	10.4	0.0	0.0	0.0	7.2	0.0	0.0
0.000 0.04 0.03 0.01 0.29 0.21 0.41 0.64 0.00 0.65 0.63 0.64 0.09 0.55 0.19 0.00 0.65 0.09 0.65 0.09 0.65 0.09 0.65 0.09 0.65 0.09 0.65 0.09 0.65 0.09 0.65 0.09 0.65 0.09 0.00 0.00 0.65 0.09 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.04 0.03 0.01 0.29 0.0 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.29 0.21 0.41 0.00 0.50 0.19 0.00 0.00 0.00 0.50 0.19 0.00 0.00 0.67 0.00 0.100 0.100 0.00 0.00 0.00 6.5 20.6 0.0 0.0 2.9 0.00 0.10 0.00 0.0 0.0 0.0 0.0 5.0 1.1 0.0 0.0 0.0 0.0 0.0 8.4 20.9 0.0 0.0 26.3 0.0 8.4 20.9 0.0 0.0 26.3 0.0 8.4 20.9 0.0 0.0 26.3 0.0 8.4 20.9 0.0 0.0 26.3 0.0 8.4 20.9 0.0 0.0 26.3 0.0 8.4 20.9 0.0 0.0 26.3 0.0 8.4 20.9 0.0 0.0 26.3 0.0 1.1 0.0 0.0 4.5 0.0 8.4 20.9 0.0 0.0 26.3 0.0 1.1 0.0 0.0 26.3 0.0 1.1 0.0 0.0 1.20 0.0 1.1 0.0 0.0 1.20 0.0 1.1 0.0 0.0 1.20 0.0 1.1 0.0 0.0 1.20 0.0 1.1 0.0 0.0 1.20 0.0 1.1 0.0 0.0 1.20 0.0 1.1 0.0 0.0 1.20 0.0 1.1 0.0 0.0 0.0 1.20 0.0 1.1 0.0 0.0 0.0 1.20 0.0 1.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Cycle Q Clear(g_c), s	0.0	0.0	0.0	10.0	0.0	10.4	2.2	0.0	0.0	9.4	0.0	0.0
1149 0 988 1103 0 975 406 0 0 0 390 10.60 0.00 0.63 0.48 0.00 0.50 0.19 0.00 0.00 0.67 10.60 0.00 0.63 0.48 0.00 0.50 0.19 0.00 0.00 0.67 10.80 0.00 0.38 1.00 0.00 1.00 1.00 1.00 1.00 10.80 0.00 0.00 0.00 0.00 0.00 0.00 0.00	1149 0 988 1103 0 975 406 0 0 0.650 0.050 0.653 0.069 0.053 0.063 0.059 0.050	0 975 406 0 0 390 0 0.00 0.50 0.19 0.00 0.00 0.67 0 975 492 0 0 0.47 1.00 1.00 1.00 1.00 1.00 1.00 0.00 1.00 1	Prop In Lane	0.00		0.04	0.03		0.01	0.29		0.21	0.41		0.30
0.66 0.00 0.63 0.48 0.00 0.50 0.19 0.00 0.67 0.10 0.08 0.00 2.00 1.00 1.00 1.00 1.00 1.00 0.38 0.00 0.38 1.00 0.00 1.00 1.00 1.00 1.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.66 0.00 0.63 0.48 0.00 0.50 0.19 0.00 C 2.00 2.00 2.00 1.00 1.00 1.00 1.00 1.00	0.00 0.55 0.19 0.00 0.00 0.67 0.00 0.05 0.19 0.00 0.00 0.05 0.00 0.00 0.00 0.00 0.0	Lane Grp Cap(c), veh/h	1149	0	985	1103	0	975	406	0	0	390	0	0
1149 0 988 1103 0 975 492 0 0 473 2.00 2.00 2.00 1.00 1.00 1.00 1.00 1.00 2.00 0.00 0.38 1.00 0.00 1.00 1.00 1.00 1.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1149 0 988 1103 0 975 492 0 0 2.00 2.00 2.00 2.00 1.00 1.00 1.00	1.00 1.00 1.00 473 1.00 1.00 1.00 1.00 1.00 0.00 1.00 1.00	V/C Ratio(X)	09:0	0.00	0.63	0.48	0.00	0.50	0.19	0.00	0.00	0.67	0.00	0.00
2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00	2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	1149	0	985	1103	0	975	492	0	0	473	0	0
0.38 0.00 0.38 1.00 0.00 1.00 0.00 0.00 1.00 0.00 0.0	0.38 0.00 0.38 1.00 0.00 1.00 0.00 0.00 0.00 0.00 0.0	0.00 1.00 1.00 0.00 1.00 0.00 1.00 0	HCM Platoon Ratio	2.00	2.00	2.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.0 0.0 0.0 6.5 0.0 6.5 20.6 0.0 0.0 23.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0.0 0.0 0.0 6.5 0.0 6.5 20.6 0.0 0.0 0.0 0.0 0.0 1.2 1.5 0.0 1.9 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 65 206 0.0 0.0 235 0.0 0.1.9 0.2 0.0 0.0 2.9 0.0 0.0 0.0 0.0 0.0 2.9 0.0 5.0 1.1 0.0 0.0 4.5 0.0 8.4 20.9 0.0 0.0 26.3 A C 77 8.2 20.9 A C C 8.4 88 43.2 16.8 6 7 8 6 8 6 0 5.0 12.4 4.2 10.7 1.0	Upstream Filter(I)	0.38	0.00	0.38	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
0.9 0.0 1.2 1.5 0.0 1.9 0.2 0.0 0.0 2.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.9 0.0 1.2 1.5 0.0 1.9 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	0.0	0.0	0.0	6.5	0.0	6.5	50.6	0.0	0.0	23.5	0.0	0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	6.0	0.0	1.2	1.5	0.0	1.9	0.2	0.0	0.0	2.9	0.0	0.0
n 0.3     0.0     0.3     5.1     0.0     5.0     1.1     0.0     0.4.5       A     A     A     C     0.0     0.0     4.5       A     A     A     C     0.0     0.0     4.5       A     A     A     C     C     C       1.0     8.2     20.9     0.0     0.0     26.3       A     A     A     C     C     C       A     A     B     C     C     C       A     A     B     C     C     C       A     B     B     C     C     C       B     B     C     C     C     C       B     B     B     B     B     C       B     B     B     B     B     B       B     B     B     B     B     B       B     B     B     B     B     B       B     B     B     B     B     B       B     B     B     B     B     B       B     B     B     B     B     B       B     B     B     B     B     B       B     B	0.3 0.0 0.3 5.1 0.0 5.0 1.1 0.0 0.9 0.0 1.2 7.9 0.0 8.4 20.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 5.0 1.1 0.0 0.0 4.5 0.0 8.4 20.9 0.0 0.0 26.3 1016 7 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
0.9 0.0 1.2 7.9 0.0 8.4 20.9 0.0 26.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	0.9 0.0 12 7.9 0.0 84 20.9 0.0  A A A A C T7  1.0 82 20.9  A A S 6 7 8  43.2 16.8 43.2 16.8  6.0 5.0 6.0 5.0  3.4 0 6.0 5.0  3.4 1.5 6.7 8  8 20.9  1.2 3 4 5 6 7 8  8 43.2 16.8  43.2 16.8  43.2 16.8  43.2 16.8  60 50 60 5.0  3.4 12.4 12.4  12.6 0.5 10.7 1.0	0.0 8.4 20.9 0.0 0.0 26.3 10.16	%ile BackOfQ(-26165%),veh/ln		0.0	0.3	2.1	0.0	2.0		0.0	0.0	4.5	0.0	0.0
A	A	1016 A C C C C C C C C C C C C C C C C C C	LnGrp Delay(d),s/veh	0.0	0.0	1.2	7.9	0.0	8.4	20.9	0.0	0.0	26.3	0.0	0.0
1305 1016 77 1.0 A A C C C C C C C C C C C C C C C C C	1305 1016 1.0 82 A A A A A A A 4 5 6 7 7 6 6 7 6 6 7 6 6 7 6 6 6 6 6 6 6	1016 77 82 20.9 5.7 8 6 7 8 43.2 16.8 6.0 5.0 34.0 15.0 17.4 4.2 10.7 1.0	LnGrp LOS	A		A	A		A	ပ			ပ		
10 82 20.9 A A A C C 2 4 6 7 8 43.2 16.8 43.2 16.8 6.0 5.0 6.0 5.0 34.0 15.0 34.0 15.0 2.0 11.4 12.4 4.2 12.6 0.5 10.7 1.0	1.0 8.2 A 3 4 5 6 7 43.2 4 6 6 43.2 16.8 43.2 6.0 5.0 6.0 34.0 15.0 34.0 2.0 11.4 12.4 12.6 0.5 10.7	8.2 20.9 A C C 5 6 7 8 6 8 43.2 16.8 6.0 5.0 34.0 15.0 12.4 4.2	Approach Vol, veh/h		1305			1016			77			263	
1 2 3 4 5 6 7 2 432 46 6 7 432 168 432 60 50 60 340 150 340 126 05 107 68	1 2 3 4 5 6 7 2 4 5 6 7 43.2 168 43.2 60 340 50 60 340 150 34.0 2.0 11.4 12.4 12.6 0.5 10.7	A C C 6 7 8 6 43.2 16.8 6.0 5.0 8.0 12.4 4.2 10.7 1.0	Approach Delay, s/veh		1.0			8.2			20.9			26.3	
1 2 3 4 5 6 7 2 4 6 7 43.2 168 43.2 6.0 5.0 6.0 34.0 150 34.0 2.0 11.4 12.4 12.6 0.5 10.7 A A	1 2 3 4 5 6 7 2 4 6 6 432 168 432 60 50 60 340 150 340 20 11.4 12.4 12.6 0.5 10.7	5 6 7 432 6 60 340 7 12.4	Approach LOS		A			⋖			S			O	
2 4 6 43.2 168 43.2 60 5.0 6.0 34.0 15.0 34.0 20 11.4 12.4 12.6 0.5 10.7 A A	2 4 6 43.2 168 43.2 6.0 5.0 6.0 34.0 15.0 34.0 2.0 11.4 12.4 12.6 0.5 10.7 A A	6 43.2 6.0 34.0 12.4 10.7	Timer	-	2	က	4	2	9	7	∞				
43.2 16.8 43.2 6.0 5.0 6.0 6.0 34.0 15.0 34.0 12.4 12.4 12.4 12.4 6.8 A A	43.2 16.8 43.2 6.0 6.0 8.0 8.0 8.0 8.0 8.0 8.0 1.2 0 11.4 12.4 12.4 12.4 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8	43.2 6.0 34.0 12.4 10.7	Assigned Phs		2		4		9		∞				
60 50 60 340 150 340 20 11.4 12.4 12.6 0.5 10.7 6.8	60 50 60 340 150 340 20 11.4 12.4 12.6 0.5 10.7 6.8	6.0 34.0 12.4 10.7	Phs Duration (G+Y+Rc), s		43.2		16.8		43.2		16.8				
340 150 340 20 11.4 12.4 12.6 0.5 10.7 6.8 A	340 150 340 20 114 12.4 12.6 0.5 10.7 6.8	34.0 12.4 10.7	Change Period (Y+Rc), s		0.9		2.0		0.9		2.0				
2.0 11.4 12.4 12.6 0.5 10.7 6.8 A	2.0 11.4 12.4 12.6 0.5 10.7 6.8 A	12.4 10.7	Max Green Setting (Gmax), s		34.0		15.0		34.0		15.0				
12.6 0.5 10.7 6.8 A	12.6 0.5 10.7 6.8 A	10.7	Max Q Clear Time (g_c+I1), s		2.0		11.4		12.4		4.2				
		Intersection Summary 6.8  HCM 2010 CM Detay 6.8  HCM 2010 LOS  A	Green Ext Time (p_c), s		12.6		0.5		10.7		1.0				
		HCM 2010 CM Delay 6.8 HCM 2010 LOS A Notes	Intersection Summary												
		HCM 2010 LOS A	HCM 2010 Ctrl Delay			8.9									
		Notes	HCM 2010 LOS			A									
		Notes													

NB 23 pm 9/16/2014 Baseline Synchro 8 Report Page 2

3/10/2015 396 0 0 0 1.15 SWT 454 1.15 121.9 0.0 121.9 ~270 #446 NET 227 0.34 17.3 0.0 17.3 70 122 710 0 0 0 0.32 NEL 112 0.44 20.6 0.0 20.6 34 66 90 Volume exceeds capacity, queue is theoretically infinite.

Oueue shown is maximum after two cycles.

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

Oueue shown is maximum after two cycles. 610 610 0.97 59.6 0.0 59.6 ~368 #569 632 65 91 0 0 0 0 0.32 29 0.32 34.8 0.0 34.8 12 #43 821 1.08 79.4 0.0 79.4 ~483 #702 601 763 Queues 16: Sproul Rd & Conestoga Rd 50 211 0 0 0 0 0 0 0 112 0.54 23.5 0.0 23.5 33 #65 Total Delay

Queue Length 50th (ft)

Queue Length 55th (tt)

Lunal Link Dist (tt)

Turn Bay Length (tt)

Base Capacity (vph)

Sarvation Cap Reduch

Soriage Cap Reduch

Soriage Cap Reduch

Soriage Cap Reduch

Reduced v/c Ratio Lane Group Lane Group Flow (vph) v/c Ratio Control Delay Queue Delay

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HCM 2010 Signalized Intersection Summary 16: Sproul Rd & Conestoga Rd

Queues 25: S Ithan Ave & Conestoga Rd

3/10/2015

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	<u>,                                    </u>	¢Ŷ		<u>,                                     </u>	÷		je.	£,			4	
Volume (veh/h)	106	529	221	78	531	48	106	188	28	51	296	84
Number	7	4	14	m	∞	18	-	9	16	2	2	12
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
Adj Sat Flow, veh/h/In	1782	1782	1800	1827	1827	1845	1773	1773	1791	1809	1791	1809
Adj Flow Rate, veh/h	112	288	0	53	226	0	112	198	29	54	312	88
Adj No. of Lanes	_	<del></del>	0	<del>-</del>	<del>-</del>	0	-	_	0	0	<del></del>	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	-	-	-	-	-	-	-	-	-	<del>-</del>	-	-
Cap, veh/h	220	818	0	255	613	0	300	601	88	98	316	82
Arrive On Green	90:0	0.46	0.00	0.34	0.34	0.00	90.0	0.40	0.40	0.26	0.26	0.26
Sat Flow, veh/h	1697	1782	0	854	1827	0	1689	1513	222	137	1202	322
Grp Volume(v), veh/h	112	588	0	29	559	0	112	0	227	454	0	0
Grp Sat Flow(s),veh/h/ln	1697	1782	0	854	1827	0	1689	0	1734	1661	0	0
Q Serve(g_s), s	3.3	21.3	0.0	2.3	23.4	0.0	3.7	0.0	7.3	14.8	0.0	0.0
Cycle Q Clear(g_c), s	3.3	21.3	0.0	13.7	23.4	0.0	3.7	0.0	7.3	21.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.13	0.12		0.19
Lane Grp Cap(c), veh/h	220	818	0	255	613	0	300	0	689	486	0	0
V/C Ratio(X)	0.51	0.72	0.00	0.11	0.91	0.00	0.37	0.00	0.33	0.93	0.00	0.00
Avail Cap(c_a), veh/h	264	818	0	255	613	0	337	0	726	486	0	0
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	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.3	17.5	0.0	27.0	25.5	0.0	18.3	0.0	16.7	29.8	0.0	0.0
Incr Delay (d2), s/veh	1.8	5.4	0.0	6.0	20.2	0.0	0.8	0.0	0.3	25.2	0.0	0.0
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
%ile BackOfQ(-26165%),veh/ln		11.7	0.0	9.0	15.2	0.0	1.7	0.0	3.5	13.4	0.0	0.0
LnGrp Delay(d),s/veh	21.1	22.8	0.0	27.9	45.7	0.0	19.0	0.0	17.0	22.0	0.0	0.0
LnGrp LOS	ပ	ပ		ပ	۵		В		В	ш		
Approach Vol, veh/h		700			288			339			454	
Approach Delay, s/veh		22.6			44.8			17.7			55.0	
Approach LOS		O			Ω			В			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	-	2		4		9	7	8				
Phs Duration (G+Y+Rc), s	10.8	27.0		42.2		37.8	6.6	32.3				
Change Period (Y+Rc), s	5.5	5.5		5.0		5.5	5.0	5.0				
Max Green Setting (Gmax), s	7.0	21.5		35.5		34.0	7.0	23.5				
Max Q Clear Time (g_c+I1), s	5.7	23.0		23.3		9.3	5.3	25.4				
Green Ext Time (p_c), s	0.0	0.0		2.7		2.5	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			35.1									
HCM 2010 LOS			D									

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NB 23 pm 9/16/2014 Baseline

HCM 2010 Signalized Intersection Summary 25: S Ithan Ave & Conestoga Rd

Queues 33: Williams Rd/Garrett Ave & Conestoga Rd

3/10/2015

35.8 0.0 35.8 0.0 35.8 40 84 1821

31 31 0.15 26.6 0.0 26.6 12 33 33

EBT WBT 587 591 0.43 0.42 7.1 7.0 0.0 0.0 7.1 7.0 106 107 189 189 1390 1278

Lane Group
Lane Group Flow (vph)
vc Ratio
Control Delay
Control Delay
Queue Delay
Queue Length (tit)
Cueue Length (50th (fit)
Cueue Length (50th (fit)
Cueue Length (tit)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Storage Cap Reductn
Reduced vic Ratio

258 0 0 0 0 0.39

Intersection Summary

Movement EBL Lane Configurations 65 Volume (verlit) 65 Volume (verlit) 65 Initial O (Ob), veh 0 Peed Bits Adi(A, pbT) 1.00 Parking Bus, Adi Sat Flow, verlivlin 1894 Adi Sat Flow, verlivlin 1894 Adi Sat Flow, verlivlin 1894 Adi Flow Rate, vehith 74 Adi Flow Rate, vehith 174 Cap, vehith 174 Gap, vehith 177 Gap, vehith 177 Gap Volume(v), vehith 683 Gap Sat Flow, vehith 683	EBT 529 529 6	EBR	WBL	WBT	WBR	NBI	NBT	NBR	SBL	SBT	SBR
ons bbT) cbth thin thin thin thin thin thin thin th	\$25 625					1					
obt)  suh, %  eh/h  eh/h  eh/h  eh/h/ln  1	529			4			4			4	
obt)  vhvin  th  ch/, %  ch/in   9	7	=	477	40	7	19	9	54	68	138	
obT) ivh/in 1 ivh ich/i eh/i ich/in 1 ich/in 1 ich/in 1 ich/in 1	,	16	2	2	12	7	4	14	3	00	18
obT)  ivVnIn  ivVn  ivVn  ivVn  ivVn  ivVn  ivV  ivV	0	0	0	0	0	0	0	0	0	0	0
eh'n 1		1.00	1.00		1.00	1.00		1.00	1.00		1.00
uh/in H/h eh/i eh/ih/in :	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
eh'h eh'h eelvlhin	1836	1854	1764	1747	1764	1763	1745	1763	1844	1826	1844
eh/h	601	00	12	542	45	œ	22	7	61	101	157
	-	0	0	-	0	0	-	0	0	<del></del>	0
	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
u	-	-	-	-	-	-	-	-	-	-	_
u/	763	10	87	751	61	139	273	73	144	143	186
u/	0.48	0.48	0.48	0.48	0.48	0.23	0.23	0.23	0.23	0.23	0.23
· u/	1598	70	10	1573	129	177	1172	315	500	919	800
	0	0	266	0	0	37	0	0	319	0	0
	0	0	1712	0	0	1664	0	0	1625	0	0
C 201 Ve(y_2), 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	0.0	0.0
Cycle Q Clear(g_c), s 14.5	0.0	0.0	12.5	0.0	0.0	8.0	0.0	0.0	8.4	0.0	0.0
		0.01	0.02		0.08	0.22		0.19	0.19		0.49
p(c), veh/h	0	0	866	0	0	485	0	0	474	0	0
V/C Ratio(X) 0.74	0.00	0.00	19.0	0.00	0.00	0.08	0.00	0.00	0.67	0.00	0.00
Avail Cap(c_a), veh/h 1357	0	0	1353	0	0	929	0	0	654	0	0
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
_	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
-h	0.0	0.0	9.4	0.0	0.0	13.5	0.0	0.0	16.4	0.0	0.0
	0.0	0.0	6.0	0.0	0.0	0.1	0.0	0.0	1.7	0.0	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(-26165%),veh/ln 7.3	0.0	0.0	0.9	0.0	0.0	0.4	0.0	0.0	3.9	0.0	0.0
LnGrp Delay(d),s/veh 11.1	0.0	0.0	10.2	0.0	0.0	13.6	0.0	0.0	18.0	0.0	0.0
LnGrp LOS B			В			В			В		
Approach Vol, veh/h	683			266			37			319	
Approach Delay, s/veh	11.1			10.2			13.6			18.0	
Approach LOS	В			В			В			В	
Timer 1	2	3	4	2	9	7	8				
Assigned Phs	2		4		9		8				
Phs Duration (G+Y+Rc), s	27.9		16.9		27.9		16.9				
Change Period (Y+Rc), s	0.9		0.9		0.9		0.9				
Max Green Setting (Gmax), s	34.0		16.0		34.0		16.0				
Max Q Clear Time (g_c+I1), s	14.5		2.8		16.5		10.4				
Green Ext Time (p_c), s	9.9		1.2		5.4		0.7				
Intersection Summary											
HCM 2010 Ctrl Delay		12.2									
HCM 2010 LOS		В									

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HCM 2010 Signalized Intersection Summary 33: Williams Rd/Garrett Ave & Conestoga Rd

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		4			4			4			4	
Volume (veh/h)	27	504	6	12	502	29	17	-	1	28	12	53
Number	2	2	12	-	9	16	m	8	18	7	4	14
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
Adj Sat Flow, veh/h/In	1872	1872	1872	1872	1872	1872	1800	1800	1800	1728	1728	1728
Adj Flow Rate, veh/h	29	248	10	13	246	32	18	<del></del>	12	30	13	28
Adj No. of Lanes	0	-	0	0	-	0	0	-	0	0	-	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	88	1244	22	19	1229	11	151	25	22	101	26	73
Arrive On Green	0.71	0.71	0.71	0.71	0.71	0.71	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	41	1748	31	13	1728	100	730	289	643	329	306	826
Grp Volume(v), veh/h	287	0	0	591	0	0	31	0	0	101	0	0
Grp Sat Flow(s),veh/h/ln	1820	0	0	1840	0	0	1662	0	0	1490	0	0
O Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0
Cycle Q Clear(g_c), s	8.5	0.0	0.0	9.8	0.0	0.0	1.1	0.0	0.0	4.2	0.0	0.0
Prop In Lane	0.05		0.02	0.02		0.02	0.58		0.39	0.30		0.57
Lane Grp Cap(c), veh/h	1355	0	0	1367	0	0	230	0	0	200	0	0
V/C Ratio(X)	0.43	0.00	0.00	0.43	0.00	0.00	0.13	0.00	0.00	0.51	0.00	0.00
Avail Cap(c_a), veh/h	1355	0	0	1367	0	0	410	0	0	384	0	0
HCM Platoon Ratio	00.5	1:00	00.5	00.1	1.00	00.5	1.00	1.00	1:00	1.00	1.00	1.00
Upstream Filter(I)	00.1	0.00	0.00	00.1	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.9	0.0	0.0	3.9	0.0	0.0	27.3	0.0	0.0	78.7	0.0	0.0
Incr Delay (d2), s/ven	0.1	0.0	0:0	0.1	0.0	0.0	0.4	0.0	0.0	7.8	0.0	0.0
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
%ile BackUlQ(-26165%),vervin	0.4.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	21.5	0.0	0.0
Lingip Delay(u),s/veii	4.4 A	0.0	0.0	4:4 A	0:0	0.0	2/.0	0.0	0.0		0.0	0.0
Approach Vol, veh/h		587			591		,	31			101	
Approach Delay, s/veh		4.9			4.9			27.6			31.5	
Approach LOS		⋖			A			ပ			ပ	
Timer	<del>-</del>	2	3	4	2	9	7	8				
Assigned Phs		2		4		9		8				
Phs Duration (G+Y+Rc), s		52.0		11.9		52.0		11.9				
Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
Max Green Setting (Gmax), s		46.0		14.0		46.0		14.0				
Max Q Clear Time (g_c+l1), s		10.5		6.2		10.6		3.1				
Green Ext Time (p_c), s		5.7		0.3		2.7		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			7.5									
HCM 2010 LOS			⋖									
Noton												

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HCM 2010 Signalized Intersection Summary 3: County Line Rd & Spring Mill Rd

Movement	96 96 120 1.00 1.00 1.00 0.00 0.00 0.00 0.00	57 57 1.00 1.00 1800 1800 0.72 3 3 137 0.39 171	WBT 248 6 0 0 1.00 1766	WBR	NBL	IBI ♣	NBR	SBL	SBT	SBR
65 5 5 1.00 1.00 1.00 1.00 90 0.72 0.72 0.72 0.73 184 1 184 1 174 1 184 1 0.39 0.16 1 0.39 0.16 1 0.31 0.31 0.31 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45	96 100 100 1100 1100 1112 0 0.86 1123 1123 0 0.00 0.00 0.00 0.00 0.00 0.00	57 1 0 0 1.00 1.00 1.800 79 0 0 0.72 3 137 171	248 6 6 0 1.00 1766	27		4			4	
66 65 65 65 65 65 65 65 65 65 65 65 65 6	9,6 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,	57 1 0 0 1.00 1.00 1.800 79 0 0 0.72 3 3 137 171	248 6 0 1.00 1766	2						
5 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	120 1.00 1.00 1.00 1.00 0.08 0.08 0.09 0.00 0.00 0.00 0.00 0	1 0 0 1.00 1.00 79 0 0 0.72 3 137 137 447	6 0 1.00 1766	20	73	206	38	99	403	45
1.00 1.00 1.00 1.00 0.72 0.72 1.14 1.84 1.84 1.84 1.85 0.39 1.84 0.39 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16	1.00 1.100 1800 1112 1123 0.39 0.39 3.18 0.00 0.00 0.00 0.00	0 1.00 1.00 79 0 0.72 3 137 0.39	1.00	16	3	8	18	7	4	14
1.00 1.00 1.00 1.00 90 0.72 0.72 1.14 0.39 1.84 0.39 1.85 0.39 1.85 0.16 1.00 0.16 1.00 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0	1.00 1180 1180 1180 0 0.86 0.39 3.18 0.0 0 0.0 0 0.0 0 0.00	1.00 1.00 79 0 0.72 3 3 137 171	1.00	0	0	0	0	0	0	0
1000 1000 1000 1000 1000 1141 1141 1141	1,00 1800 1,123 0,39 0,39 3,18 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,	1.00 1800 79 0 0.72 3 137 0.39 171	1.00	1.00	1.00		1.00	1.00		1.00
1800 5 1 .	1800 112 0 0 0.86 123 0.39 3.18 0 0 0.0 0.0 0.21 0.00 0.00	1800 79 0 0.72 3 137 0.39 171	1766	1.00	1.00	1.00	1.00	1.00	1.00	1.00
90 0.72 0.72 0.39 184 184 184 0.39 186 0.16 0.16 0.16 0.01 6.70 0.45 eh 17.1 eh 0.0 0.45 eh 22.1 C	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0 0 0.72 3 137 0.39 171		1800	1800	1800	1800	1800	1773	1800
0.72 6 141 0.39 0.39 0.39 0.36 0.16 0.16 0.16 0.16 0.16 0.16 0.17 0.16 0.17 0.16 0.45 eh 17.1 eh 0.0 C C	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0 0.72 3 137 0.39 171	285	83	8	264	28	87	453	65
6 0.72 6 141 0.39 184 184 1850 2.00 0.16 0.01 6.70 1.00 0.45 eh 17.1 eh 0.0 %),veh/in 9.4 22.1 C	0.86 0.39 318 0.39 0.00 0.00 0.00 0.00	0.72 3 137 0.39 171 447	<del>-</del>	0	0	_	0	0	_	0
6 1111 184 184 184 184 184 1850 184 1850 1850 1850 1850 1850 1870 1870 1870 1870 1870 1870 1870 187	123 0.39 318 0 0 0 0.0 0.0 0.21 0.0 0.00	3 0.39 171 447	0.87	0.64	0.81	0.78	99.0	0.76	0.89	69.0
141 0.184 184 184 187 186 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	0.39 0.39 318 0 0.0 0.0 0.21 0.00 0.00	137 0.39 171 447	~	m	0	0	0	_	-	_
0.39 184	0.39 318 0 0 0.0 0.0 0.21 0.00 0.00	0.39	390	104	151	379	75	134	203	89
184 546 Mn 1550 200 200 0.16 Mb 670 0.16 17.1 eh 0.0 89,veh/ln 9.4 22.1	318 0 0 0.0 0.0 0.21 0 0.0 0.00	171	0.39	0.39	0.40	0.40	0.40	0.40	0.40	0.40
546 III 1550 20.0 20.0 0.16 II 670 1.00 17.1 eh 17.1 eh 5.0 eh 22.1 C C	0 0.0 0.21 0.00 0.00	447	1008	569	197	958	189	166	1270	173
Mn 1550 40 200 0.16 0.16 670 0.81 (670 0.81 (7.1 1.00 1 1.00 1 0.45 (eh 0.0 8),veVIIn 9.4 22.1 C	0.0 0.0 0.21 0 0.00		0	0	412	0	0	909	0	0
4.0 20.0 0.16 6.70 0.81 6.70 1.00 1.00 1.7.1 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.21 0 0.00 0 0.00	1448	0	0	1344	0	0	1609	0	0
20.0 0.16 670 670 11.00 17.1 5.0 0.0 9.4 22.1 C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	0.0	0.0
0.16 670 0.81 670 1.00 0.45 1.77 5.0 0.0 9.4 22.1 C	0.21	16.0	0.0	0.0	15.0	0.0	0.0	21.8	0.0	0.0
670 0.81 670 0.45 17.1 5.0 0.0 9.4 22.1 C	0.00	0.18		0.19	0.22		0.14	0.14		0.11
0.81 670 1.00 0.45 17.1 5.0 0.0 9.4 22.1	0.00	631	0	0	902	0	0	90/	0	0
670 1.00 0.45 17.1 5.0 0.0 9.4 22.1	0	0.71	0.00	0.00	0.68	0.00	0.00	0.86	0.00	0.00
1.00 0.45 17.1 5.0 0.0 9.4 C		631	0	0	623	0	0	725	0	0
0.45 17.1 5.0 0.0 9.4 22.1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
17.1 5.0 0.0 9.4 22.1 C	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
5.0 0.0 0.0 22.1 C	0.0	15.7	0.0	0.0	14.8	0.0	0.0	17.3	0.0	0.0
0.0 9.4 22.1 C	0.0	9.9	0.0	0.0	2.4	0.0	0.0	9.3	0.0	0.0
9.4 22.1 C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22.1 C C	0.0	9.7	0.0	0.0	6.1	0.0	0.0	11.4	0.0	0.0
O He	0.0	22.3	0.0	0.0	17.2	0.0	0.0	26.7	0.0	0.0
, ue		C			В			C		
			447			412			909	
			22.3			17.2			26.7	
			ပ			В			ပ	
1 2	3	4	2	9	7	8				
2		4		9						
Phs Duration (G+Y+Rc), s 29.7		30.3		29.7		30.3				
		0.9		0.9		0.9				
Max Green Setting (Gmax), s 23.0		25.0		23.0		25.0				
		23.8		18.0		17.0				
		0.4		2.1		1.8				
ntersection Summary										
JCM 2010 Ctrl Delay	22 E									
(na)	5 C									

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HCM 2010 TWSC 79: Garrett Rd & Lancaster Ave

3/10/2015

3/10/2015

intersection							
Int Delay, s/veh	1.6						
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Vol, veh/h	1243	48	49	930	0	38	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	•	None	•	None		None	
Storage Length	•		•			0	
Veh in Median Storage, #	0		•	0	0		
Grade, %	ç		•	r	0		
Peak Hour Factor	82	82	85	82	82	82	
Heavy Vehicles, %	0	0	0	0	0	0	
Wvmt Flow	1516	26	99	1134	0	46	
Wajor/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	1574	0	2232	787	
Stage 1					1545		
Stage 2					289		
Critical Hdwy	•		4.1	,	8.9	6.9	
Critical Hdwy Stg 1	•		•		2.8		
Critical Hdwy Stg 2			•	,	5.8		
Follow-up Hdwy	•		2.2	,	3.5	3.3	
Pot Cap-1 Maneuver	•		424		37	339	
Stage 1			•		165		
Stage 2	•		•		466		
Platoon blocked, %							
Mov Cap-1 Maneuver	•		424		23	339	
Mov Cap-2 Maneuver	•		•		23		
Stage 1			•		165		
Stage 2					288		
Approach	a.		M/D		an		
HCM Control Delay s			3.2		17.3		
HCM LOS			5		20		
Minor Lane/Major Mymt	NRI PRT	FRD WRI	WRT				
Capacity (veh/h)		- 424					
HCM Lane V/C Ratio	0.137	- 0.141					
HCM Control Delay (s)	17.3 -	- 14	9 2.6				
HCM Lane LOS	ပ	,	В				
HCM 95th %tile Q(veh)	0.5	- 0.5					

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HCM 2010 TWSC 15: Conestoga Rd & Spring Mill Rd

ntersection									
nt Delay, s/veh 0.6									
Movement	EBL	EBT			WBT V	WBR	SWL	SWR	
/ol, veh/h	10	199			627	3	18	6	
Conflicting Peds, #/hr	0	0			0	0	0	0	
Sign Control	Free	Free			Free	Free	Stop	Stop	
RT Channelized	•	None			-	- None		None	
Storage Length	1	•			٠		0		
Veh in Median Storage, #	•	0			0		0		
Grade, %	•	0			0		0		
Peak Hour Factor	96	96			96	%	96	96	
Heavy Vehicles, %	- ;	- i			- 0	- 0		← (	
Wiving Flow	2	042			653	~	6	5	
Mojoril disco	Moion		ı	NA.	Cacion	ı	Minor		
JOINVIII IOI	INIAJUI I	<		M	1)ULZ	c	1071	707	
Chang Flow All	000	>				> '	1371	660	
Stage 2							716		
Critical Hdwy	4.11	ľ					6.41	6.21	
Critical Hdwy Stg 1	•				٠		5.41		
Critical Holwy Stg 2	•	•			,		5.41		
Follow-up Hdwy	2.209	•			٠		3.509	3.309	
Pot Cap-1 Maneuver	936	•					162	468	
Stage 1	•						519		
Stage 2	•	٠					486		
Platoon blocked, %		•			٠				
Mov Cap-1 Maneuver	936	٠					159	468	
Mov Cap-2 Maneuver	•	•			٠		159		
Stage 1	•	١			٠		519		
Stage 2	•	•			٠		478		
Approach	EB				WB		SW		
HCM Control Delay, s	0.1				0		25.4		
HCM LOS							Q		
Minor Lane/Major Mvmt	EBL	EBT	WBT W	WBRSWLn1					
Capacity (veh/h)	936			- 204					
HCM Lane V/C Ratio	0.011	•		- 0.138					
HCM Control Delay (s)	8.9	0		- 25.4					
HCM Lane LOS	<	٠		1					
	4	⋖		_					

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Microscilor   EBL EBI EBR   WBI WBI WBR   WBI NBI NBR   SBI													
EBL EBT EBR WBL WBT WBR NBL NBT NBR SBLAT  1													
## 1510 18 WBI		7											
33   510   18   18   471   17   15   8   18   9   18   18   18   471   17   15   8   18   9   18   18   18   471   17   15   8   18   9   18   18   19   18   18	Movement	EBI	FBT	FBR	WBI		WBR	NBI		NBR	SBI	SBT	SBR
Free   Free   Free   Free   Stop	Vol, veh/h	37	510	18	18		17	15			6	18	
Free Free Free Free Free Stop Stop Stop Stop Stop Stop Stop Stop	Conflicting Peds, #/hr	0	0	0	0		0	0			0	0	
Majort   None    Sign Control	Free	Free	Free	Free			Stop			Stop	Stop		
Majort	RT Channelized	•		None	·		None	·					None
#         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         0         0         0         -         0         0         -         0	Storage Length	•											
96 96 96 96 96 96 96 96 96 96 96 96 96 9	Veh in Median Storage, #	•	0					·				0	
96 96 96 96 96 96 96 96 96 96 96 96 96 9	Grade, %	•	0			0		·	0			0	
Majort	Peak Hour Factor	96	%	96	96			%			96	96	
Majora	Heavy Vehicles, %	_	<del></del>	<del>-</del>	_		_	_			-	<del>-</del>	
Majort   Major2   Minor1   Minor2   M	Mvmt Flow	39	531	19	19		18	16			6	19	
Majort   Majort   Minort   Minort   Minort   Sol													
508   0   0   550   0   0   1192   1164   541   1168   1164       618   618   -   537   537       -   -   618   618   -   618   618   537   537       -   -     -     -     574   546   -   631   621       -     -     -     -       -       611   651   621   7.11   651         -     -       -       -	Major/Minor	Major1			Major2			Minor1			Minor2		
4.11   -   -   -     6.18   618   -     537	Conflicting Flow All	208	0	0	220		0	1192			1168	1164	
411	Stage 1	•						618			537	537	
4.11 4.11 7.11 6.51 6.21 7.11 6.51 6.21 1.21 6.51 6.21 7.11 6.51 6.21 7.11 6.51 6.21 7.11 6.51 6.21 7.11 6.51 6.21 7.11 6.51 6.21 7.11 6.51 6.21 7.11 6.51 6.21 7.11 6.51 6.21 7.11 6.51 6.21 7.11 6.51 6.21 7.11 6.51 6.21 7.11 6.51 6.21 7.11 7.15 7.1 6.51 6.21 7.11 7.15 7.1 6.51 6.21 7.11 7.15 7.15	Stage 2					,		574			631	627	
1062   1062	Critical Hdwy	4.11			4.11			7.11			7.11	6.51	6.21
1062	Critical Hdwy Stg 1	•						6.11			6.11	5.51	
1062   2.009   3.509 4.009 3.309   3.509 4.009 4.009 1.005	Critical Hdwy Stg 2	٠	•					6.11			6.11	5.51	
1062     1025     165   195   543   171   195	Follow-up Hdwy	2.209			2.209			3.509			3.509	4.009	3.309
1062	Pot Cap-1 Maneuver	1062			1025			165			171	195	574
1062	Stage 1					,		478			230	524	
1062     1025     129   180   543   150   180	Stage 2	•	٠		·			206			471	478	
1062     1025     129   180   543   150   180   180     150     1025       1025       1025       1025       1025       1025       1025       1025       1025       1025       1025       1025       1025       1025	Platoon blocked, %					•							
EB WB WB SBINT  1 NBINT EBI EBT EBT WB WB SBINT  211 1062 1025 - 319  20.0036 - 0.018 - 0.203  1 A A A A A C C T 1050  1 1067 1025  1 A A A A A A C C T 1050  1 1067 - 1068 - 0.038  1 1068 - 0.048	Mov Cap-1 Maneuver	1062	•		1025			129			120	180	574
FB	Mov Cap-2 Maneuver	•						129			150	180	
EB         WB         NB         AB         AB<	Stage 1	•	١					453			205	210	
EB   WB   NB   NB   NB   O.6   O.5   O.5	Stage 2							478			473	453	
0.6 0.3 26.3 2 D D D D D D D D D D D D D D D D D D D	Approach	B			WB			NB			SB		
1 NBLn1 EBL EBT EBR WBL WBT WBR SBLn1 211 1062 - 1025 - 319 0.202 0.036 - 0.018 - 0.203 26.3 8.5 0 - 8.6 0 - 20.3 D A A A A A A A C	HCM Control Delay, s	9.0			0.3			26.3			20.3		
NBIn1 EBL EBT EBR WBL WBT WBRS   211 1062   - 1025   -	HCM LOS							D			O		
211 1062 - 1025 022 0036 - 0.018 0.018 0.018 0.018 0.018 0.018 0.018 0.018 0.018 0.018 - 0.018	Minor Lane/Major Mvmt	NBLn1	EBL		BR WBL	WBT	WBR SB	Ln1					
0.202 0.036 · · 0.018 · · · 0. 26.3 8.5 0 · 8.6 0 · · D A A · A A · · A	Capacity (veh/h)	211	1062	١.	- 1025	ľ	ı	319					ı
26.3 8.5 0 - 8.6 0 -	HCM Lane V/C Ratio	0.202	0.036		- 0.018		- 0	264					
D A A . A A .	HCM Control Delay (s)	26.3	8.5	0	- 8.6		٠	20.3					
	301												

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NB 23 pm 9/16/2014 Baseline	

3/10/2015 Lanes, Volumes, Timings 38: County Line Rd & N Ithan Ave

	•	*_	3	<b>→</b>	<b>,</b>	4	
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	
Lane Configurations	*			4	×		
Volume (vph)	273	119	185	466	116	63	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.959				0.952		
Flt Protected				0.987	696.0		
Satd. Flow (prot)	1804	0	0	1857	1735	0	
Flt Permitted				186.0	696.0		
Satd. Flow (perm)	1804	0	0	1857	1735	0	
Link Speed (mph)	30			30	30		
Link Distance (ft)	295			1901	824		
Travel Time (s)	6.7			43.2	18.7		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Adj. Flow (vph)	290	127	197	531	123	29	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	417	0	0	728	190	0	
Enter Blocked Intersection	9N	9	9	9	2	S	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			0	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		6	15		12	6	
Sign Control	Free			Stop	Stop		
Intersection Summary							
Area Type: Ot	Other						
Control Type: Unsignalized							
Intersection Capacity Utilization 78.4%	on 78.4%			<u>0</u>	J Level o	ICU Level of Service D	
Analysis Period (min) 15							

	•	7	_#	•	4	<b>~</b>	
Lane Group	EBL	EBR	SBL	SBR	NWL	NWR	
Lane Configurations	>		>		>		
Volume (vph)	225	37	306	312	24	164	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.981		0.932		0.883		
Flt Protected	0.959		926.0		0.994		
Satd. Flow (prot)	1763	0	1711	0	1651	0	
Flt Permitted	0.959		926.0		0.994		
Satd. Flow (perm)	1763	0	1711	0	1651	0	
Link Speed (mph)	30		30		30		
Link Distance (ft)	973		295		2014		
Travel Time (s)	22.1		6.7		45.8		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Bus Blockages (#/hr)	-	0	0	0	0	0	
Adj. Flow (vph)	239	39	326	332	26	174	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	278	0	929	0	200	0	
Enter Blocked Intersection	2	9	No No	N N	No.	No	
Lane Alignment	Left	Right	Left	Right	Left	Right	
Median Width(ft)	22		12		12		
Link Offset(ft)	0		0		0		
Crosswalk Width(ft)	10		10		10		
Two way Left Turn Lane							
Headway Factor	1.01	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	6	15	6	15	6	
Sign Control	Stop		Free		Stop		
Intersection Summary							
Area Type: Ol	Other						
Control Type: Unsignalized							
Intersection Capacity Utilization 72.3%	on 72.3%			೨	U Level o	ICU Level of Service C	
Analysis Period (min) 15							

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HCM 2010 TWSC 53: County Line Rd & Lowrys Ln

HCM 2010 TWSC 52: Airdale Rd & County Line Rd

ntersection							
nt Delay, s/veh	1.5						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Vol, veh/h	17	19	53	185	158	126	
Conflicting Peds, #/hr	0	0	0	0	0		
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized		None		None		None	
Storage Length	0	٠					
/eh in Median Storage, #	0			0	0		
Grade, %	0	•	•	0	0		
Peak Hour Factor	96	%	%		%	96	
Heavy Vehicles, %	0	0	0		0		
Mvmt Flow	18	70	22	-	165	131	
Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	533	230	296	0	'	0	
Stage 1	230						
Stage 2	303						
Critical Hdwy	6.4	6.2	4.1				
Critical Hdwy Stg 1	5.4	•	•		•		
Critical Hdwy Stg 2	5.4	•					
ollow-up Hdwy	3.5	3.3	2.2		•	,	
Pot Cap-1 Maneuver	511	814	1277				
Stage 1	813	•			•		
Stage 2	754						
Platoon blocked, %							
Mov Cap-1 Maneuver	486	814	1277				
Mov Cap-2 Maneuver	486	•			•		
Stage 1	813						
Stage 2	718						
Approach	EB		NB		SB		
HCM Control Delay, s	11.2		1.8		0		
HCM LOS	В						
Vinor Lane/Major Mvmt		NBT EBLn1	SBT SBR				
Capacity (veh/h)	1277	- 617					
HCM Lane V/C Ratio	0.043	0					
HCM Control Delay (s)	7.9						
CM Lane LOS	A	A B					
HCM 95th %tile Q(veh)	0.1						

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Movement         EBL         EBT         WBT         VBR         SBR           Movement         171         218         349         17         120           Conflicting Peds, #fhr         0         0         0         0         0           Sign Control         Free         Free         Free         Stop         Stop           Storage Length         None         0         0         0         0           Veh in Median Storage, #         0         0         0         0         0           Read, W.         0         0         0         0         0         0           Cardad, S.         1         1         1         1         1         1           Veh in Median Storage, #         0         0         0         0         0         0         0           Peak Hour Fator         98 <td< th=""><th></th><th>0.0</th><th></th><th></th><th></th><th></th><th></th><th></th></td<>		0.0						
Fig. EBI   WBT WBR SBL								
171 218 349 17 12   12   12   12   12   13   14   15   15   15   15   15   15   15	Movement	EBL	EBT		WBT	WBR	SBL	SBR
Free Free Free Sup	Vol, veh/h	171	218		349	17	12	120
Free Free Free Stop  - None - None - None - O O O O O O O O O O O O O O O O O O	Conflicting Peds, #/hr	0	0		0	0	0	0
9e,# None None O	Sign Control	Free	Free		Free		Stop	Stop
99, #	RT Channelized	•	None		•	None		None
99, # . 0 0 0 0 . 0  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Storage Length	•			٠		0	
174   222   356   17   12     174   222   356   17   12     174   222   356   17   12     174   222   356   17   12     174   222   356   17   12     175   -	Veh in Median Storage, #	•	0		0		0	
Majort	Grade, %	٠	0		0		0	
1	Peak Hour Factor	86	86		86	86	86	86
174 222 356 17 12   12   12   13   15   15   15   15   15   15   15	Heavy Vehicles, %	<del></del>	<b>—</b>		<del></del>	<del>-</del>	-	-
Majort	Mvmt Flow	174	222		326	17	12	122
Major1								
373 0	Major/Minor	Major1		2	1ajor2		Minor2	
## 4.11	Conflicting Flow All	373	0		١.	0	936	365
## 4.11 571  4.11	Stage 1	•			٠		365	
### ### ##############################	Stage 2	•			•		571	
EB WB SBL1  S 3.8 0 0.147 5.47  Tight tell EBT WBT SBL11  S 8.5 0	Critical Hdwy	4.11			٠		6.41	6.21
1191	Critical Hdwy Stg 1	•			•		5.41	
2.209	Critical Hdwy Stg 2	•			•		5.41	
1191   295   66     704	Follow-up Hdwy	2.209			1		3.509	3.309
FB WB SBIN1  1191 - 5 704  - 7 67  - 7 67  - 7 704  - 7 7	Pot Cap-1 Maneuver	1191			•		295	682
1191   567	Stage 1	•			1		704	
1191	Stage 2	'			•		292	
1191   246   68	Platoon blocked, %				1			
EB WB SBLn1  1 EBL EBT WBT WBR SBLn1  1 EBL E	Mov Cap-1 Maneuver	1191			•		246	682
EB WB SEL1  1191 - 587  0.147 - 0.229  8.5 0 - 13  8.5 0 - 13  8.5 0 - 13  8.5 0 - 13  8.5 0 - 13	Mov Cap-2 Maneuver	•					246	
EB WB WB SBLn1  1191 - 587  0.147 - 0.229  8.5 0 - 13  A A A B B B B WB B B B B B B B B B B B B	Stage 1						704	
EB WBT WBR SBLn1  1191 - 587  0.147 - 0.229  8.5 0 - 13  A A A - 1	Stage 2				•		472	
3.8 0 1 EBL EBT WBT WBR SBLn1 1191 - 587 0.147 - 0.229 8.5 0 - 13 A A B B B	Approach	EB			WB		SB	
1 EBL EBT WBT WBRSBLn1 1191 587 0.147 0.229 8.5 0 13 A A A	HCM Control Delay, s	3.8			0		13	
t EBL EBT WBT WBRS 1191 0.147 8.5 0	HCM LOS						В	
t EBL EBT WBT WBRS 1191 0.147 8.5 0								
0.147 8.5 0 8.5 0	Minor Lane/Major Mvmt	EBL		T WBR SBLn1				
0.147 8.5 0 A A A A	Capacity (veh/h)	1191		587				
8.5 0 A A	HCM Lane V/C Ratio	0.147		- 0.229				
- V V	HCM Control Delay (s)	8.5	0					
' ' '	UCM I and I OC	<		0				

HCM 2010 TWSC 43: County Line Rd & Roberts Rd

HCM 2010 TWSC 61: Dwy/Aldwyn Ln & S Ithan Ave

3/10/2015

3.3  State															١
Feb.   EBr   EBr   WB1   WB1   WBR   WB1   NBR	ω														
FBL EBT EBR   WBI WBI WBR   NBL NBT NBR															
The state of the	ovement	EBL	EBT	EBR				NBR	NBL	NBT	NBR	SBL	L SBT		SBR
99c. # Stop Stop Stop Stop Stop Stop Stop Stop	ol, veh/h	37	26	_		6	76	11	4		29	1	11 66	662	61
Stop	onflicting Peds, #/hr	0		0				0	0				0		0
99c.# None None None None None None None None	ign Control	Stop		Stop				Stop	Free			Free		Free	Free
99. #	T Channelized		'	None				None		'	_			2	None
99e, # 0 0 0 0 0 0 0 0 0 0 0 0	torage Length		1	1		٠	1	٠		1	1				
Minor2 Minor1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	storage,	ľ	0	٠		٠	0	٠	ľ		ľ			0	ľ
95 95 95 95 95 95 95 95 95 95 95 95 95	rade, %	•	0	٠		٠	0			0	•			0	'
Minor	eak Hour Factor	95	96	95		95	95	95	95	0.	95	6	95	95	95
Minot   Mino	eavy Vehicles, %	<del></del>	_	<del></del>		<del>-</del>	<del></del>	-			<del></del>			<del></del>	_
Minor2 Minor1 Minor1 Major1  1047 1336 381 994 1353 288 761 0 0 0  752 752 752 5 695 699 69 69 6 6 6 6 6 6 6 6 6 6 6 6	vmt Flow	39	27	-		6	27	12	4		31	_	12 69	269	64
Minor2         Minor1         Major1           1047         1336         381         954         1353         288         761         0         0           752         552         652															
1047   1336   381   954   1353   288   761   0   6   6   752   752   569   569	ajor/Minor	Minor2			≥	lnor1			Major1			Major2	.5		
152 752	onflicting Flow All	1047	1336	381			1353	288	761		0	576	9	0	0
152 652 692   385 784	Stage 1	752	752	٠		269	269								'
752 652 6.92 752 652 6.92 4.12 - 6.52 5.52 - 6.52 5.52 - 6.52 5.52 - 6.52 5.52 - 6.52 6.92 - 7.52 6.52 6.92 - 7.52 6.52 6.92 - 7.52 6.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 - 7.52 6.92 6.92 6.92 6.92 6.92 6.92 6.92 6.9	Stage 2	295	584	•		385	784	٠						·	ď
652 5.52	ritical Hdwy	7.52	6.52	6.92		7.52	6.52	6.92	4.12			4.12	2		'
652 552	ritical Hdwy Stg 1	6.52	5.52	٠		6.52	5.52	٠		•					
351 4.01 3.31 3.51 4.01 3.31 2.21	itical Hdwy Stg 2	6.52	5.52	٠		6.52	5.52			•	•				1
184   154   620   275   150   772   853	ollow-up Hdwy	3.51	4.01	3.31		3.51	4.01	3.31	2.21			2.21	_		
371   418	ot Cap-1 Maneuver	184	154	620		215	150	712	823			1000	0		•
692   499   .   613   405   .   .   .   .   .   .   .   .   .	Stage 1	371	418	•		477	202	٠		•				ï	
152   150   620   181   146   712   853   152   150     181   146   712	Stage 2	692	499	٠		613	405	٠			'				•
152   150   620   181   146   712   853   150   620   181   146     150   146     150   146     150   146       150   146       150   146       150   146       140   146       140   146       140   146       140   140     140   140     140   140     140   140     140   140     140   140     140   140     140   140     140   140     140   140     140   140     140   140     140	atoon blocked, %													ï	
152   150	ov Cap-1 Maneuver	152	150	620		181	146	712	823		•	1000	0		
368   409   474   503	ov Cap-2 Maneuver	152	150	•		181	146	٠	•		Ť		į,	ï	
639 496	Stage 1	368	409	•		474	203	•		•					•
45.8 30.5  E	Stage 2	639	496	•		226	396	٠					ì	ï	
45.8 30.5  E															
45.8 30.5    NBL NBT NBREBLITWBLNT SBL SBT SBR 853	proach	EB				WB			NB			S	SB		
NBL NBT NRREBLINBLIN SBL SBT   SB3   SB3   SB4   SB7   SB4   SB7   SB4   SB7   SB4   SB7   SB4    CM Control Delay, s	45.8				30.5			0.1			0.	0.2			
NBL NBT NBREBLITWBLn1 SBL SBT   853   . 153 189 1000   . 0.005   . 0.44 0.256 0.012   . 0.22   0.48 0.35   . 0.14   . 0.49   .	CM LOS	Е				Ω									
NBL NBT NBREBLINWBLNT SBL SBT   853   . 153 189 1000   . 0.005   . 0.44 0.256 0.012   . 0.22   0.48 0.24   . 0.48 0.24   . 0.48 0.24   . 0.49 0.25   . 0.49 0.24   . 0.4															
853 153 189 1000 0.005 0.44 0.266 0.012 9.2 0 - 45.8 30.5 8.6 A A - E D A 0 2 1 0	inor Lane/Major Mvmt	NBL	NBT	NBR E	BLn1W	3Ln1	SBL		SBR						
0.005 - 0.44 0.256 0.012 92 0 - 45.8 30.5 8.6 A A - E D A 0 - 2 1 0	apacity (veh/h)	853			153		1000								
9.2 0 - 45.8 30.5 8.6 A A - E D A 0 - 2 1 0	CM Lane V/C Ratio	0.005	•	٠	0.44 (		.012	٠							
A A - E D A 0 - 2 1 0	CM Control Delay (s)	9.2	0	٠	45.8	30.5	9.8	0.1							
0 2 1 0	CM Lane LOS	A	A	٠	ш	Ω	4	۷							
	HCM 95th %tile Q(veh)	0		٠	2	-	0								

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int Dolay, 3/vol.	4.7												
Movement	EBL	EBT	EBR	WBL	L WBT	WBR		NBL	NBT	NBR	SBL	SBT	
Vol, veh/h	35	134	2	51	1 278	22		∞	3	37	4	0	
Conflicting Peds, #/hr	0	0	0		0 0	0		0	0	0	0	0	
Sign Control	Free	Free	Free	Free	e Free	Free		Stop	Stop	Stop	Stop	Stop	
RT Channelized			None			None		•	٠	None			None
Storage Length	•		•			·		٠	•	٠			
Veh in Median Storage, #		0	٠		0 -	ľ			0			0	
Grade, %	•	0	•		0 -	Ť			0			0	
Peak Hour Factor	91	91	91	6	91 91	91		16	91	91	91	91	
Heavy Vehicles, %	2	2	2					2	2	2	2	2	
Mvmt Flow	38	147	2	2	202	24		6	က	41	4	0	
Major/Minor	Major1			Major2	2		2	Minor1			Minor2		
Conflicting Flow All	330	0	0	153	3 0	0		664	699	150	619	099	
Stage 1	•	•	•			·		227	227		430	430	
Stage 2	•		•			Ċ		437	442	٠	249	230	
Critical Hdwy	4.12		•	4.12	2 -			7.12	6.52	6.22	7.12	6.52	
Critical Hdwy Stg 1	•		•			·		6.12	5.52	٠	6.12	5.52	
Critical Hdwy Stg 2	•		•		Ì			6.12	5.52		6.12	5.52	
Follow-up Hdwy	2.218		•	2.218	. 8	·		3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1229		•	1428				374	379	968	366	383	
Stage 1	•	1	1		1	•		776	716		603	583	
Stage 2	•	•	•			'		2	216		755	714	
Platoon blocked, %		1	•			Ì							
Mov Cap-1 Maneuver	1229		٠	1428				344	349	968	326	352	
Mov Cap-2 Maneuver	•	1	•			Ċ		344	349		326	352	
Stage 1	•		•			Ċ		750	692		582	222	
Stage 2	•					Ċ		228	548		663	069	
-	í				,						ć		
Approach	FB			WB	~			NB			SB		
HCM Control Delay, s	1.6			1.1	_			=			11.6		
HCM LOS								В			В		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR WBL	L WBT		WBR SBLn1						
Capacity (veh/h)	929	1229	•	- 1428		·	295						
HCM Lane V/C Ratio		0.031	•	- 0.039		Ċ	0.033						
HCM Control Delay (s)	Ξ	∞	0	9.7 -	9		- 11.6						
HCM Lane LOS	ď	<	<										
0 0 1 0 1 0 1	ב	ζ	I	∀ -	Ζ		20						

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Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

-ane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations		N.S.	<b>‡</b>		*		p z	₩.				
Volume (vph)	2	224	838	84	219	4	Ξ	958	_	13	က	49
ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
-ane Width (ft)	10	10	₩ 7	=	14	10	12	12	12	12	10	10
Grade (%)		000	3%	c			ŀ	%7-	c			(
Storage Lengtn (II)		300		o ,			0,		0 0			0 0
Storage Lanes		- 1		-			- 1		0			0 [
Taper Length (ft)		22					25					25
Lane Util. Factor	0.95	1:00	0.95	0.95	1.00	0.95	1:00	0.95	0.95	0.95	1.00	1.00
T.			0.986		0.850			0.998				
Flt Protected		0.950					0.950					
Satd. Flow (prot)	0	1497	3058	0	1531	0	1645	3283	0	0	0	0
FIt Permitted		0.074					0.291					
Satd. Flow (perm)	0	117	3058	0	1531	0	204	3283	0	0	0	0
Right Turn on Red					Yes					Yes		
Satd. Flow (RTOR)					204			_				
Link Speed (mph)			32					32				
Link Distance (ft)			277					1609				
ravel Time (s)			11.2					31.3				
Peak Hour Factor	96:0	96:0	0.96	96.0	96:0	96:0	96.0	96.0	96.0	96.0	96.0	96.0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	2	233	873	88	228	4	=	866	_	14	3	51
Shared Lane Traffic (%)												
-ane Group Flow (vph)	0	235	196	0	228	0	15	1013	0	0	0	0
Enter Blocked Intersection	8	S	8	9	2	2	8	9	9	No No	8	No
-ane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Median Width(ft)			12					12				
Link Offset(ft)			0					0				
Crosswalk Width(ft)			10					10				
wo way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.06	1.18	1.18
urning Speed (mph)	15	15		6	6	15	15		6	6	15	15
Number of Detectors	_	_	<del></del>		0	<del>-</del>	<del></del>	_			_	_
Detector Template	Left	Left	Thru		Right	Left	Left	Thru			Left	Left
Leading Detector (ft)	70	37	37		0	70	37	37			20	20
railing Detector (ft)	0	ç,	c,		0	0	ç,	5-			0	0
Detector 1 Position(ft)	0	ς'n	ς'n		0	0	ς'n	٣-			0	0
Detector 1 Size(ff)	70	40	40		37	70	40	40			20	20
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		Cl+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+EX
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0:0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Furn Type	pm+pt	pm+pt	NA		Perm	Perm	Perm	NA			Perm	Perm
Protected Phases	2	2	2					9				
Permitted Phases	2	2			2	9	9				10	10
Detector Phase	2	2	2		2	9	9	9			10	10
Switch Phase												

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Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

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Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Lane Configurations	4		4				KZ.	£\$				K
Volume (vph)	.0	00	-	3	12	182	0	194	20	6	19	∞
Ideal Flow (vphpf)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	12	12	7	=	1	10	10
Grade (%)	%	c	-3%	c			000	3%	c			T.
Storage Length (ft)		0 0		0 0			700		0 0			150
Storage Lanes		0		0			- 1		0			- 1
Taper Length (ft)							25					25
Lane Util. Factor Frt	1.00	1.00	1.00	1.00	1.00	1.00	1:00	1.00	1.00	1:00	1.00	1.00
Flt Protected	0.958						0.950	5				0.950
Satd. Flow (prot)	1499	0	1418	0	0	0	1604	1575	0	0	0	1573
Flt Permitted	0.742						0.171					0.597
Satd. Flow (perm)	1161	0	1418	0	0	0	289	1575	0	0	0	686
Right Turn on Red					No					No		
Satd. Flow (RTOR)												
Link Speed (mph)	22		25					40				
Link Distance (ft)	492		263					1336				
Travel Time (s)	13.4		16.3					22.8				
Peak Hour Factor	96.0	96.0	96.0	96.0	96.0	96:0	96:0	96:0	96.0	0.96	96:0	96.0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	∞	-	3	12	190	0	202	25	6	20	00
Shared Lane Traffic (%)		•	į	c	•	c	9		•	c	•	c
Lane Group Flow (vph)	79	0 :	16	0 ;	0 ;	0 :	190	263	0 :	0 ;	0 :	78
Enter Blocked Intersection	2	2	2 .	2	2	2 ·	2	<u>و</u>	2	2	٩ <u>:</u>	<u>ا</u>
Lane Alignment	Lett	Kight	ret Fet	Kight	Kight	Lett	Left	Lett	Kight	Right	Lett	Lett
Median Width(It)	0 0		0					7.5				
Link Offset(ft)	0 ;		0 ;					0 ;				
Crosswalk Width(ft)	01		01					01				
I wo way Left Turn Lane	4	4	1	1	4	4	4	,	,	,	4	4
Headway Factor	1.18	1.18	1.12	1.15	1.15	1.09	1.09	1.14	1.14	1.14	1.12	1.12
Turning Speed (mph)		6	•	6	6	15	15	,	6	6	15	15
Number of Detectors	,— i		і			<del>.</del> .	<del>.</del>	<b>—</b> і				
Detector Template	Thru		Thru			Left	Left	Thru			Left	Left
Leading Detector (ft)	37		37			50	37	37			20	37
Trailing Detector (ft)	က္		ç-			0	ကု	-3			0	ကု
Detector 1 Position(ft)	ကု		ကု			0	ကု	ကု			0	ς'n
Detector 1 Size(ft)	40		40			20	40	40			20	40
Detector 1 Type	CI+Ex		CI+Ex			CI+Ex	CI+EX	CI+Ex			CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Turn Type	NA		NA			pm+pt	pm+pt	¥			Perm	Perm
Protected Phases	9		6			m ·	co i	∞				
Permitted Phases						∞	00				4	4
Detector Phase	10		6			co	co	∞			4	4
Switch Phase	d		c			c	c	c			d	c
Minimum Initial (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

C	ė	9	
-ane Group	SWI	SWK	
Lane ponfigurations	æ		
Volume (vph)	134	155	
ideal Flow (vphpl)	1800	1800	
Lane Width (ft)	10	10	
Grade (%)	-1%		
Storage Length (ft)		0	
Storage Lanes		0	
Faper Length (ft)			
Lane Util. Factor	1.00	1.00	
TH.	0.920		
Flt Protected			
Satd. Flow (prot)	1524	0	
FIt Permitted			
Satd. Flow (perm)	1524	0	
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)	22		
Link Distance (ft)	3168		
ravel Time (s)	86.4		
Peak Hour Factor	96:0	96.0	
Heavy Vehicles (%)	2%	2%	
Adj. Flow (vph)	140	161	
Shared Lane Traffic (%)			
-ane Group Flow (vph)	301	0	
Enter Blocked Intersection	2	No.	
ane Alignment	Left	Right	
Median Width(ft)	12		
ink Offset(ft)	0		
Crosswalk Width(ft)	10		
Two way Left Turn Lane			
Headway Factor	1.12	1.12	
Furning Speed (mph)		6	
Number of Detectors	-		
Detector Template	Thru		
Leading Detector (ft)	37		
Frailing Detector (ft)	ကု		
Detector 1 Position(fl)	ς		
Detector 1 Size(ft)	40		
Detector 1 Type	CI+Ex		
Detector 1 Channel			
Detector 1 Extend (s)	0.0		
Detector 1 Queue (s)	0.0		
Detector 1 Delay (s)	0.0		
Turn Type	NA		
Protected Phases	4		
Permitted Phases			
Detector Phase	4		
Switch Phase			

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/9/2015

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Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Minimum Split (s)	13.0	13.0	21.0		21.0	21.0	21.0	21.0			13.0	13.0
Total Split (s)	25.0	25.0	0 62		79.0	540	540	540			15.0	15.0
Total Split (%)	15.6%	15.6%	49 4%		49 4%	33.8%	33.8%	33.8%			9.4%	9.4%
Maximum Green (s)	19.0	19.0	73.0		73.0	48.0	48.0	48.0			0.6	0.6
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				
Lead/Lag	Lead	Lead				Lag	Lag	Lag			Lag	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	None	Max		Max	None	None	None			None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		72.6	72.6		72.6		47.6	47.6				
Actuated g/C Ratio		0.48	0.48		0.48		0.31	0.31				
v/c Ratio		1.05	99.0		0.27		0.10	0.99				
Control Delay		117.1	33.8		5.3		41.7	76.4				
Oueue Delay		0.0	0.0		0.0		0.0	0.0				
Total Delay		117.1	33.8		5.3		41.7	76.4				
SOT		ш	U		⋖		۵	ш				
Approach Delay			43.0					75.9				
Approach LOS			۵					ш				
Queue Length 50th (ft)		~193	351		12		10	200				
Queue Length 95th (ft)		#422	466		92		33	#740				
Internal Link Dist (ft)			497					1529				
Turn Bay Length (ft)		300					75					
Base Capacity (vph)		223	1459		837		157	1027				
Starvation Cap Reductn		0	0		0		0	0				
Spillback Cap Reductn		0	0		0		0	0				
Storage Cap Reductn		0	0		0		0	0				
Reduced v/c Ratio		1.05	99.0		0.27		0.10	0.99				
Intersection Summary												
	Other											
Cycle Length: 160												
Actuated Cycle Length: 152.2	7.7											
Natural Cycle: 150												
Control Type: Actuated-Uncoordinated	coordinated											
Maximum v/c Ratio: 1.06												
Intersection Signal Delay: 68.0	8.0			ㅁ	Intersection LOS: E	1 LOS: E						
Intersection Capacity Utilization 107.0% Analysis Period (min) 15	ition 107.09	×2		2	ICU Level of Service G	of Service	g					
<ul> <li>Volume exceeds capacity, queue is theoretically infinite</li> </ul>	ity, queue is	stheoretic	cally infinite	ai								
Queue shown is maximum after two cycles.	im after two	cycles.										
# 95th percentile volume exceeds capacity, queue may be longer.	exceeds ca	pacity, qu	ieue may k	e longer								
Queue shown is maximum after two cycles.	im after two	cycles.		•								
												ĺ

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Base 18 am 9/15/2014 Baseline

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

17.5 66.5 15.5 15.5 15.5 15.5 15.5 15.5 15	ping and mages.	plins and i hases: 7. Sproal readpling frill read Andrews in the & Earleaster Are	WOLLING & La	DAY DISTRICT		
17.5 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7	<b>2</b> 0€		£ <b>*</b>	94	68	<b>♦</b>
99 45 59	56		17.5	365	13 5 15	S
54.5	<b>≯</b>	9,6	80			
	5.5	54 s	53.5			

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/9/2015

NBT NBR SBT SBR SBR2 NEL2 NEL NET NER NBR NBR SBT SBR SBR2 NEL2 NEL NET NER NBR SBR2 NEL2 SBR SBR2 NEL2 NEL NBR SBR2 NEL2 NEL SBR2 NEL	NBT         NBT         SBT         SBR		<b>—</b>	*_	<b>→</b>	٦,	•	₹	1	×	•	4	•	<b>\</b>
13.0 13.0 13.0 13.0 13.0 13.0 13.0 13.0	13.0   13.0	Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWI
15.0 13.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17	15.0   13.0   17.0   17.0   53.0   36.0     9.4%   8.1%   10.6%   10.6%   33.1%   22.5%     9.0   3.0   3.0   4.0   4.0   4.0     3.0   3.0   3.0   2.0   2.0     2.0   2.0   2.0   2.0     2.0   2.0   2.0     2.0   2.0   2.0     2.0   2.0   2.0     2.0   2.0   2.0     2.0   2.0   2.0     2.0   2.0   2.0     2.0   2.0   2.0     2.0   2.0   2.0     2.0   2.0   2.0     3.0   3.0   3.0   3.0     3.0   3.0   3.0   3.0     3.0   3.0   3.0   3.0     3.0   3.0   3.0   3.0     3.0   3.0   3.0   3.0     3.0   3.0   3.0   3.0     3.0   3.0   3.0   3.0     3.0   3.0   3.0     3.0   3.0   3.0     3.0   3.0   3.0     4.0   4.6   46.6     4.0   6.0   6.0     4.0   6.0   6	Minimum Split (s)	13.0		13.0			13.0	13.0	13.0			13.0	13.0
9,4% 8,1% 10,6% 10,6% 10,6% 10,6% 10,6% 10,6% 10,6% 10,6% 10,10 11	9,4%         817%         10,6%         10,6%         33.1%         22,5%           9,0         7,0         7,0         11,0         11,0         47,0         30,0           3,0         3,0         3,0         4,0         4,0         40,0         40,0           0,5         0,5         0,5         0,5         0,5         20,0         20,0           1,5         6,5         6,5         6,5         6,5         6,5         4,0         4,0           1,0         0,5         0,5         0,5         0,5         0,5         0,0         2,0 <td< td=""><td>Total Split (s)</td><td>15.0</td><td></td><td>13.0</td><td></td><td></td><td>17.0</td><td>17.0</td><td>53.0</td><td></td><td></td><td>36.0</td><td>36.0</td></td<>	Total Split (s)	15.0		13.0			17.0	17.0	53.0			36.0	36.0
9.0 7.0 110 110 110 13.0 3.0 3.0 4.0 4.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	9.0 7.0 11.0 11.0 47.0 30.0 3.0 3.0 3.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4	Total Split (%)	9.4%		8.1%			10.6%	10.6%	33.1%			22.5%	22.5%
3.0 3.0 4.0 4.0 3.0 0.5 0.5 6.5 6.5 6.5 6.5 Lead Lead Lead  3.0 3.0 3.0 0.5  8.5 6.1 46.6 6.5  0.06 0.04 0.01  170.3 86.1 127.5 1  F F F F F F F F F F F F F F F F F F	3.0         3.0         4.0         2.0         3.0 <td>Maximum Green (s)</td> <td>0.6</td> <td></td> <td>7.0</td> <td></td> <td></td> <td>11.0</td> <td>11.0</td> <td>47.0</td> <td></td> <td></td> <td>30.0</td> <td>30.0</td>	Maximum Green (s)	0.6		7.0			11.0	11.0	47.0			30.0	30.0
3.0 3.0 2.0 2.0 2.0 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	3.0         3.0         2.0         3.0 <td>Yellow Time (s)</td> <td>3.0</td> <td></td> <td>3.0</td> <td></td> <td></td> <td>4.0</td> <td>4.0</td> <td>4.0</td> <td></td> <td></td> <td>4.0</td> <td>4.0</td>	Yellow Time (s)	3.0		3.0			4.0	4.0	4.0			4.0	4.0
0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.5         0.2         0.0 <td>All-Red Time (s)</td> <td>3.0</td> <td></td> <td>3.0</td> <td></td> <td></td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td></td> <td></td> <td>2.0</td> <td>5.0</td>	All-Red Time (s)	3.0		3.0			2.0	2.0	2.0			2.0	5.0
6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	6.5 6.5 6.5 6.5 149  14ay Lead Lead Lead Lead Lead Lead Lead Lead	Lost Time Adjust (s)	0.5		0.5				0.5	0.5				0.5
Lag   Lead   L	Lag   Lead   None   N	Total Lost Time (s)	6.5		6.5				6.5	6.5				9.6
30 30 30 30 30 30 30 30 30 30 30 30 30 3	30 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Lead/Lag	Lag		Lead			Lead	Lead				Lag	Lag
30 30 30 30 30 30 30 30 30 30 30 30 30 3	30         30         30         30         30           None         None         None         None         None           1         8.5         6.1         46.6         46.6           0.06         0.04         0.31         0.31         0.31           1.00         0.05         0.29         1.06         6.55           1.00         0.0         0.0         0.0         0.0           1.00         86.1         1.27.5         50.1         50.1           1.70         86.1         1.27.5         50.1         50.0           1.70         86.1         1.27.5         50.1         50.1           1.70         86.1         1.27.5         50.1         50.1           1.70         86.1         1.27.5         50.1         50.1           1.70         4.1         4.4         4.32.3         33.7           1.0         0         0         0         0           1.0         0         0         0         0           1.0         0         0         0         0           1.0         0         0         0         0           1.0 <td< td=""><td>Lead-Lag Optimize?</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Lead-Lag Optimize?												
Nane	Nane         Nane <th< td=""><td>Vehicle Extension (s)</td><td>3.0</td><td></td><td>3.0</td><td></td><td></td><td>3.0</td><td>3.0</td><td>3.0</td><td></td><td></td><td>3.0</td><td>3.0</td></th<>	Vehicle Extension (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0
8.5 6.1 466 0.00 0.00 0.031 0.95 0.29 1.06 1.70.3 86.1 127.5 0.0 0.0 0.0 1.70.3 86.1 127.5 F F F F F 1.70.3 86.1 127.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	8.5 6.1 46.6 46.6 0.00 0.00 0.00 0.00 0.00 0.00	Recall Mode	None		None			None	None	None			None	None
8.5 6.1 46.6 0.06 0.04 0.031 0.05 0.04 0.031 0.031 0.05 0.29 0.031 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	8.5 6.1 46.6 46.6 0.00 0.00 0.00 0.00 0.00 0.00	Walk Time (s)								7.0				
8.5 6.1 466 0.06 0.04 0.34 0.095 0.29 1.06 170.3 86.1 127.5 170.3 86.1 127.5 170.3 86.1 127.5 170.4 44 #323 417 517 200 0	8.5 6.1 46.6 46.6 0.004 0.004 0.031 0.31 0.31 0.31 0.31 0.31 0.35 0.029 0.029 0.30 0.31 0.31 0.31 0.31 0.31 0.31 0.31	Flash Dont Walk (s)								25.0				
85 6.1 46.6 0.06 0.004 0.31 0.05 0.004 0.31 0.05 0.20 1.06 1.70.3 86.1 127.5 1.70.3 86.1 127.5 1.70.3 86.1 127.5 1.70.3 86.1 1.	8.5 6.1 46.6 46.6 10.0   0.06 0.004 0.31 0.31 0.31   0.05 0.029 1.06 0.55   170.3 86.1 127.5 50.1   170.3 86.1 127.5 50.1   F F F F F B B   170.3 86.1 127.5 50.1   170.3 86.1 127.5 50.1   170.3 86.1 127.5 50.1   170.3 86.1 1   170.	Pedestrian Calls (#/hr)								0				
0.06 0.04 0.31 0.05 0.29 1.06 1.03 86.1 170.5 0.0 0.0 0.0 1.70.3 86.1 177.5 F F F F F F F F F F F F F F F F F F F	0.06 0.04 0.31 0.31 0.31 0.31 0.35 0.29 0.29 0.55 0.55 0.29 0.05 0.05 0.00 0.00 0.00 0.00 0.00 0.0	Act Effct Green (s)	8.5		6.1				46.6	46.6				29.6
0.95 0.29 1106 170.3 86.1 127.5 0.0 0.0 0.0 127.5 170.3 86.1 127.5 F F F F F F 177.4 44 #32.3 412 517 200 65 60 179 0 0 0 0	0.95 0.29 1.06 0.55 170.3 86.1 175.5 50.1 0.0 0.0 0.0 170.3 86.1 127.5 50.1 F F F P P P P P P P P P P P P P P P P P	Actuated g/C Ratio	90:0		0.04				0.31	0.31				0.19
170.3 86.1 127.5 170.3 1	170.3 86.1 127.5 50.1 0.0 0.0 0.0 170.3 86.1 127.5 50.1 170.3 86.1 127.5 50.1 F F F D D F T T	v/c Ratio	0.95		0.29				1.06	0.55				0.15
170.3 86.1 127.5   F F F F F F F F F F F F F F F F F F	0.0 0.0 0.0 0.0 170.3 86.1 127.5 50.1   F F F D F F F D F 170.3 86.1 86.1 82.6 1  1.70.3 86.1 82.6 F F F D F F F D D F F F F F D D F F F F F D D F F F F F F D D F F F F F F F D D F	Control Delay	170.3		86.1				127.5	50.1				55.4
170.3 86.1 127.5 F F F F F F F F F F F F F F F F F F F	170.3 86.1 127.5 50.1 F F D 170.3 86.1 F F D 170.3 86.1 F R 60 15 -147 207 412 517 200 65 60 179 482 0	Oueue Delay	0.0		0.0				0.0	0.0				0.0
170.3 86.1   F   F   F   F   F   F   F   F   F	170.3	Total Delay	170.3		86.1				127.5	50.1				22.7
## 170.3 86.1  F F F F F F F F F F F F F F F F F F F	170.3 86.1 826 F F F -147 207 #174 44 #32.3 337 412 517 200 65 60 179 482 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SOT	ш.		ш				ш	۵				_
F F F -147 #174 44 #323 412 517 200 65 60 179 0 0 0 0 0 0 0 0 0 0 0 0	F F F F F F F F F F F F F F F F F F F	Approach Delay	170.3		86.1					82.6				
60 15 -147 #174 44 #323 412 517 200 65 60 179 0 0 0 0	60 15 -147 207 #174 44 #323 337 412 517 200 65 60 179 482 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Approach LOS	ഥ		ш					ш				
#174 44 #323 412 517 200 65 60 179 n 0 0 0 0 0 0 0 0	#174 44 #323 337 412 517 200 1256  65 60 179 482  0	Queue Length 50th (ft)	09		15				~147	207				22
412 517 2.00 1 179 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	412 517 1266  65 60 179 482  0 0 0 0 0  0 0 0 0  0	Queue Length 95th (ft)	#174		44				#323	337				5
65 60 179 n 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	200 200 179 482	Internal Link Dist (ft)	412		217					1256				
65 60 179 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	n 65 60 179 482 n 0 0 0 0 0 0 0 0 0 0 0 0 0 0.95 0.27 1.06 0.55	Turn Bay Length (ft)							200					120
	n 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)	99		09				179	482				19.
	0 0 0 0 0 0 0 0 0.95 0.27 1.06 0.55	Starvation Cap Reductn	0		0				0	0				
0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn	0		0				0	0				
100	0.95 0.27 1.06 0.55	Storage Cap Reductn	0		0				0	0				0
0.75 0.27		Reduced v/c Ratio	0.95		0.27				1.06	0.55				0.15

Base 18 am 9/15/2014 Baseline

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Base 18 am 9/15/2014 Baseline

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

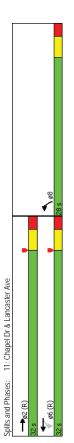
Annual Care Group   SWT SWR		×	<b>`</b>	
2 - 2	Lane Group	SWT	SWR	
2	Minimum Split (s)	13.0		
2	Total Split (s)	36.0		
	Total Split (%)	22.5%		
	Maximum Green (s)	30.0		
	Yellow Time (s)	4.0		
5 (2011 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	All-Red Time (s)	2.0		
z	Lost Time Adjust (s)	0.5		
Z	Total Lost Time (s)	6.5		
N	Lead/Lag	Lag		
N 1,01-11 11 # 16	Lead-Lag Optimize?			
_	Vehicle Extension (s)	3.0		
	Recall Mode	None		
ik (s) Is (#nn) Is (#nn) Ratio ((s) Ratio (s) Soth (f) Soth (f) (h) (h) (h) (h) (h) (h) (h) (h) (h) (h	Walk Time (s)			
Is (#/hx) Agatio (1(s) Soft (f) 95th (f) 95th (f) (vph) Neducth Reducth Recould	Flash Dont Walk (s)			
Agio Agio y y 1 5 oth (ft) 95th (ft) 1st (ft) (kph)	Pedestrian Calls (#/hr)			
katio  y y y Schr (f) Sch (f) Sch (h) (kyh) (kyh) (koh) Reducin Reducin Reducin manain	Act Effct Green (s)	29.6		
y y y y y y y y y y y y y y y y y y y	Actuated g/C Ratio	0.19		
y y 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	v/c Ratio	1.02		
y y 1	Control Delay	116.7		
y 50th (f) 95th (f) 95th (f) (vph) Reductin Reductin Reductin	Queue Delay	0.0		
y y y y y y y y y y y y y y y y y y y	Total Delay	116.7		
_	TOS	ш.		
_	Approach Delay	111.5		
2, #5, 301 0 1.1	Approach LOS	ш.		
#55 300 0 1.1.	Queue Length 50th (ft)	290		
301 1.1	Queue Length 95th (ft)	#545		
2.	Internal Link Dist (ft)	3088		
2 7:	Turn Bay Length (ft)			
= =====================================	Base Capacity (vph)	295		
1.0	Starvation Cap Reductn	0		
1.0	Spillback Cap Reductn	0		
	Storage Cap Reductn	0		
niersedion Summarv	Reduced v/c Ratio	1.02		
	Intersection Summary			

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am 9/15/2014 Baseline	

		1			NDL	NON	
Lane Configurations	₩,			44	>		
Volume (vph)	917	96	=	876	6	4	
Ideal Flow (vphpf)	1800	1800	1800	1800	1800	1800	
Lane Width (ft)	=	1	=	=======================================	12	12	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00	
Ĕ	986.0				0.961		
Flt Protected				0.999	996:0		
Satd. Flow (prot)	3196	0	0	3238	1638	0	
Flt Permitted				0.942	996.0		
Satd. Flow (perm)	3196	0	0	3053	1638	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	23				4		
Link Speed (mph)	32			32	25		
Link Distance (ft)	1609			1285	319		
Travel Time (s)	31.3			25.0	8.7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adi. Flow (vph)	266	103	12	1063	10	4	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1100	0	0	1075	14	0	
Enter Blocked Intersection	2	No	No.	8	N	N <sub>o</sub>	
Lane Alianment	Left	Riaht	Left	Left	Left	Right	
Median Width(ft)	12	,		12	12	•	
Link Offset(ft)	c			С	С		
Crosswalk Width(ft)	10			10	10		
Two way Left Tirm Lane	2			2	2		
Hoadway Factor	113	112	113	110	107	107	
Turning Speed (mph)	1.12	7 0	11.12	1.12	10.	0.0	
Number of Detectors	-		2 -	-	<u> </u>	,	
Detector Template	Thri		- Ha	Thri	- Ha		
Leading Detector (ft)	27		200	37	37		
Trailing Detector (ft)	, c		07	5 0	5 0		
naming Detector (ii)	ဂု င		0	ç, c	, c		
Detector 1 Position(ii)	ည် <u>ရှိ</u>		> 6	, ć	ئ د		
Defector 1 Size(rt)	40		07 -	40	40		
Detector 1 Type	C+EX		CI+EX	CI+EX	CHEX		
Detector 1 Extend (c)	0		0	0			
Detector 1 Oriena (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Turn Tyne	NA N		Perm	NA N	Prot		
Protected Phases	2			9	00		
Permitted Phases			9				
Detector Phase	2		9	9	00		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	4.0		
Minimum Split (s)	21.0		21.0	21.0	28.0		
Total Split (s)	32.0		32.0	32.0	28.0		
Total Split (%)	53.3%		53.3%	53.3%	46.7%		
Maximum Green (s)	27.0		27.0	27.0	23.0		
Yellow Time (s)	3.0		3.0	3.0	3.0		
		l					

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

	†	<i>&gt;</i>	<b>&gt;</b>	ţ	•	•
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.5			0.5	0.5	
Total Lost Time (s)	2.5			5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	C-Max		C-Max	C-Max	None	
Walk Time (s)	10.0		10.0	10.0	7.0	
Flash Dont Walk (s)	0.0		0.0	0.0	16.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	299			299	9.6	
Actuated g/C Ratio	0.94			0.94	0.09	
v/c Ratio	0.37			0.37	0.00	
Control Delay	1.5			3.2	22.5	
Queue Delay	0.0			0.0	0.0	
Fotal Delay	1.5			3.2	22.5	
SOT	V			A	ပ	
Approach Delay	1.5			3.2	22.5	
Approach LOS	V			A	ပ	
Queue Length 50th (ft)	0			0	e	
Queue Length 95th (ft)	100			326	9	
nternal Link Dist (ft)	1529			1205	239	
Furn Bay Length (ft)						
Base Capacity (vph)	3009			2873	919	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.37			0.37	0.05	
ntersection Summary						
Area Type:	Other					
Cycle Length: 60						
Actuated Cycle Length: 60						
Offset: 55 (92%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow	ed to phase	2:EBT ar	Id 6:WBT	L, Start o	f Yellow	
Natural Cycle: 60						
Control Type: Actuated-Coordinated	ordinated					
Maximum v/c Ratio: 0.37						
ntersection Signal Delay: 2.5	.5			⊒	Intersection LOS: A	LOS: A
ntersection Capacity Utilization 49.2%	ition 49.2%			೨	U Level o	CU Level of Service A
Analysis Period (min) 15						



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Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/9/2015

3/9/2015

FBL   FBF   WBL   WBT   WBR   NBL   NBF													
100   100	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
90 796 36 136 866 45 86 176 75 180 1800 1800 1800 1800 1800 1800 1800	Lane Configurations	*	₩		je-	₩		r	æ		<i>y</i> -	æ	
1800   1800	Volume (vph)	06	96/	36	136	826	45	98	176	75	79	218	48
10	Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
140	Lane Width (ft) Grade (%)	10	OL %	10	10	3%	10	10	2 %	10	10	2 %	2
1	Storage Length (ft)	140		0	70		0	105		0	99		
100   100	Storage Lanes	-		0	-		0	-		0	<del></del>		
1,00 0,95 0,95 1,00 0,95 0,95 1,00 1,00 1,00 0,95 0,95 0,95 0,95 0,95 0,95 0,95 0	Taper Length (ft)	25			25			25			25		
0.950 0.774 0.950 0.772 0.950 0.750 0.750 0.750 0.750 0.750 0.750 0.750 0.750 0.750 0.750 0.750 0.750 0.750 0.750 0.750 0.750 0.775 0.750 0.775 0.750 0.775 0.750 0.775 0.750 0.775 0.750 0.775	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
1550   3022   0   1497   2970   0   1512   1520   0     280   3022   0   290   2970   0   1512   1520   0     280   3022   0   290   2970   0   492   1520   0     1285   285   285   285   285   285     25.0   294   0.94   0.94   0.94   0.94   0.94     28, 5%   5%   5%   5%   5%   5%   5%     5%   5%	Fit Protected	0.950	0.77		0.950	0.772		0.950	0.73		0.950	0.73	
0.175	Satd Flow (prot)	1520	3022	C	1497	2970	C	1512	1520	C	1520	1557	
280 3022 0 290 2970 0 492 1520 0 1281	Fit Permitted	0.175		,	0.184		,	0.309		•	0.343		
1285   25   183   25   183   25   25   25   25   25   25   25   2	Satd. Flow (perm)	280	3022	0	290	2970	0	492	1520	0	549	1557	
35 35 35 2035 183 250 1285 183 250 250 250 250 250 250 250 250 250 250	Right Turn on Red			8			8			2			2
1285   2035   183   1285   183   1285   183   1285   183   1285   183	Satd. Flow (RTOR)												
1285   1285   183   1285   1285   183   1250   12	Link Speed (mph)		32			32			25			22	
25.0	Link Distance (ft)		1285			2035			183			973	
(%) 9% 8% 5% 5% 5% 5% 5% 5% 5% 5% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6%	Travel Time (s)		25.0			39.6			2.0			26.5	
(%) 9% 8% 5% 5% 5% 5% 5% 5% 5% 5% 5% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6%	Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
(%) 96 885 0 145 911 48 91 187 80 ection No	Heavy Vehicles (%)	2%	2%	2%	2%	5%	2%	2%	20%	2%	2%	23%	2%
(v,v)	Adj. Flow (vph)	96	84/	38	145	116	48	16	18/	80	87	787	2
ection No	Shared Lane Traffic (%) Lane Group Flow (vph)	%	885	0	145	959	0	16	267	0	78	283	
Left Left Right Left Right Left Right Left Right   Left R	Enter Blocked Intersection	8	9N	N N	8	9N	N N	9N	N	8	8	9	8
ane 1.17 1.17 1.19 1.19 1.19 1.18 1.18 1.18 1.19 1.19 1.17 1.17 1.19 1.19 1.19 1.18 1.18 1.18 1.10 1.10 1.19 1.19 1.18 1.18 1.18 1.18 1.2 1 0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
ame  1.17 1.17 1.17 1.17 1.17 1.17 1.19 1.19	Median Width(ft)		10			10			10			10	
10	Link Offset(ft)		0			0			0			0	
ane  1.17 1.17 1.17 1.19 1.19 1.19 1.18 1.18 1.18 1.18 1.18	Crosswalk Width(ft)		10			10			10			9	
1.17 1.17 1.17 1.19 1.19 1.19 1.18 1.18 1.18 1.18 1.18	Two way Left Turn Lane												
15   9   1	Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Color   Colo	Turning Speed (mph)	15	•	6	15	•	6	15	•	6	15	*	
(i) 1. (ii) 1. (iii)	Number of Detectors	- 4	0 1		- a	0 :		- 40	- ;		- 4	- ;	
3	Loading Detector (#)	27			37			132	27		132	27	
(i) -3 0 -3 0 -3 -3 -3 (1) -40	Trailing Detector (ft)	5 07	0		5 4	0		5 07	5 4		5 07	5 %	
40 6 40 6 40 40 6 40 40 6 6 40 40 6 6 6 40 40 6 6 6 6	Detector 1 Position(ff)	, c	0		, c	0		, c	, c		, c	, c	
CHEX CHEX CHEX CHEX CHEX CHEX CHEX CI-EX CHEX  3) 0.0 0.0 0.0 0.0 0.0 0.0  0.0 0.0 0.0 0.	Detector 1 Size(ft)	40	9		40	9		40	40		40	40	
s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 1 Channel												
) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
pm+cr NA pm+cr NA Perm NA 2 2 1 6 8 8 8 5 5 2 1 6 8 8 8	Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
2 2 2 6 6 8 8 6 6 8 8 8 6 6 8 8 8 8 6 8	Turn Type	pm+pr	NA C		pm+pt	¥		FeIII	ĕ°		FeIII	AN S	
2 2 1 6 8 8	Permitted Phases		7		- 4	o		α	0		V	+	
	Detector Dhace	4 гс	0		- c	4		οα	α			-	
	Switch Phase	0	7		-	0		0	0		t	+	
Minimum Initial (s) 3.0 34.0 34.0 3.0 3.0 3.0 3.0	Owner Filase												

Base 18 am 9/15/2014 Baseline

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lane Group ø9	
l and Configurations	
Laire Collingulations	
volume (vpn)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd Flow (RTOR)	
Link Speed (mph)	
Link Distance (#)	
Travel Time (s)	
Doak Hour Eactor	
Logar Vobiolog (97)	
Heavy venicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases 9	
Detector Phase	
Switch Phase	
Minimum Initial (s) 24.0	

26.7% 26.0 4.0 0.5 6.5 3.0 None 24.1 0.20 0.91 79.0 0.0 213 #365 893 0.86 330 F 76.1 65 116 0 0 0 0 26.0 20.7% 26.0 4.0 2.0 2.0 0.5 6.5 3.0 None 24.1 0.20 0.25 46.3 0.0 46.3 8 48 13.0 32.0 26.7% 26.0 4.0 2.0 2.0 0.5 199 #341 103 3.0 None 24.1 0.20 0.88 74.5 0.0 74.5 E E 323 13.0 32.0 26.7% 26.0 4.0 2.0 0.5 6.5 Cycle Longhr: 120 Actuated Cycle Length: 120 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection 3.0 None 69 #172 24.1 0.20 0.93 120.6 0.0 120.6 105 0 0 0 0 0 0 88. Intersection LOS: DICU Level of Service D 3.0 C-Max 40.0 49.0 43.0 4.0 2.0 2.0 6.5 6.5 Lag 359 #493 1955 49.2 0.41 0.79 31.2 0.0 C C C Analysis Period (min) 15
# 95lih percentile voludine exceeds capacity, queue may be longer.
Queue shown is maximum after tho cycles.
Wolume for 95th percentile queue is metered by upstream signal. 65 m#110 Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave 13.0 15.0 12.5% 9.0 4.0 2.0 0.5 6.5 Lead 57.5 0.48 0.65 29.1 0.0 C 70 3.0 C-Max 40.0 47.0 39.2% 41.0 4.0 2.0 0.5 6.5 Lag 47.3 0.39 0.74 37.1 0.0 37.1 D 36.2 D 36.2 D 34.8 1191 Intersection Signal Delay: 45.1 Intersection Capacity Utilization 78.2% 53.7 0.45 0.51 27.8 0.0 27.8 140 192 0 0 0 0 0 0 13.0 13.0 13.0 7.0 7.0 4.0 2.0 0.5 6.5 Lead 42 Control Type: Actuated-Coordinated Other Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio Total Lost Time (s)
Lead/ag
Lead-ag optimize?
Vehicle Extension (s)
Recall Mode
Walk Time (s)
Flash Dont Walk (s)
Pedestrian Calls (#hr)
Act Effct Green (s)
Actualed g/C Ratio
of Control Delay
Control Delay
LOS
Queue Leagth Sch (f)
Losal Delay
Total Delay
To Maximum v/c Ratio: 0.93 lane Group
Minimum Split (s)
Total Split (s)
Total Split (%)
Maximum Green (s)
Maximum Green (s)
All-Red Time (s)
Lost Time (s) ntersection Summary Vatural Cycle: 95

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Base 18 am 9/15/2014 Baseline

Synchro 8 Report Page 2

Base 18 am 9/15/2014 Baseline

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

	<b>↓</b>	32 s	89	32 s	
	€69 €60	265			
r Ave	•		•		
Splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave	<b>9</b> 2 (R)	, s	96 (R)		
i Phases:	,	47	4	49 s	
its and	, o	S	<b>₹</b>	S	

Lanes, Volumes, Timings

27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Minimum Spit (s) 26.0

Total Spit (s) 26.0

Maximum Green (s) 22%

Maximum Green (s) 22%

Maximum Green (s) 22%

Maximum Green (s) 24.0

Valled Irme (s) 2.0

All-Red Time (s) 3.0

All-Red Time (s) 4.0

All-Red Time (s) 4.0

All-Red Time (s) 4.0

And Eth (cen (s) 4.0

Actual Led Spit (m) 4.5

Actual Led Spit (m) 4.5

Actual Delay

Approach Loss

Queue Length Soft (t)

And Eth (cen (s) 4.0

Actual Delay

Approach Loss

Queue Length Soft (t)

And Eth (seen (s) 4.0

Actual Delay

Approach Loss

Approach Delay

Approach Loss

Approach Cap Reducin

Stranglor Cap Reducin

Stranglor Cap Reducin

Reduced Vic Ratio

Synchro 8 Report	Page 4
5/2014 Baseline	
Base 18 am 9/1	

Intersection Summary

HCM 2010 Signalized Intersection Summary 51: Lowrys Ln & Lancaster Ave

Movement EBL Lane Configurations 18 Volume (veh/h) 18 Number 5 Number 6 Ped-Bike Adj(A_pbT) 1.00 Parking Bus, Adj 100 Adj Sar Flow, veh/h) 1900 Adj Sar Flow, veh/h) 1900	EBT 4↑ 1056	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	415 1056			44							
	1056			\$ T			4			4	
	0	19	16	1084	22	47	104	39	22	11	19
	7	12	-	9	16	33	∞	18	7	4	14
	0	0 9	0 0	0	0 0	0 0	0	0 0	0	0	0 0
	5	8.6	8.6	0	8.5	00.1	1 00	00.1	0.1	100	1.00
	1748	1800	1773	1721	1773	1900	1845	1900	1881	1827	1881
	1135	20	17	1166	24	51	112	42	24	76	20
	2	0	0	2	0	0	-	0	0	-	0
Peak Hour Factor 0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, % 3	3	3	3	m	3	33	က	co	3	က	c
Cap, veh/h 74	2091	36	71	2061	42	120	154	21	102	186	43
٦.	1.00	1.00	0.65	0.65	0.65	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h 18	3203	26	15	3158	64	309	1046	349	200	1263	293
Grp Volume(v), veh/h 609	0	299	628	0	279	202	0	0	120	0	0
Grp Sat Flow(s),veh/h/ln 1697	0	1580	1682	0	1555	1704	0	0	1756	0	0
	0.0	0.0	0.0	0.0	12.4	3.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s 0.0	0.0	0.0	12.0	0.0	12.4	6.9	0.0	0.0	3.7	0.0	0.0
		0.04	0.03		0.04	0.25		0.20	0.20		0.17
p(c), veh/h	0	1032	1159	0	1015	326	0	0	331	0	0
V/C Ratio(X) 0.52	0.00	0.55	0.54	0.00	0.57	0.63	0.00	0.00	0.36	0.00	0.00
U	0	1032	1159	0	1015	426	0	0	431	0	0
0	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00
0	0.00	0.61	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
e	0.0	0.0	2.7	0.0	ω Θ	24.7	0.0	0.0	23.4	0.0	0.0
	0.0	1.3	1.8	0.0	2.3	2.0	0.0	0.0	0.7	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%),veh/ln	0.0	0.4	6.2	0.0	2.8	3.4	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh 1.0	0.0	1.3	7.5	0.0	8.1	26.7	0.0	0.0	24.1	0.0	0.0
LnGrp LOS A		A	Þ		A	ပ			ပ		
Approach Vol, veh/h	1174			1207			202			120	
Approach Delay, s/veh	1:1			7.8			26.7			24.1	
Approach LOS	⋖			⋖			S			S	
Timer 1	2	3	4	2	9	7	∞				
Assigned Phs	2		4		9		∞				
Phs Duration (G+Y+Rc), s	45.7		14.3		45.7		14.3				
Change Period (Y+Rc), s	0.9		2.0		0.9		2.0				
Max Green Setting (Gmax), s	36.0		13.0		36.0		13.0				
Max Q Clear Time (g_c+11), s	2.0		2.7		14.4		8.9				
Green Ext Time (p_c), s	13.7		0.7		11.2		0.5				
Intersection Summary											
HCM 2010 Ctrl Delay		7.1									
HCM 2010 LOS		A									
Notes											

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HCM 2010 Signalized Intersection Summary 16: Sproul Rd & Conestoga Rd

3/9/2015

3/9/2015

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	*	£,		r	2		r	£			4	
Volume (veh/h)	149	553	138	36	601	22	213	267	28	29	200	74
Number	7	4	14	3	∞	18	-	9	16	2	2	12
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
Adj Sat Flow, veh/h/ln	1748	1748	1800	1791	1791	1845	1739	1739	1791	1809	1756	1809
Adj Flow Rate, veh/h	164	809	0	40	099	0	234	293	31	62	220	81
Adj No. of Lanes	-	-	0	-	-	0	-	-	0	0	-	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	m	m	m	3	m	m	3	3	m	m	3	3
Cap, veh/h	200	874	0	272	657	0	309	976	61	93	236	81
Arrive On Green	0.07	0.50	0.00	0.37	0.37	0.00	0.07	0.37	0.37	0.23	0.23	0.23
Sat Flow, veh/h	1664	1748	0	822	1791	0	1656	1546	164	199	1013	348
Grp Volume(v), veh/h	164	809	0	40	099	0	234	0	324	363	0	0
Grp Sat Flow(s),veh/h/ln	1664	1748	0	822	1791	0	1656	0	1710	1560	0	0
Q Serve(g_s), s	5.3	24.0	0.0	3.5	33.0	0.0	6.5	0.0	13.2	16.0	0.0	0.0
Cycle Q Clear(g_c), s	5.3	24.0	0.0	15.5	33.0	0.0	6.9	0.0	13.2	20.9	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.10	0.17		0.22
Lane Grp Cap(c), veh/h	200	874	0	272	657	0	309	0	989	411	0	0
V/C Ratio(X)	0.82	0.70	0.00	0.15	1.00	0.00	97.0	0.00	0.51	0.88	0.00	0.00
Avail Cap(c_a), veh/h	200	874	0	272	657	0	309	0	989	411	0	0
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	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.3	17.3	0.0	27.8	28.5	0.0	26.2	0.0	21.9	34.3	0.0	0.0
Incr Delay (d2), s/veh	22.8	4.6	0.0		36.3	0.0	10.3	0.0	0.7	19.7	0.0	0.0
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(-26165%),veh/ln	3.6	12.6	0.0	6.0	22.9	0.0	3.7	0.0	6.3	11.2	0.0	0.0
LnGrp Delay(d), s/veh	44.1	21.8	0.0	29.0	64.8	0.0	36.5	0.0	22.6	54.0	0.0	0.0
LnGrp LOS	٥	ပ		ပ	ш		Ω		ပ	٥		
Approach Vol, veh/h		772			700			228			363	
Approach Delay, síveh		26.5			62.8			28.4			54.0	
Approach LOS		S			ш			S			Ω	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	-	2		4		9	7	∞				
Phs Duration (G+Y+Rc), s	12.5	27.0		50.5		39.5	12.0	38.5				
Change Period (Y+Rc), s	2.5	5.5		2.0		5.5	2.0	2.0				
Max Green Setting (Gmax), s	7.0	21.5		45.5		34.0	7.0	33.5				
Max Q Clear Time (g_c+I1), s	8 0	22.9		26.0		15.2	7.3	35.0				
Green Ext IIme (p_c), s	0:0	0.0		8.5		7.4	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			41.7									
HCM 2010 LOS			۵									

Base 18 am 9/15/2014 Baseline

HCM 2010 Signalized Intersection Summary 25: S Ithan Ave & Conestoga Rd

•	•	†	~	<b>\</b>	ţ	4	•	•	•	٠	<b>→</b>	•	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		4			4			4			4		
Volume (veh/h)	165	390	2	2	452	128	14	156	12	62	25	139	
Number	<del>-</del>	9	16	2	2	12	7	4	14	n	∞	18	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/In	1854	1783	1854	1764	1696	1764	1763	1695	1763	1844	1773	1844	
Adj Flow Rate, veh/h	204	481	7	2	228	158	17	193	15	77	64	172	
Adj No. of Lanes	0	-	0	0	-	0	0	-	0	0	-	0	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4	
Cap, veh/h	229	454	2	19	714	202	11	338	25	141	93	194	
Arrive On Green	0.56	0.56	0.56	0.56	0.56	0.56	0.23	0.23	0.23	0.23	0.23	0.23	
Sat Flow, veh/h	271	813	3	<u>_</u>	1280	361	29	1501	111	294	413	863	
veh/h	687	0	0	718	0	0	225	0	0	313	0	0	
Grp Sat Flow(s),veh/h/ln	1087	0	0	1642	0	0	1668	0	0	1570	0	0	
	12.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	
-c), s	33.5	0.0	0.0	20.8	0.0	0.0	7.2	0.0	0.0	11.4	0.0	0.0	
	0.30		0.00	0.00		0.22	80.0		0.07	0.25		0.55	
Lane Grp Cap(c), veh/h	982	0	0	716	0	0	440	0	0	428	0	0	
V/C Ratio(X)	1.00	0.00	0.00	0.74	0.00	0.00	0.51	0.00	0.00	0.73	0.00	0.00	
Avail Cap(c_a), veh/h	982	0	0	776	0	0	493	0	0	476	0	0	
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	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	
Uniform Delay (d), s/veh	15.4	0.0	0.0	10.5	0.0	0.0	20.8	0.0	0.0	22.3	0.0	0:0	
Incr Delay (d2), s/veh	35.2	0.0	0.0	5.9	0.0	0.0	6.0	0.0	0.0	5.1	0.0	0.0	
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(-26165%),veh/ln 17.9	17.9	0.0	0.0	10.0	0.0	0.0	3.4	0.0	0.0	9.6	0.0	0.0	
LnGrp Delay(d),s/veh	9.09	0.0	0.0	13.4	0.0	0.0	21.7	0.0	0.0	27.3	0.0	0.0	
LnGrp LOS	ш			В			ပ			ပ			
Approach Vol, veh/h		289			718			225			313		
Approach Delay, s/veh		9.09			13.4			21.7			27.3		
Approach LOS		٥			В			S			O		
Timer	_	2	3	4	2	9	7	8					
Assigned Phs		2		4		9		8					
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		20.0					
Change Period (Y+Rc), s		0.9		0.9		0.9		0.9					
Max Green Setting (Gmax), s		34.0		16.0		34.0		16.0					
Max Q Clear Time (g_c+I1), s		22.8		9.2		35.5		13.4					
Green Ext Time (p_c), s		5.4		1.3		0.0		9.0					
Intersection Summary													
HCM 2010 Ctrl Delay			29.8										
HCM 2010 LOS			ပ										

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HCM 2010 Signalized Intersection Summary 33: Williams Rd/Garrett Ave & Conestoga Rd

3/9/2015

3/9/2015

sr (To Mh	EBT	EBR	WBL	WBT			H	-	IMS	FWO	CIVID
	\$ 040				WBR	NEL	7	NE K	7440	2VV	200
	440			4			4			4	
	440	<del>-</del>	4	418	4	9	9	6	15	m	38
	7	12	<del>-</del>	9	16	3	00	18	7	4	14
	0	0	0	0	0	0	0	0	0	0	0
		1.00	1.00	,	1.00	1.00		1.00	1.00	,	1.00
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	1872	1872	1872	1872	1872	1800	1800	1800	1728	1728	1728
	200	- <	2	4/5	۵ د	- 0		2 9	= 0	ν <sub>τ</sub>	43
	- 00	000	000	- 00 0	0 00	000	- 00	0 00	0 00	- 00 0	000
Peak Hour Factor 0.88	0.88	0.00	0.00	0.88	0.08	0.08	0.88	0.08	0.88	0.88	0.00
0	1330	۰، د	0 00	1387	7	0 00	25.0	27	98	o 01	2 2
O O	0.75	0.75	0.75	0.75	0.75	0.05	0.05	0 05	0 0	0 0	0 05
	1774	e e	4	1842	19	333	655	706	325	147	1014
veh/h	0	0	485	0	0	24	0	0	63	0	ľ
/ln 1	0	0	1865	0	0	1695	0	0	1485	0	0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0
r(g_c), s	0.0	0.0	5.8	0.0	0.0	6.0	0.0	0.0	2.7	0.0	0.0
		0.00	0.01		0.01	0.29		0.42	0.27		0.68
p(c), veh/h	0	0	1454	0	0	160	0	0	148	0	0
V/C Katio(X) 0.37	0.00	0.00	1.454	0.00	0.00	0.15	0.00	00:0	0.43	0.00	0.00
	100	100	100	1 00	100	100	100	100	1 00	100	100
	0.00	0.00	1.00	0.00	0.00	1.00	0.00	00.0	1.00	0.00	0.00
eh	0.0	0.0	2.8	0.0	0.0	30.0	0.0	0.0	30.9	0.0	0.0
	0.0	0.0	9.0	0.0	0.0	9.0	0.0	0.0	2.8	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%),veh/ln	0.0	0.0	3.1	0.0	0.0	0.4	0.0	0.0	1.3	0.0	0.0
y(d),s/veh 3	0.0	0.0	3.4	0.0	0.0	30.6	0.0	0.0	33.6	0:0	0.0
-nGrp LUS A	100		A	100		ی			ی		
Approach Vol, veh/h	531			482			24			63	
Approach Delay, swen	3.0			3.4			30.6			33.0	
Appiloacii LOS	¥			۲			ر			ر	
Timer 1	2	3	4	2	9	7	∞				
Assigned Phs	2		4		9		∞				
Phs Duration (G+Y+Rc), s	26.0		10.0		26.0		10.0				
Change Period (Y+Rc), s	0.0		0.0		0.0		0.0				
Max O Clear Time (a c+11) s	20.0		0.01		20.0		0.00				
Steen Ext Time (p. c), s	4.6		0.1		4.6		0.2				
ptersection Summary											
HCM 2010 Cirl Delay		Z,									
HCM 2010 LOS		V									
Notes											
User approved pedestrian interval to be less than phase max green.	less than	phase m	lax green								

HCM 2010 Signalized Intersection Summary 3: County Line Rd & Spring Mill Rd

•	4	†	<u>/-</u>	<b>/</b>	Ļ	4	•	<b>—</b>	•	٠	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		÷			÷			÷			4	
Volume (veh/h)	32	280	09	62	265	78	41	250	45	33	328	53
Number	2	2	12	-	9	16	3	∞	18	7	4	14
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
Adj Sat Flow, veh/h/In	1800	1631	1800	1800	1731	1800	1800	1731	1800	1800	1731	1800
Adj Flow Rate, veh/h	37	295	63	92	279	82	43	263	47	35	345	26
	0	-	0	0	-	0	0	<del>-</del>	0	0	-	0
	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	101	909	122	144	554	150	86	368	62	84	402	62
_	0.50	0.50	0.50	0.50	0.50	0.50	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	74	1214	244	154	1110	301	112	1264	211	74	1380	214
Grp Volume(v), veh/h	395	0	0	426	0	0	353	0	0	436	0	0
Grp Sat Flow(s),veh/h/ln	1533	0	0	1565	0	0	1587	0	0	1669	0	0
	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0
Cycle Q Clear(g_c), s	10.3	0.0	0.0	9.01	0.0	0.0	12.3	0.0	0.0	15.4	0.0	0.0
	60.0		0.16	0.15		0.19	0.12		0.13	0.08		0.13
p(c), veh/h	828	0	0	848	0	0	278	0	0	549	0	0
	0.48	0.00	0.00	0.50	0.00	0.00	0.67	0.00	0.00	0.79	0.00	0.00
Avail Cap(c_a), veh/h	828	0	0	848	0	0	663	0	0	069	0	0
o.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	0.53	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
eh	10.4	0.0	0.0	10.4	0.0	0.0	19.8	0.0	0.0	21.0	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	2.1	0.0	0.0	1.0	0.0	0.0	3.9	0.0	0.0
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(-26165%),veh/ln	4.7	0.0	0.0	5.4	0.0	0.0	5.5	0.0	0.0	7.7	0.0	0.0
LnGrp Delay(d),s/veh	11.4	0.0	0.0	12.6	0.0	0.0	20.7	0.0	0.0	24.9	0.0	0:0
LnGrp LOS	В			В			ပ			ပ		
Approach Vol, veh/h		395			426			353			436	
Approach Delay, s/veh		11.4			12.6			20.7			24.9	
Approach LOS		В			Ω			S			S	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs		2		4		9		8				
Phs Duration (G+Y+Rc), s		37.4		24.6		37.4		24.6				
Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
Max Green Setting (Gmax), s		26.0		24.0		26.0		24.0				
Max Q Clear Time (g_c+I1), s		12.3		17.4		12.6		14.3				
Green Ext Time (p_c), s		3.0		1.2		3.0		1.4				
Intersection Summary												
HCM 2010 Ctrl Delay			17.4									
HCM 2010 LOS			В									
)			ì									

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HCM 2010 TWSC 79: Garrett Rd & Lancaster Ave

3/9/2015

3/9/2015

Int Delay, s/veh	3.9							
Movement	EBT	T EBR	~	WBL	WBT	NBL	NBR	
Vol, veh/h	1092		24	19	1122	0	26	
Conflicting Peds, #/hr		0	0	0	0	0	0	
Sign Control	Free	e Free	a	Free	Free	Stop	Stop	
RT Channelized		- None	a		None		None	
Storage Length				•			0	
Veh in Median Storage, #					0	0		
Grade, %		۲-		•	cs	0		
Peak Hour Factor			29	19	19	19	19	
Heavy Vehidles, %		0	0	0	0	0	0	
Mvmt Flow	1630		36	78	1675	0	39	
Major/Minor	Major1	~		Major2		Minor1	ı	ı
Conflicting Flow All		0	0	1666	0	2542	833	
Stage 1						1648		
Stage 2				•		894		
Critical Hdwy				4.1		8.9	6.9	
Critical Hdwy Stg 1		,		•		5.8		
Critical Hdwy Stg 2		,		•		5.8		
Follow-up Hdwy		,	,	2.2	,	3.5	3.3	
Pot Cap-1 Maneuver				391		23	316	
Stage 1		ì	,	•		145		
Stage 2		,		•		365		
Platoon blocked, %		ì						
Mov Cap-1 Maneuver				391		23	316	
Mov Cap-2 Maneuver		į	ļ	•		23		
Stage 1				•		145		
Stage 2						365		
Approach	ш	EB		WB		NB		
HCM Control Delay, s		0		7.3		18		
HCM LOS						O		
Winor Lane/Major Mvmt	NBLn1 EBT	T EBR	S WBL	WBT				
Capacity (veh/h)	316		- 391					
HCM Lane V/C Ratio	0.123	,	- 0.073					
HCM Control Delay (s)	18	ļ,	- 14.9	7.2				
HCM Lane LOS	ပ	į.	- B	V				
1CM 05th %tile O(veh)	V 0		0					

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HCM 2010 TWSC 15: Conestoga Rd & Spring Mill Rd

IIII Deldy, sivell 0.2									
Movement	EBL	EBT			WBT WBR	WBR	SWL	SWR	
Vol, veh/h	2	638			692	ĸ	4	80	
Conflicting Peds, #/hr	0	0			0	0	0	0	
Sign Control	Free	Free			Free	Free	Stop	Stop	
RT Channelized		None			٠	None		None	
Storage Length		•					0		
Veh in Median Storage, #		0			0		0		
Grade, %	•	0			0		0		
Peak Hour Factor	98	98			98	98	98	98	
Heavy Vehicles, %	4	4			4	4	4	4	
Mvmt Flow	2	742			802	m	2	6	
Major/Minor	Major1				Major2		Minor2		
Conflicting Flow All	808	0				0	1553	908	
Stage 1	ľ	٠					908		
Stage 2		٠			٠		747		
Critical Hdwy	4.14	•			•		6.44	6.24	
ritical Hdwy Stg 1	•	•			•		5.44		
Critical Hdwy Stg 2	•	٠			•		5.44		
-ollow-up Hdwy	2.236	•			•		3.536	3.336	
Pot Cap-1 Maneuver	809	٠			•		123	379	
Stage 1	•	•			•		436		
Stage 2	'	٠			•		465		
Platoon blocked, %		•			•				
Mov Cap-1 Maneuver	809	٠			•		123	379	
Mov Cap-2 Maneuver	•	•			•		123		
Stage 1		٠			•		436		
Stage 2		•					463		
Approach	EB				WB		MS		
HCM Control Delay, s	0				0		22.1		
HCM LOS							ပ		
Minor Lane/Maior Mymt	EB	FBT	WBT	WBRSWI n1					
Capacity (web(h)	000			VCC					
Sapacity (verinil)	0003			- 0.062	+ ^				
HCM Control Delay (s)	9.5	0		- 22.1					
HCM Lane LOS	A	A	٠						

t	_
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Intersection Int Delay, S/veh  3.7  Wovement EBL EBT  Vol. vehin 47 423  Conflicting Peds, #/hr 0 0  Sign Control  RT Channellzed - 0  Sign Control  RT Channellzed - 0  Grade, % 0  Peak Hour Factor 80 80  Heavy Vehicles, % 0  Sade, % 0  Sade, % 0  Chadle, % 0  Chad	TEBR 14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	WBI. 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	WBT 456 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	WBR 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NBL 13 Stop 80	NBT 14 0 Stop			
3.7  EBL 47 0 0 Free				WBR 5 6 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	13 13 13 10 0 0 Stop				
EBI 47 47 47 47 47 47 47 47 47 47 47 47 47				WBR 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NBL 13 0 0 Stop 0				
Free 80 8 9 59 59 576 576				None None 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	133 Stop 80 80 80 80 80 80 80 80 80 80 80 80 80		2	-	F
Free		6 Free 80 8 8 9 8 111 111 111	Free 80 80 80 970 970 970 970 970 970 970 970 970 97	None 80 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Stop 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			3BL	15 15
Free 80 3 3 59 59 576 576		Free 80 3 3 111 111	Free 0 0 0 80 80 3 3 570 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	None 80	Stop			0	20
age,#		80 80 3 3 111 Major2 546	0 0 80 80 3 3 3 570	None			Š	Stop	Stop
	8 -	80 80 3 3 111 111 546	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8 8 6					•
age.,# 80 80 80 93 95 95 95 976 976 976	8 +		0 80 80 3 3 570 0	88 80	80 4		٠	•	•
80 80 3 59 Major1		80 3 11 11 Major2 546	80 3 3 570 0	. 8 % 0 .	. 08 6.				0
80 3 59 Major1 576		80 3 11 11 Major2 546	80 3 570 0	9 9 0 '	80	0	٠	٠	0
3 59 Major1 576		3 11 Major2 546	570	0 0	3,			8	80
59 Major1 576		11 Major2 546	570	9 0 '	14	33	3	3	က
Ma		Major2 546	0 '	0 '	2			2	19
Wa		Major2 546	0 '	0					
		546	0 '	0 '	Minor1			Minor2	
Chang 1			•		1312	_	538	1267	1260
Stage -					929			296	969
Stage 2		•	٠		657			671	664
Critical Hdwy 4.13		4.13	'		7.13		6.23	7.13	6.53
Critical Hdwy Stg 1		•	•		6.13	5.53		6.13	5.53
12			٠		6.13			6.13	
2.		2.227	•		3.527	4	3	3.527	4.027 3.327
Pot Cap-1 Maneuver 992		1018	١		135		541	145	170
Stage 1					453			488	490
Stage 2		•	'		452	489		444	457
			•						į
Mov Cap-1 Maneuver 992		1018	1		3 8	154	541	119	153
viov Cap-z ivialieuvei Stage 1					414			446	482
Stage 2					342			378	418
Approach		WB			NB			SB	
HCM Control Delay, s 0.9		0.2			39.8			20	
HCM LOS					ш			O	
Minor Lane/Major Mvmt NBLn1 EBL	EBT	EBR WBL	WBT	WBT WBR SBLn1	Ln1				
Capacity (veh/h) 151 992	. 2	- 1018		,	363				
0.323 0.		- 0.011	1	- 0.344	344				
ay (s) 39		9.8	0		20				
HCM Lane LOS E A	A T	Α .	V		ပ				

Lanes, Volumes, Timings 38: County Line Rd & N Ithan Ave

																												1			
																														ce D	
4	SWR		101	1900	1.00			0		0				0.91	111		0	8	Right					1.00	6					of Servic	
<b>\</b>	SWL	×	155	1900	1.00	0.947	0.971	1713	0.971	1713	30	824	18.7	0.91	170		281	2	Left	12	0	10		1.00	15	Stop				ICU Level of Service D	
<b>→</b>	SBT	₩	299	1900	1.00		0.982	1829	0.982	1829	30	1901	43.2	0.91	329		513	8	Left	0	0	10		1.00		Stop				⊇	
<b>&gt;</b>	SBL		167	1900	1.00			0		0				0.91	184		0	No No	Left					1.00	15						
*_	NBR		110	1900	1.00			0		0				0.91	121		0	9	Right					1.00	6						
<b>←</b>	NBT	+	345	1900	1.00	0.967		1801		1801	30	295	6.7	0.91	379		200	N N	Left	0	0	10		1.00		Free		Other		n 74.6%	
	Lane Group	Lane Configurations	Volume (vph)	ideal Flow (vphpl)	Lane Util. Factor	Frt	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Link Speed (mph)	Link Distance (ft)	Travel Time (s)	Peak Hour Factor	Adj. Flow (vph)	Shared Lane Traffic (%)	Lane Group Flow (vph)	Enter Blocked Intersection	Lane Alignment	Median Width(ft)	Link Offset(ft)	Crosswalk Width(ft)	Two way Left Turn Lane	Headway Factor	Turning Speed (mph)	Sign Control	Intersection Summary	Area Type: Oth	Control Type: Unsignalized	Intersection Capacity Utilization 74.6%	Analysis Period (min) 15

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Base 18 am 9/15/2014 Baseline

	•	۴	_#	•	€	4	
Lane Group	EBL	EBR	SBL	SBR	NWL	NWR	
Lane Configurations	>		>		×		
Volume (vph)	203	15	141	335	38	255	
Ideal Flow (vphpf)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ē	0.991		0.905		0.882		
Flt Protected	0.956		0.985		0.994		
Satd. Flow (prot)	1765	0	1660	0	1633	0	
Flt Permitted	0.956		0.985		0.994		
Satd. Flow (perm)	1765	0	1660	0	1633	0	
Link Speed (mph)	30		30		30		
Link Distance (ft)	973		295		2020		
Travel Time (s)	22.1		6.7		45.9		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	216	16	150	356	40	271	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	232	0	206	0	311	0	
Enter Blocked Intersection	9	N N	No No	N <sub>o</sub>	8	No	
Lane Alignment	Left	Right	Left	Right	Left	Right	
Median Width(ft)	22		12		12		
Link Offset(ft)	0		0		0		
Crosswalk Width(ft)	10		10		10		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	6	15	6	15	6	
Sign Control	Stop		Free		Stop		
Intersection Summary							
Area Type:	Other						
Control Type: Unsignalized							
Intersection Capacity Utilization 68.4%	ion 68.4%			C	U Level o	ICU Level of Service C	
Analysis Period (min) 15							

Synchro 8 Repo	-
: 18 am 9/15/2014 Baseline	
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HCM 2010 TWSC 53: County Line Rd & Lowrys Ln

HCM 2010 TWSC 52: Airdale Rd & County Line Rd

3/9/2015

Int Delay, s/veh 3.7	7					
Movement	EBL	EBR	NBL	L NBT	SBT	SBR
Vol, veh/h	19	81	D.	58 238	150	30
Conflicting Peds, #/hr	0	0		0 0	0	0
Sign Control	Stop	Stop	Free	e Free	Free	Free
RT Channelized		None		- None		None
Storage Length	0	1			•	
Veh in Median Storage, #	0			0 -	0	
Grade, %	0	•			0	
Peak Hour Factor	87	87	ω	87 87	87	87
Heavy Vehicles, %	0	0		0 0	0	0
Mvmt Flow	0/	93	9	7 274	172	34
Major/Minor	Minor2		Major1	-	Major2	
Conflicting Flow All	265	190	207	0 4	'	0
Stage 1	190	•				
Stage 2	407				•	
Critical Hdwy	6.4	6.2	4.1			
Critical Hdwy Stg 1	5.4	1			,	
Critical Hdwy Stg 2	5.4	•			•	
Follow-up Hdwy	3.5	3.3	2.2	2 -	1	
Pot Cap-1 Maneuver	469	857	1376	- 9.		
Stage 1	847				•	
Stage 2	9/9	•			•	
Platoon blocked, %					•	
Mov Cap-1 Maneuver	442	857	1376	- 9	•	
Mov Cap-2 Maneuver	442				•	
Stage 1	847				•	
Stage 2	637				•	
Approach	EB		Z	NB	SB	
HCM Control Delay, s	13		1.5	5	0	
HCM LOS	В					
Winor Lane/Major Mvmt	NBL	NBT EBLn1	SBT SBR	R		
Capacity (veh/h)	1376	- 611				
HCM Lane V/C Ratio	0.048	- 0.267				
HCM Control Delay (s)	7.7					
HCM Lane LOS	A	A B				
HCM 95th %tile Q(veh)	0.2					

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Movement						
Movement						
	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	203	220	288	70	15	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free Free	Free	Free	Free Free	Stop	Stop
RT Channelized	-	None		None		None
Storage Length	٠		•		0	
Veh in Median Storage, #		0	0		0	
Grade, %	٠	0	0		0	
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	-	<del>-</del>	_	<b>.</b>	<b>—</b>	<del>-</del>
Mvmt Flow	231	250	327	23	17	111
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	320	0	'	0	1050	339
Stage 1	٠				339	
Stage 2	٠		٠		711	
Critical Hdwy	4.11				6.41	6.21
Critical Hdwy Stg 1	٠				5.41	
Critical Hdwy Stg 2	٠				5.41	
Follow-up Hdwy	2.209		•		3.509	3.309
Pot Cap-1 Maneuver	1214		•		253	907
Stage 1	•				724	
Stage 2	٠		•		489	
Platoon blocked, %			•			
Mov Cap-1 Maneuver	1214		•		197	902
Mov Cap-2 Maneuver	٠		•		197	
Stage 1	٠				724	
Stage 2	·		•		381	
Approach	EB		WB		SB	
HCM Control Delay, s	4.2		0		14	
HCM LOS					В	
Minor Lane/Major Mvmt	EBL	EBT WBT WBR	WBR SBLn1			
Capacity (veh/h)	1214		526			
HCM Lane V/C Ratio	0.19		0.244			
HCM Control Delay (s)	8.7	. 0	- 14			
HCM Lane LOS	V	Α .	<u>~</u>			

HCM 2010 TWSC 43: County Line Rd & Roberts Rd

FBI	nt Delay, síveh 27.2	.2												
Feb.   EBI   EBI   WBI														
Numary   N	Iovement	EBL	EBI	EBK	WBL	WBI	WBK	NB			NBK	SBL	SBI	SBR
Stop	ol, veh/h	19	100	00	2	23	9	_		19	26	∞	473	38
Stop   Stop   Stop   Stop   Stop   Stop   Stop   Stop	conflicting Peds, #/hr	0	0	0	0	0			0	0	0	0	0	0
99c.# None None	ign Control	Stop			Stop			Fre			Free	Free	Free	Free
99e, #	T Channelized		•	None		•				2	None		٠	None
99c.# . 0 0 0 0 0  8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	torage Length		•			•	•						•	ľ
See	eh in Median Storage, #		0			0	٠			0			0	ľ
Minor   88 88 88 88 88 88 88 88 88 88 88 88 8	irade, %		0			0	•		,	0		•	0	
Minor2 Minor1 Major1 Major1 141 9 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	eak Hour Factor	88	88	88	88	88	88	8	00	88	88	88	88	88
Minor	leavy Vehicles, %	2	2	2	2	2	2		2	2	2	2	2	2
Minor2 Minor1 Minor1 Minor1 Minor1 Minor2 Minor1 Mi	Ivmt Flow	76	114	6	2	26	7	_		03	30	6	238	43
Minor2														
974 1342 290 1094 1349 366 581     974 1342 290 1094 1349 366 581     977 1347	1ajor/Minor	Minor2			Minor1			Major	<del>-</del>			Major2		
177   577   750	onflicting Flow All	974	1342	290	1094	1349	366	28	-	0	0	733	0	0
397 765	Stage 1	577	577		750	750	٠							ľ
Fig. 6.54 6.94 7.54 6.94 6.94 4.1.  6.54 5.54 - 6.54 5.54 5.54 - 6.54 5.54 5.54 - 6.54 5.54 5.54 5.54 5.54 5.54 5.54 5.54	Stage 2	397	765		344	266	٠		,	,			1	ľ
Fig. 6.54 5.54 . 6.54 5.54 6.54 5.54 6.54 5.54 6.54 5.54 6.54 5.54 6.54 5.54	ritical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.1	4			4.14		ľ
12   12   12   13   14   15   15   15   15   15   15   15	ritical Hdwy Stg 1	6.54	5.54		6.54	5.54	•						•	ľ
FILE OF THE PROPERTY SET A 102 3.3.2 2.2. 2.2. 2.0. 2.0. 2.0. 15. 17. 17. 18. 14.9 6.3.1 98. 14.9 6.3.1 98. 14.9 6.3.1 98. 14.0 14.0 14.5 17.0 14.5 17.0 14.5 17. 14.3 17. 14. 17. 14. 17. 14. 17. 14. 17. 14. 17. 14. 17. 14. 17. 14. 17. 14. 17. 14. 17. 17. 17. 17. 17. 17. 17. 17. 17. 17	ritical Hdwy Stg 2	6.54	5.54		6.54	5.54	٠					٠	٠	
206 151 707 168 149 631 998 469 500 - 369 417 - 645 600 410 - 645 489 - 645 170 145 707 57 143 631 988 170 145 707 57 143 631 988 170 145 707 57 143 631 988 2069 - 488 482 - 688 2069 - 359	ollow-up Hdwy	3.52		3.32	3.52	4.02	3.32	2.2	7			2.22	•	ľ
469   500   369   417   .	ot Cap-1 Maneuver	206		707	168	149	631	86	6			898	•	
170   145   707   57   143   631   988   170   145   707   57   143   631   988   170   145   645   489   170   145   645	Stage 1	469	200		369	417	•		,	,			1	
170   145   707   57   143   631     170   145	Stage 2	009	410		645	489	•		,	,		•	•	
170	latoon blocked, %												•	
170	lov Cap-1 Maneuver	170	145		27	143		88	6			898	•	
456   493     359   406       EB	lov Cap-2 Maneuver	170		,	22	143	•				,	•	•	
EB WB AB AB2	Stage 1	426			329	406						٠	•	
206.9 35.9  206.9 35.9  F E  INBL NBT NBREBLINWBLn1 SBL SBT SBR 989 - 160 151 868 0.016 - 1.243 0.233 0.01 8.7 0.1 - 206.9 35.9 9.2 0.1 - A A F F E A A 0 114 0.9 0	Stage 2	540			483	482							•	Ċ
206.9 35.9  206.9 35.9  F E  NBL NBT NBREBLINWBLn1 SBL SBT SBR 989 - 160 151 868 0.016 - 1.243 0.233 0.01 8.7 0.1 - 206.9 35.9 9.2 0.1 - A A F F F A A A - 0 11.4 0.9 0														
206.9 35.9  F	pproach	EB			WB			Z	<u></u>			SB		
F E E E E E E E E E E E E E E E E E E E	ICM Control Delay, s	206.9			35.9			0.	c,			0.2		
NBL NBT NBREBLnTWBLn1 SBL SBT 989	CM LOS	ш.			ш									
NBL NBT NBREBLINGBLNT SBL SBT   989   160 151 868   1243 0.333 0.01   1243 0.353 0.01														
989 160 151 868 0.016 1243 0.233 0.01 8.7 0.11 . 206.9 35.9 9.2 0. A A F E A 0 114 0.9 0	linor Lane/Major Mvmt	NBL	NBT	NBR EBLI	11WBLn1	SBL	SBT	SBR						
0.016 - 1.243 0.233 0.01 8.7 0.1 - 206.9 35.9 9.2 0. A A F F E A 0 - 114 0.9 0	apacity (veh/h)	686		٠.		898								
8.7 0.1 - 206.9 35.9 9.2 0. A A - F E A 0 - 114 09 0	ICM Lane V/C Ratio	0.016	1	- 1.2	43 0.233	0.01								
A A - F E A 0 0 0	ICM Control Delay (s)	8.7	0.1			9.2	0.1							
0 - 114 09	CM Lane LOS	A	V		H H	V	A							
00 1:1-	HCM 95th %tile Q(veh)	0		- 11	.4 0.9	0	٠							

Synchro	<u> </u>
s am 9/15/2014 Baseline	
	Base 18 am 9/15/2014 Baseline Synct

Intersection													
veh	2.1												
Movement	EBL	EBT	EBR	WBL	L WBT	WBR		NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	358	6	7	16 193	ĺ		7	-	12	16	0	
Conflicting Peds, #/hr	0	0		_					0		0		
Sign Control	Free	Free		Free	e Free	Free		Stop	Stop	Stop	Stop	Stop	Stop
Storage Length			100							i i			Ž
Veh in Median Storage, #	ľ	0	٠			ľ			0		ľ	0	
Grade, %	٠	0	٠		- 0			٠	0		•	0	
Peak Hour Factor	81	8	81	81	1 81	8		83	81	81	8	8	
Heavy Vehicles, %	4	4	4	•				4	4	4	4	4	
Mvmt Flow	=	442	=	2	) 238	16		6	-	12	20	0	
	-						2	7	П		4		
Conflicting Flow All	254	0	0	10(a)(1)	0	0	Σ	793	764	448	764	761	246
Stage 1				!				470	470		286		
Stage 2		•	٠					323	294		478		
Critical Hdwy	4.14	•	٠	4.14	-	Ť			6.54	6.24	7.14	6.54	6.24
Critical Hdwy Stg 1	•		í						5.54	í	6.14	5.54	
Critical Hdwy Stg 2		1	٠		Ì			6.14			6.14	5.54	
Follow-up Hdwy	2.236	•	٠	2.236			(.,	3.536 4.036		3.336	3.536	4	$\sim$
Pot Cap-1 Maneuver	1300		٠	/601				304	33	/09	318	333	200
Stage 2								685	999		292	554	
Platoon blocked, %		•	٠										
Mov Cap-1 Maneuver	1300	1		1097		Ť		569	320	607	302	322	788
Mov Cap-2 Maneuver	•	•	•					569	320		302	322	
Stage 1	•	1	٠			1		264	221		709	657	
Stage 2								809	652		544	548	
Approach	EB			WB	~			R			SB		
HCM Control Delay, s	0.2			9.0	۰			14.4			12.3		
HCM LOS								В			В		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR WBL	L WBT	WBR	WBR SBLn1						
Capacity (veh/h)	409	1300		- 1097			289						
HCM Lane V/C Ratio	90.0	0.06 0.009		- 0.018			0.159						
HCM Control Delay (s)	14.4	7.8	0	- 8.3		•	12						
HCM Lane LOS	В	⋖	A	Α .	4 A		В						
HCM 95th %tile Q(veh)	0.2	0	٠	- 0.1	_		9.0						

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

ane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
ane Configurations		K.	‡		*-		je z	₩				4
Volume (vph)	4	249	984	30	282	2	72	852	33	7	52	0
deal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
ane Width (ft)	10	10	= 3	Ξ	14	10	12	12	12	10	10	10
Grade (%)		000	3%	•			ŀ	-7%			•	%
storage Length (ft)		300		0			75				0	
Storage Lanes		- 1		-			- 5				0 [	
aper Length (ft)	i c	722	L	i c	6	i c	25	L C	0	0	25	
ane Util. Factor	0.95	1:00	0.95	0.95	1.00	0.95	1:00	0.95	0.95	1.00	1.00	1.00
_			966.0		0.850			0.994				0.975
- It Protected		0.950					0.950					0.961
Satd. Flow (prot)	0	1541	3180	0	1576	0	1693	3366	0	0	0	1536
It Permitted		0.105					0.189					0.753
Satd. Flow (perm)	0	170	3180	0	1576	0	337	3366	0	0	0	1203
Right Turn on Red					Yes				Yes			
satd. Flow (RTOR)					222			196				
ink Speed (mph)			32					35				25
ink Distance (ft)			277					1609				492
ravel Time (s)			11.2					31.3				13.4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	257	1014	31	291	2	23	878	34	7	54	0
Shared Lane Traffic (%)												
ane Group Flow (vph)	0	261	1045	0	291	0	22	912	0	0	0	75
Enter Blocked Intersection	No	9	N N	9	2	9	9	8	9	No No	No No	No
ane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Left	Left	Left
Median Width(ft)			12					12				0
ink Offset(ft)			0					0				0
Crosswalk Width(ft)			10					10				10
wo way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.18	1.18	1.18
urning Speed (mph)	15	15		6	6	15	15		6	15	12	
Number of Detectors	_	<del></del>	<del>-</del>		<del>-</del>	<del>-</del>	-	_		-	_	_
Detector Template	Left	Left	Thru		Right	Left	Left	Thru		Left	Left	Thru
eading Detector (ft)	70	37	37		37	70	37	37		70	20	37
railing Detector (ft)	0	ς'n	ς'n		ကု	0	ņ	ς'n		0	0	5-
Detector 1 Position(ft)	0	ကု	۲-		ကု	0	ကု	ç,		0	0	٠-
Detector 1 Size(ft)	70	40	40		40	20	40	40		70	20	40
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Extend (c)	0	0	0		0	0	0	0		0	0	0
Defector 1 Onene (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	00	0.0	0.0		0.0	00	0 0	0 0		0.0	00	00
urn Type	pm+pt	pm+pt	Ϋ́		Perm	Perm	Perm	AN		Perm	Perm	X
Protected Phases	വ	2	2					9				10
Permitted Phases	2	2			2	9	9			10	10	
Detector Phase	2	2	2		2	9	9	9		10	10	10
Switch Phase	c	c	-		, ,	7	7	7		c	c	c
William IIIII (S)	2.0	0.0	0.01		0.0	0.0	0.0	0.0		0.0	0.0	
	0 0	0	0		0		0					7

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Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/10/2015

	-				•	4	,	`	•	•		٠
Lane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2
Lane onfigurations					4				μş	æ		
Volume (vph)	4	10	<del>-</del>	<del>-</del>	0	က	14	191	0	112	20	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	=	=	=
Grade (%)					-3%					3%		
Storage Length (ft)	0			0		0			200		0	
Storage Lanes	0			0		0			<del></del>		0	
Taper Length (ft)				25					25			
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
분					0.879					926.0		
Fit Protected					0.995				0.950			
Satd. Flow (prot)	0	0	0	0	1462	0	0	0	1651	1640	0	0
Fit Permitted					0.982				0.121			
Satd. Flow (perm)	0	0	0	0	1443	0	0	0	210	1640	0	0
Right Turn on Red		No No					9					ž
Satd. Flow (RTOR)												
Link Speed (mph)					25					40		
Link Distance (ft)					265					1336		
Travel Time (s)					16.3					22.8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	10	-	-	0	3	14	197	0	115	21	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	19	0	0	0	197	137	0	0
Enter Blocked Intersection	2	No No	No No	No No	No No	8	8	No No	9	8	No No	8
Lane Alignment	Right	Right	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right
Median Width(ft)					0					12		
Link Offset(ft)					0					0		
Crosswalk Width(ft)					10					10		
Two way Left Turn Lane												
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.15	1.15	1.09	1.09	1.14	1.14	1.14
Turning Speed (mph)	6	6	12	12		6	6	12	12		6	
Number of Detectors					<b>—</b>				- :	,— i		
Detector Template			le#	le#				Lett	E E	Ihru		
Leading Detector (ft)			70	70	37			70	37	3/		
I railing Detector (ft)			0	0	ņ			0	ئ.	Ϋ́		
Detector 1 Position(ft)			0	0	ကု			0	-3	က		
Detector 1 Size(ft)			70	70	40			70	40	40		
Detector 1 Type			CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0			0.0	0.0	0:0		
Detector 1 Queue (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Delay (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Turn Type			Perm	Perm	¥			pm+pt	pm+pt	NA		
Protected Phases			•	•	6			က	က	00		
Permitted Phases			6	6				∞	∞			
Detector Phase			6	6	6			3	2	00		
Switch Phase												
Minimum Initial (s)			3.0	3.0	3.0			3.0	3.0	3.0		

NB 18 pm 9/16/2014 Baseline

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

		۰				
Lane Group	SWL2	SWL	SWT	SWR	SWR2	
Lane Configurations		K	£			
Volume (vph)	36	6	166	235	<del></del>	
deal Flow (vphpl)	1800	1800	1800	1800	1800	
Lane Width (ft)	10	10	10	10	10	
Grade (%)			-1%			
Storage Length (ft)		120		0		
Storage Lanes		-		0		
Taper Length (ft)		22				
Lane Util. Factor	1:00	1:00	1:00	1.00	1.00	
Ŧ			0.912			
Fit Protected		0.950				
Satd. Flow (prot)	0	1619	1555	0	0	
Fit Permitted		699.0				
Satd. Flow (perm)	0	1140	1555	0	0	
Right Turn on Red					No	
Satd. Flow (RTOR)						
Link Speed (mph)			22			
Link Distance (ft)			3168			
Fravel Time (s)			86.4			
Peak Hour Eactor	0 07	0.07	0.07	0.07	79.0	
Adi Flow (ynh)	40.V	0	17.1	24.0		
Auj. r IOW (vpir)	₽		=	747	_	
laled Lalle Hallic (70)	•	ç	414	c	c	
Lane Group Flow (vpn)	0	44	4 14	0	٥	
Enter Blocked Intersection	9 .	No.	9 ·	2	NO	
Lane Alignment	Left	Left	Left	Right	Right	
Wedian Width(ft)			7.5			
Link Offset(ff)			0			
Crosswalk Width(ft)			10			
Iwo way Left Turn Lane						
Headway Factor	1.12	1.12	1.12	1.12	1.12	
Turning Speed (mph)	12	12		6	6	
Number of Detectors		_	_			
Detector Template	Left	Left	Thru			
Leading Detector (ft)	70	37	37			
Frailing Detector (ft)	0	ç,	ç,			
Detector 1 Position(ft)	0	ς'n	ကု			
Detector 1 Size(ft)	20	40	40			
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex			
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0	0.0			
Turn Type	Perm	Perm	NA			
Protected Phases			4			
Permitted Phases	4	4				
Detector Phase	4	4	4			
Switch Phase						
Minimum Initial (s)	3.0	3.0	3.0			
Minimum Split (s)	13.0	13.0	13.0			

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/10/2015

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Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Total Split (s)	24.0	24.0	62.0		62.0	38.0	38.0	38.0		15.0	15.0	15.0
Total Split (%)	16.0%	16.0%	41.3%		41.3%	25.3%	25.3%	25.3%		10.0%	10.0%	10.0%
Maximum Green (s)	18.0	18.0	26.0		26.0	32.0	32.0	32.0		0.6	0.6	0.6
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				0.5
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				6.5
Lead/Lag	Lead	Lead				Lag	Lag	Lag		Lag	Lag	Lag
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None		None	None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		97.9	97.9		9.29		31.6	31.6				8.5
Actuated g/C Ratio		0.38	0.38		0.38		0.22	0.22				90:0
v/c Ratio		1.13	98.0		0.39		0.34	1.03				1.07
Control Delay		137.6	49.8		10.1		65.2	80.8				188.7
Queue Delay		0.0	0.0		0.0		0.0	0.0				0.0
Total Delay		137.6	49.8		10.1		65.2	80.8				188.7
TOS		ш	٥		В		ш	ш				ш
Approach Delay			26.9					80.4				188.7
Approach LOS			ш					ш				ш
Queue Length 50th (ft)		~260	203		44		21	~429				-83
Queue Length 95th (ft)		#447	602		120		26	#267				#197
Internal Link Dist (ft)			497					1529				412
Turn Bay Length (ft)		300					75					
Base Capacity (vph)		230	1221		741		73	988				20
Starvation Cap Reductn		0	0		0		0	0				0
Spillback Cap Reductn		0	0		0		0	0				0
Storage Cap Reductn		0	0		0		0	0				0
Reduced v/c Ratio		1.13	98.0		0.39		0.34	1.03				1.07
Intersection Summary												
	Other											
Cycle Length: 150												
Actuated Cycle Length: 144.8	∞											
Natural Cycle: 150	7											
Control Type: Actuated-Uncoordinated	oordinated											
Maximum V/C Ratio: 1.13				2		0						
Intersection Signal Delay: 75.9	).y ilon 116 00			= =	Intersection LOS: E	LOS: E	_					
Analysis Period (min) 15	10.07	0		2	ח רבאבו ה	J SCI VICE	=					
Volume aggregation	oi oriona re	thorogen	tinijai i dlo									
<ul> <li>Volume exceeds capacity, queue is theoretically infinite.</li> </ul>	y, queue is	meoreiic	ally infinit	a;								
Cueue snown is maximum after two cycles.	n alter two	cycles.	TOW OTTO	opuol od								
Orong chang is maximum after two cycles.	woffer two	ovelor	ene may	ne iorige								
Queue shown is maximum arel two cycles	II ditei two	cycles.										

NB 18 pm 9/16/2014 Baseline

Lanes, Volumes, Imings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave	Ln/Kenilwor	th Rd & Lancaster Ave	3/10/2015
Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave	wyn Ln/Kenilwortl	ו Rd & Lancaster Ave	
<b>*</b>	<b>₩</b>	<sup>4€</sup> ×	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
52.5	17.5	43.5	13s 15s
9¢ <b>4</b> \$5¢	8,6		
385	s 09		

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/10/2015

4	NER2																																	
*	NER																																	
×	NET	0.09	40.0%	54.0	4.0	2.0	0.5	6.5			3.0	None	7.0	25.0	0	53.6	0.37	0.23	33.7	0.0	33.7	ပ	88.2	ш	94	120	1256		909	0	0	0	0.23	
4	NEL	17.0	11.3%	11.0	4.0	2.0	0.5	6.5	Lead		3.0	None				53.6	0.37	1.08	126.1	0.0	126.1	ш			~159	#328		200	182	0	0	0	1.08	
•	NEL2	17.0	11.3%	11.0	4.0	2.0			Lead		3.0	None																						
•	SBR2																																	
_	SBR																																	
<b>→</b>	SBT	13.0	8.7%	7.0	3.0	3.0	0.5	6.5	Lead		3.0	None				6.1	0.04	0.32	83.2	0.0	83.2	ш	83.2	ш	18	48	217		64	0	0	0	0.30	
٠	SBL	13.0	8.7%	7.0	3.0	3.0			Lead		3.0	None																						
>	SBL2	13.0	8.7%	7.0	3.0	3.0			Lead		3.0	None																						
•	NBR2																																	
*_	NBR																																	
	Lane Group	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	TOS	Approach Delay	Approach LOS	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Turn Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary

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Lanes, Volumes, Timings
7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

Lane Group Total Spit (s) Total Spit (%) Maximum Green (s) Yellow Time (s) All-Red Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag	SWL2 43.0	SWL 43.0	SWT	SWR	SWR2	
Total Spit (s) Total Spit (%) Maximum Green (s) Yellow Time (s) Lost Time Adjust (s) Total Lost Time Adjust (s) Laot Time (s)	43.0	43.0				
Total Spit (%) Maximum Green (s) Yellow Time (s) All-Red Time (s) Lost Time Adjust (s) Total Lost Time (s)	700	;	43.0			
Maximum Green (s) Yellow Time (s) All-Red Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag	78.1%	28.7%	28.7%			
Yellow Time (s) All-Red Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag	37.0	37.0	37.0			
All-Red Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag	4.0	4.0	4.0			
Lost Time Adjust (s) Total Lost Time (s) Lead/Lag	2.0	2.0	2.0			
Total Lost Time (s) Lead/Lag		0.5	0.5			
Lead/Lag		6.5	6.5			
	Lag	Lag	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	None	None	None			
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)		36.6	36.6			
Actuated g/C Ratio		0.25	0.25			
v/c Ratio		0.17	1.06			
Control Delay		46.1	111.9			
Queue Delay		0.0	0.0			
Total Delay		46.1	111.9			
SOT		۵	ш			
Approach Delay			104.9			
Approach LOS			ш.			
Queue Length 50th (ft)		38	~456			
Queue Length 95th (ft)		11	#671			
Internal Link Dist (ft)			3088			
Turn Bay Length (ft)		120				
Base Capacity (vph)		287	392			
Starvation Cap Reductn		0	0			
Spillback Cap Reductn		0	0			
Storage Cap Reductn		0	0			
Reduced v/c Ratio		0.17	1.06			
Intersection Summary						

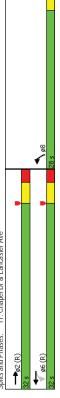
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Lane Configurations Volume (vph)	<b>#</b>			**	)		
Volume (vph)				4	>		
	1111	122	20	816	82	19	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Width (ft)	Ξ	1	Ξ	Ξ	12	12	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00	
正 :	0.985				0.975		
Fit Protected				0.999	0.961		
Satd. Flow (prot)	3193	0	0	3238	1653	0	
Flt Permitted				906.0	0.961		
Satd. Flow (perm)	3193	0	0	2937	1653	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	25				21		
Link Speed (mph)	32			32	25		
Link Distance (ff)	1609			1291	319		
Travel Time (s)	31.3			25.1	8.7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1208	133	22	887	92	21	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1341	0	0	606	113	0	
Enter Blocked Intersection	2	N <sub>o</sub>	9	9	9	No No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane							
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07	
Turning Speed (mph)		6	15		15	6	
Number of Detectors	-		-	<del></del>	<del></del>		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (ft)	37		20	37	37		
Trailing Detector (ft)	ς'n		0	ς'n	ς'n		
Detector 1 Position(ft)	ကု		0	ကု	ကု		
Detector 1 Size(ft)	40		50	40	40		
Detector 1 Type	CI+EX		CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0:0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Turn Type	NA (		Perm	NA.	Prot		
Protected Phases	2			9	∞		
Permitted Phases			9				
Detector Phase	2		9	9	∞		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	4.0		
Minimum Split (s)	21.0		21.0	21.0	28.0		
Total Split (s)	32.0		32.0	32.0	28.0		
Total Split (%)	53.3%		53.3%	53.3%	46.7%		
Maximum Green (s)	27.0		27.0	27.0	23.0		
Vallow Time (c)	3.0		3.0	3.0	3.0		

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

All-Red Time (s)         2.0         2.0         2.0         2.0           All-Red Time (s)         5.5         5.5         5.5         5.5           Lead Last Time (s)         5.5	ane Group	EBT	EBR	WBL	WBT	NBL	NBR	
Adjust (s) 0.5 0.5 0.5 Time (s) 5.5 5.5 Time (s) 6.5 5.5 5.5 Time (s) 6.5 5.5 6.5 5.5 Time (s) 6.5 6.5 6.5 5.5 6.5 5.5 5.5 5.5 Time (s) 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	II-Red Time (s)	2.0		2.0	2.0	2.0		
Time (s) 5.5 5.5 5.5 5.5 Cubin Ee(s) 3.0 3.0 dension (s) 3.0 3.0 10.0 10.0 10.0 10.0 10.0 10.0 1	ost Time Adjust (s)	0.5			0.5	0.5		
Polimize?  (s) 3.0 3.0 3.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4	otal Lost Time (s)	5.5			5.5	5.5		
3.0 3.0 3.0 3.0 3.0 C-Max C-Ma	ead/Lag							
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	ead-Lag Optimize?							
C-Max C-Max C-Max C-Max I-00 100 100 100 100 100 100 100 100 100	ehicle Extension (s)	3.0		3.0	3.0	3.0		
100 100 100 100 100 00 00 00 00 00 00 00	ecall Mode	C-Max		C-Max	C-Max	None		
00 00 00 00 00 00 00 00 00 00 00 00 00	/alk Time (s)	10.0		10.0	10.0	7.0		
43.8 43.8 43.8 63.8 65.7 6.42 6.0 6.57 6.42 6.7 6.42 6.7 6.42 6.7 6.42 6.7 6.42 6.7 6.42 6.7 6.0 6.0 6.7 6.0 6.0 6.7 6.0 6.0 6.7 6.0 6.0 6.2 6.2 EBT and 6.0 BTL, Start 5.5 6.0 6.5 7 6.42 6.0 6.0 6.5 7 6.42 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	lash Dont Walk (s)	0.0		0.0	0.0	16.0		
43.8 43.8 63.8 67.7 6.73 6.72 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7	edestrian Calls (#/hr)	0		0	0	0		
0.73 0.73 0.73 0.73 0.73 0.73 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75	ct Effct Green (s)	43.8			43.8	8.5		
0.57 0.42 0.7 3.4 0.0 0.0 6.7 3.4 A A A A A A A A A A A A A A A A A A A	ctuated g/C Ratio	0.73			0.73	0.14		
6.7 3.4 6.7 4 4 6.7 3.4 6.7 3.4 6.7 3.4 6.7 4 4 1.10 m130 1.529 1211 2.335 2142 0 0 0 0 0 0 0	c Ratio	0.57			0.42	0.45		
0.0 0.0 0.0 0.0 6.7 3.4 A A A A A A A A A A A A A A A A A A A	ontrol Delay	6.7			3.4	24.8		
6.7 3.4 A A A A A A A A A A A A A A A A A A A	ueue Delay	0.0			0.0	0.0		
60 Coordinated A A A A A A 110 110 205 111 1229 1121 1214 0 0 0 0 0 0 0 0 0 0 0 0 0	otal Delay	6.7			3.4	24.8		
6.7 3.4  1.10 205 11529 11211 2335 2142 0 0 0 0 0 0.0 0 0.0 0 0.0 0 0 0 0 0 0	SC	A			A	ပ		
110 1130 205 m130 1529 12142 2335 2142 0 0 0 0 0 0 0 0 0.57 0.42 Other  Coordinated 7 7 9: 6.3	oproach Delay	6.7			3.4	24.8		
110 m130 1529 m130 1529 1711 2335 2142 0	oproach LOS	A			A	ပ		
206 m130 1529 1211 2335 2142 0 0 0 0 0 0 0 0.57 0.42 Coordinated 7 5 6.3 7 7 8 7 8.3	ueue Length 50th (ft)	110			-	31		
1529 1211 2335 2142 0 0 0 0 0 0 0 0 0 0.57 0.42  Other  Coordinated 7 7 7 1211 2335 2142 0 0 7 7 7 1211 24.6.3	ueue Length 95th (ft)	205			m130	19		
2335 2142 0 0 0 0 0 0 0 0 0 0 0 0 0 0.57 0.42  Other  Coordinated 7 7 7 7 8.3	ternal Link Dist (ft)	1529			1211	239		
2335 2142 0	ırn Bay Length (ft)							
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ase Capacity (vph)	2335			2142	633		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	arvation Cap Reductn	0			0	0		
0 0 0 0.57 0.42 Other n: 60 xrenced to phase 2:EBT and 6:WBTL, Start 4-Coordinated 5.57 lay, 6.3 lay, 6.3	oillback Cap Reductn	0			0	0		
c Ratio 0.57 0.42    Summary Other	orage Cap Reductn	0			0	0		
Summary Other h: 60 43%), Referenced to phase 2:EB1 and 6:WBTL, Start lie: 60 e: Actualed-Coordinated e: Actualed-Coordinated Ce Ratio: 0.57 Signal Delay: 6.3 Capacity Ulitzation 54.3%	educed v/c Ratio	0.57			0.42	0.18		
Other th: 60  43%), Referenced to phase 2:EBT and 6:WBTL, Start lie: 60 e: Actualed-Coordinated e: Actualed-Coordinated Signal Delay: 6.3 Capacity Ullization 54.3%	tersection Summary							
th: 60 yole Length: 60 43%), Referenced to phase 2:EBT and 6:WBTL, Start ie: 60 Act Actualed-Coordinated for Ratio: 0.57 Signal Delay, 6.3 Capacity Utilization 54.3%	ea Type:	Other						
Tiset 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow Lateral Cycle: 60 Lateral Coordinated Lateral Coordinate	ycle Length: 60							
atural Cycle: 60 antirol Type: Actuated-Coordinated aximum vic Ratio: 0.57 intersection Signal Delay; 6.3 intersection Signal Delay; 6.3 intersection Capacity Utilization 54.3% included the control of Service A	ffset: 26 (43%), Referenc	ed to phase 2:	EBT an	d 6:WBT	L. Start o	Yellow		
oordinated 6.3 zation 54.3%	atural Cycle: 60							
6.3 zation 54.3%	ontrol Type: Actuated-Co.	ordinated						
6.3 zation 54.3%	aximum v/c Ratio: 0.57							
zation 54.3%	tersection Signal Delay: 0	5.3			=	ersection	LOS: A	
	tersection Capacity Utiliza	ation 54.3%			ੁ	U Level o	f Service A	

Splits and Phases: 11: Chapel Dr & Lancaster Ave



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Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/10/2015

3/10/2015

		t	•	•			-	-				
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	<b>₩</b>		F	₩.		<u>r</u>	2		<u>r</u>	£\$	
Volume (vph)	82	926	93	6	869	32	64	125	78	99	237	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	=
Grade (%)		%0			3%			1%			%0	
Storage Length (ft)	140		0	70		0	105		0	92		_
Storage Lanes	_		0	_		0	_		0	_		_
Taper Length (ft)	25			25			25			22		
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
Ē		0.987			0.993			0.943			0.964	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1565	3089	0	1541	3061	0	1557	1545	0	1565	1588	Ü
Flt Permitted	0.259			0.109			0.225			0.461		
Satd. Flow (perm)	427	3089	0	177	3061	0	369	1545	0	759	1588	_
Right Turn on Red			9			9			9			8
Satd. Flow (RTOR)												
Link Speed (mph)		32			32			25			22	
Link Distance (ft)		1291			2034			183			973	
Travel Time (s)		25.1			39.6			2.0			26.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	98	1006	86	102	735	34	49	132	82	69	249	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	1104	0	102	769	0	49	214	0	69	327	_
Enter Blocked Intersection	2	8	No.	S	No No	8	%	No No	No.	%	8	8
Lane Alignment	Leff	Lef	Right	Lef	Lef	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	
l urning Speed (mph)	72	•	6	75	•	6	15	•	6	5 ,	•	
Number of Defectors Defector Template	- ¢	I		- <del>4</del>	 		- #O	- i.4		- <del>4</del> 0	- i	
Leading Detector (#)	37	37		27 27	37		37	37		27	37	
Trailing Detector (ft)	5 ~	` ·		÷ ?	` ·		5 ~	` °		5 ~	5 ~	
Detector 1 Position(ff)	ئى د	, c		, c	ကို		, c	, c		ကို	, c	
Detector 1 Size(ft)	40	40		40	40		40	40		40	40	
Detector 1 Type	CI+EX	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0:0	0.0		0:0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	¥		Perm	¥		Perm	Ν	
Protected Phases	2	2		<del></del>	9			8			4	
Permitted Phases	2			9			∞			4		
Detector Phase Switch Phase	വ	2		<del>-</del>	9		∞	<b>∞</b>		4	4	
Minimum Initial (s)	3.0	34 0		3.0	240		3.0	3.0		3.0	000	
/- Comment of the com					7		0.0	2.5		2.5	0.0	

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Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lane Group Lane Configurations Volume (vph) Ideal Flow (vphp) Lane Width (ft)	60	
ane Configurations folume (vph) deal Flow (vphpl) ane Width (ft)		
olume (vph) deal Flow (vphpl) ane Width (ft) Srade (%)		
deal Flow (vphpl) ane Width (ft) srade (%)		
ane Width (ft)		
ane Width (ft) brade (%)		
srade (%)		
(a) -11 1		
Storage Lengtn (It)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Fr		
Fit Protected		
Satd Flow (nrot)		
Cattle Dormittod		
Cotd Flow (norm)		
atu. riow (pellii)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adi. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (#)		
Detector 1 Pecition(#)		
etector i Position(ii)		
Detector 1 Size(II)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Turn Type		
Protected Phases	6	
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	24.0	
Minimum Split (s)	26.0	
-		

31.0 25.8% 25.0 4.0 2.0 0.5 6.5 3.0 None 24.5 0.20 0.68 56.2 0.0 56.2 155 242 103 31.0 25.8% 25.0 4.0 2.0 0.5 6.5 105 75 0 0 0 0 0.89 3.0 None 24.5 0.20 0.89 126.1 0.0 51 #144 WBT 49.0 40.8% 43.0 2.0 0.5 6.5 Lag 3.0 C-Max 0 0 0.60 50.5 0.42 0.60 25.4 0.0 25.4 C C C C C 27.0 C 3240 954 WBL 13.0 10.8% 7.0 4.0 2.0 0.5 6.5 Lead Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave 45 m#106 55.7 0.46 0.65 39.1 0.0 70 156 0 0 0 0 0.65 50.0 41.7% 44.0 2.0 2.0 0.5 6.5 Lag 3.0 C-Max 48.7 0.41 0.08 44.7 0.0 D D 481 #614 1211 1253 55.8 0.46 0.32 21.1 0.0 EBL 14.0 111.7% 8.0 4.0 2.0 0.5 6.5 Lead 36 m63 140 271 0 0 0 0 Oueue Length Soth (ft)
Cueue Length Soth (ft)
Internal Link Dist (ft)
Turn Bay Length (ft)
Base Capacity (uph)
Stansition Cap Reduch
Splinback Cap Reduch
Reduced v/C Ratio Lead/Lag
Lead-Lag Optimize?
Vehicle Extension (s)
Recall Mode
Walk Time (s)
Flash Dont Walk (s)
Pedestrian Calls (#hr)
Act Effct Green (s)
Act Left Green (s)
We Ratio Lane Group
Total Split (\$)
Total Split (\$6)
Maximum Green (\$)
Yellow Time (\$)
Lost Time (\$)
Lost Time (\$)
Total Lost Time (\$) Total Delay LOS Approach Delay Approach LOS Control Delay Queue Delay

25.0 2.0 2.0 2.0 2.0 2.0 0.5

SBL 31.0 25.8% 25.0 4.0 2.0 0.5 6.5 3.0 None

3.0 None 24.5 0.20 1.01 100.2 0.0 100.2

24.5 0.20 0.45 52.5 0.0 52.5 0 0 1.01

324

65 154 0 0 0 0.45

~259 #450 893

47

Aduated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle: 115
Control Type: Actualed-Coordinated
Maximum Vol. Ratio: 1.01
Intersection Signal Delay: 48.0
Intersection Signal Delay: 48.0
Intersection Capacity Utilization 80.0%
ICU Level of Service D
Intersection Capacity Utilization 80.0%
ICU Level of Service D
Volume Coorder Capacity Utilization 80.0%

Other

Area Type: Cycle Length: 120 Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Oueue shown is maximum after two cycles.

Nolume for 95th percentile queue is metered by upstream signal.

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Lanes, Volumes, Timings
27: S Ithan Ave/N Ithan Ave & Lancaster Ave
Splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

\$2 (R) \$4 \$6 \$4 \$6 \$6 \$6 \$6 \$6 \$6 \$6 \$6 \$6 \$6 \$6 \$6 \$6			
26.5	•	<b>∳</b> \$ <sub>99</sub>	<b>↓</b> 94
	5 26 5	5	315
0.00	F		89
0.70	S		315

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/10/2015

Lane Group	60	
Total Split (s)	26.0	
Total Split (%)	22%	
Maximum Green (s)	24.0	
Yellow Time (s)	2.0	
All-Red Time (s)	0.0	
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)	6.0	
Flash Dont Walk (s)	15.0	
Pedestrian Calls (#/hr)	45	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
SOT		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

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Synchro 8 Report Page 4

NB 18 pm 9/16/2014 Baseline

HCM 2010 Signalized Intersection Summary 51: Lowrys Ln & Lancaster Ave

Movement   EB   EB   WB1   W	1.0	- EBT	EBR	WBL	WBT	WBR	IBN	H	UDIV	SBL	SRT	CDD
2 1161 2 15 16 96 4 19 44 19 8 47 100 100 100 100 100 100 100 100 100 10	1.0	44					NDL	NBI	NDK		5	SDP
2 1161 22 15 965 4 19 36 15 98 70 10 10 10 10 10 10 10 10 10 10 10 10 10	1.0	2			4			4			4	
5 12 12 1 6 16 3 8 18 18 7 4 4 100 100 100 100 100 100 100 100 12 2 0 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 10 2 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.0		22	15	902	4	19	36	15	86	70	71
100	1.0		12	-	9	16	3	8	18	7	4	14
1,000   1,00			0	0	0	0	0	0	0	0	0	0
1.00			1.00	00:1	,	0.1	1.00	4	1.00	1.00	4	1.00
100   17/2   18/2   17/3   1		,	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.02 0.92 0.92 0.92 0.92 0.92 0.92 0.92			1800	1/13	1/22	1//3	27 00	20 00	1,000	107	1863	1881
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92			0	0	2	0	0	5	0	0	-	0
1			0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
61 2041 39 72 2005 8 131 205 69 192 105 100 100 100 0.	%		τ-	-	<b>-</b>	-	<del>-</del>	τ-	<b>—</b>	τ-	τ-	τ-
1.00 1.00 0.061 0.61 0.61 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.1		•	36	72	2005	8	131	205	69	192	105	89
1 3328 63 17 3269 13 290 1098 370 575 564 1781 0 676 0 612 519 0 485 76 0 0 260 0 0 1781 0 0 00 00 00 00 00 00 00 101 21 00 00 00 772 00 00 00 00 00 00 00 00 00 00 00 00 00			1.00	0.61	0.61	0.61	0.19	0.19	0.19	0.19	0.19	0.19
1781   0   6112   519   0   485   76   0   0   260   0     1781   0   1611   1704   0   1595   1758   0   0   0   1617   0     1781   0   1611   1704   0   1595   1758   0   0   0   17.2   0     182   0   0   0   0   0   0   0   0   0			63	17	3269	13	290	1098	370	575	264	479
1781 0 1611 1704 0 1595 1758 0 0 1617 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			612	519	0	485	9/	0	0	260	0	0
0.0 0.0 0.0 0.0 0.0 10.1 0.0 0.0 0.0 7.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0			1611	1704	0	1595	1758	0	0	1617	0	0
s 0.00 0.0 0.0 9,7 0.0 10,1 2,1 0.0 0.0 9,3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.			0.0	0.0	0.0	10.1	0.0	0.0	0.0	7.2	0.0	0.0
0.00 0.04 0.03 0.01 0.28 0.21 0.41 0.00 0.00 0.04 0.03 0.01 0.28 0.21 0.41 0.00 0.59 0.09 0.05 0.00 0.67 0.00 0.05 0.09 0.09 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0			0.0	6.7	0.0	10.1	2.1	0.0	0.0	9.3	0.0	0.0
1152			0.04	0.03		0.01	0.28		0.21	0.41		0.30
0.59 0.00 0.62 0.47 0.00 0.50 0.19 0.00 0.00 0.67 0.00 0.00 0.00 0.00 0.00	, veh/h		886	1107	0	826	405	0	0	387	0	0
1152 0 988 1107 0 978 494 0 0 6 473 0 0 2.00 2.00 2.00 1.00 1.00 1.00 1.00			0.62	0.47	0.00	0.50	0.19	0.00	0.00	0.67	00:0	00:0
2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00			886	1107	0	978	464	0	0	473	0	0
0.40 0.00 0.40 1.00 0.00 1.00 0.00 0.00			2.00	9.	00.1	00.1	1.00	1.00	1.00	1:00	1.00	1.00
reth 0.0 0.0 0.0 0.4 0.0 64 20.7 0.0 0.0 23.5 0.0 cheh 0.0 0.0 0.0 12 1.4 0.0 18 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0	_	0.40	1.00	0.00	1:00	1.00	0.00	0.00	1.00	0.00	0.00
A Manual, S. 124 0.0 18 0.2 0.0 0.0 2.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0			0:0	6.4	0.0	6.4	20.7	0.0	0.0	23.5	0.0	0.0
289/vet/m 0.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0			1.2	1.4	0.0	1.8	0.2	0.0	0.0	2.7	0.0	0.0
S%), verl/lin 0.3 0.0 0.3 5.1 0.0 4.9 1.1 0.0 0.0 4.4 0.0 0.0 1.2 7.8 0.0 82 20.9 0.0 0.0 26.3 0.0 0.0 1.2 7.8 0.0 8.2 20.9 0.0 0.0 26.3 0.0 0.0 1.2 7.8 0.0 8.2 20.9 0.0 0.0 26.3 0.0 0.0 1.0 1.0 8.0 0.0 0.0 26.3 0.0 0.0 0.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A A A A C C C C C C C C C C C C C C C C			0.3	2.1	0.0	4.9	1.1	0.0	0.0	4.4	0.0	0.0
A A A A C C C C C C C C C C C C C C C C			1.2	7.8	0.0	8.2	50.9	0.0	0.0	26.3	0.0	0.0
T1288 1004 76 76 77 76 7			A	A		A	ပ			ပ		
1, 5 Veh 1, 0 8, 0 20, 9 4, 5 Veh 1, 0 8, 0 20, 9 7 C 5 C 5 C 7 R 8 C 7 R 8 C 7 R 8 C 7 R 8 C 7 R 8 C 7 R 8 C 7 R 8 C 8 C 8 C 8 C 8 C 8 C 8 C 8 C 8 C 8 C	pproach Vol, veh/h	1288			1004			16			260	
1 2 3 4 5 6 7 8  2 4 5 6 7 8  2 4 3 4 5 6 7 8  2 4 3 4 5 6 7 8  8 6 7 8  8 7 8 8  16,7 43,3 16,7  17,7 43,3 16,7  18,0 5,0 5,0  18,0 5,0 5,0  18,0 5,0 11,3 12,1  18,0 5,0 11,3 12,1  18,0 5,0 10,6 1.0  18,0 5,0 6,	pproach Delay, s/veh	1.0			8.0			20.9			26.3	
1 2 3 4 5 6 7 2 4 6 6 7 2 4 3 16.7 4 3 1 (V+RC), s 6 5 5 6 6 113 12.1 Ime (q_c-t1), s 2.0 11.3 12.1 Immary  6 (p_c), s 12.4 0.5 10.6  S 4 6 7 7 6 6 7 7 8 7 8 7 8 1 7 8 7 8 7 8 1 7 8 7 8 7 8 1 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	pproach LOS	A			A			O			O	
G+Y+Rc), s 43.3 16.7 4.8 6 17 (4.8c), s 6.0 5.0 6.0 17 (4.8c), s 34.0 15.0 34.0 17.0 (9.c), s 12.4 0.5 10.6 17.4 6.8 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	imer	1 2	က	4	2	9	7	8				
G-Y-Rc), s 43.3 16.7 43.3 11 If Y-Rc), s 6.0 5.0 6.0 If G(Gnax), s 34.0 11.3 12.1 If (Gnax), s 12.4 0.5 10.6 Immany  S A A A A A A A A A A A A A A A A A A	ssigned Phs	2		4		9		8				
6.0 5.0 6.0 340 150 340 2.0 11.3 12.1 12.4 0.5 10.6 A	hs Duration (G+Y+Rc), s	43.3		16.7		43.3		16.7				
34.0 15.0 34.0 7.2.0 11.3 12.1 12.4 0.5 10.6 8.8 A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A	:hange Period (Y+Rc), s	0.9		2.0		0.9		2.0				
20 11.3 12.1 12.4 0.5 10.6 6.8 A	lax Green Setting (Gmax), s	34.0		15.0		34.0		15.0				
12.4 0.5 10.6 6.8 A	lax Q Clear Time (g_c+l1), s	2.0		11.3		12.1		4.1				
	reen Ext Time (p_c), s	12.4		0.5		10.6		1.0				
	ntersection Summary											
	CM 2010 Ctrl Delay		8 9									
Motive	ICM 2010 LOS		A									
	000											

NB 18 pm 9/16/2014 Baseline Synchro 8 Report Page 1

HCM 2010 Signalized Intersection Summary 16: Sproul Rd & Conestoga Rd

3/10/2015

3/10/2015

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	F	2		r	2		r	£,			4	
Volume (veh/h)	105	552	218	27	524	47	105	186	27	21	293	83
Number	7	4	14	33	00	18	<del>-</del>	9	16	2	2	12
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
Adj Sat Flow, veh/h/ln	1782	1782	1800	1827	1827	1845	1773	1773	1791	1809	1791	1809
Adj Flow Rate, veh/h	111	581	0	28	222	0	111	196	28	24	308	87
Adj No. of Lanes	<del>-</del>	-	0	<b>-</b> -	-	0	<del>-</del>	<del>-</del>	0	0	-	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	<del>-</del>	-	-	<del></del>	-	-	<del></del>	<del></del>	-	<del></del>	-	-
Cap, veh/h	225	819	0	260	615	0	299	602	98	87	315	84
Arrive On Green	0.05	0.46	0.00	0.34	0.34	00:0	90.0	0.40	0.40	0.26	0.26	0.26
Sat Flow, veh/h	1697	1782	0	826	1827	0	1689	1518	217	138	1201	322
Grp Volume(v), veh/h	111	581	0	28	552	0	111	0	224	449	0	0
Grp Sat Flow(s),veh/h/ln	1697	1782	0	829	1827	0	1689	0	1735	1661	0	0
O Serve(g_s), s	3.3	20.9	0.0	2.2	23.0	0.0	3.7	0.0	7.2	14.8	0.0	0:0
Cycle Q Clear(g_c), s	3.3	20.9	0.0	13.2	23.0	0.0	3.7	0.0	7.2	21.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.13	0.12		0.19
Lane Grp Cap(c), veh/h	225	819	0	260	615	0	299	0	889	486	0	0
V/C Ratio(X)	0.49	0.71	0.00	0.11	06:0	0.00	0.37	0.00	0.33	0.92	0.00	0.00
Avail Cap(c_a), veh/h	270	819	0	260	615	0	337	0	727	486	0	0
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	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.1	17.3	0.0	56.6	25.2	0.0	18.3	0.0	16.7	29.7	0.0	0.0
Incr Delay (d2), s/veh	1.7	5.2	0.0	8.0	18.4	0.0	0.8	0.0	0.3	23.3	0.0	0.0
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
%ile BackOfQ(-26165%),veh/ln		11.3	0.0	9.0	14.6	0.0	1.7	0.0	3.5	13.0	0.0	0.0
LnGrp Delay(d),s/veh	20.8	22.5	0.0	27.4	43.7	0.0	19.0	0.0	17.0	53.0	0.0	0.0
LnGrp LOS	C	C		C	D		В		В	D		
Approach Vol, veh/h		692			280			335			449	
Approach Delay, s/veh		22.2			45.9			17.7			53.0	
Approach LOS		S			O			В			O	
Timer	<del>-</del>	2	3	4	2	9	7	00				
Assigned Phs	-	2		4		9	7	8				
Phs Duration (G+Y+Rc), s	10.7	27.0		42.3		37.7	6.6	32.4				
Change Period (Y+Rc), s	5.5	5.5		2.0		5.5	2.0	2.0				
Max Green Setting (Gmax), s	7.0	21.5		35.5		34.0	7.0	23.5				
Max Q Clear Time (g_c+I1), s	5.7	23.0		22.9		9.5	5.3	25.0				
Green Ext Time (p_c), s	0.0	0.0		5.7		2.4	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			34.0									
HCM 2010 LOS			O									

NB 18 pm *97* 6/2014 Baseline

HCM 2010 Signalized Intersection Summary 25: S Ithan Ave & Conestoga Rd

Lane Configurations	BR         WBL           7         11           16         5           0         0           0         0           0         1.00           354         1764           88         172           8         17           1         1           1         1           1         1           1         1           1         1           21         10           0         552           0         171           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0 <th>WBI W 471 471 0 0 1,100 1,1 1,174 17 5,35 1,174 0,0 1,174 0,0 0 0 0 0,0 0 0,</th> <th>WBR         NBL           40         7           12         0           0         0           1.00         1.00           1.00         1.00           0         0           0         0           0         0           0         0           0         145           0         0           0         1           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         665</th> <th>NBT 184 144 144 1745 20 20 20 20 30 1135 1135 00 00 00 00 00 00 00 00 00 00 00 00 00</th> <th>0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0</th> <th>53 3 0 1.00 1.00 1.00 0 0 0 0 0 0 0 0</th> <th>SBT 88 88 8 0 1.00 1826</th> <th>137 137 1.00 1.00 1.844</th>	WBI W 471 471 0 0 1,100 1,1 1,174 17 5,35 1,174 0,0 1,174 0,0 0 0 0 0,0 0 0,	WBR         NBL           40         7           12         0           0         0           1.00         1.00           1.00         1.00           0         0           0         0           0         0           0         0           0         145           0         0           0         1           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         665	NBT 184 144 144 1745 20 20 20 20 30 1135 1135 00 00 00 00 00 00 00 00 00 00 00 00 00	0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	53 3 0 1.00 1.00 1.00 0 0 0 0 0 0 0 0	SBT 88 88 8 0 1.00 1826	137 137 1.00 1.00 1.844
64 522 1 0 0 1.00 1.00 1.00 1.00 1.854 1836 73 593 73 593 0 1 1 1 1 146 758 0.47 0.00 140 0.00 140 0.00 140 0.00 140 0.00 140 0.00 140 0.00 140 0.00 190 0.00 1				100 100 1745 20 10 10 10 10 10 10 10 10 10 10 10 10 10	6 6 14 14 0 1.00 1.00 1.00 1.00 1.00 1.00 1	53 3 0 1.00 1.00 1844 60 0 0 0.88	88 88 8 8 0 0 1.00 1826	137 18 0 1.00 1.00 1844
64 522 1 0 0 1 1.00 1 1.00				168 1745 1745 20 20 1745 20 1745 1745 0.08 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6 6 14 0 14 0 1.00 1.00 1.00 1.00 1.00 0.03 33.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	53 3 1.00 1.00 1844 60 0	88 8 8 8 0 0 1.00	137 18 0 1.00 1.00 1844
100 1.00 1.00 1.00 1.00 1.00 1.00 1.00				100 1745 20 20 1745 20 30 30 30 1135 00 00 00 00 00 00 00 00 00 00 00 00 00	100 1.00 1.00 1.00 1.00 1.00 0.08 0.03 332 0.00 0.00 0.00 0.00	1.00 1.00 1.00 1.844 60 0 0	1.00	18 0 1.00 1844 156
1.00 0 0 1.00 1.00 1.00 1.00 1.00 1.00				1745 20 1745 20 10.88 0.23 0.23 0.00 0.00	0 1.00 1.00 1.00 1.00 0.88 0.88 0.23 332 0.00 0.0 0.00 0.00 0.00 0.00 0	1.00 1.00 1.844 60 0 0 0.88	1.00	1.00 1.00 1844
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00				1,00 1745 20 1 0.08 0.23 1135 0.0 0 0 0.0 0.0 0.0	1.00 1.00 1.00 1.00 0.08 0.00 0.00 0.00	1.00 1.00 1844 60 0 0 0.88	1.00	1.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00				1.00 20 20 30 30 30 30 30 30 30 30 30 30 30 30 30	1,00 1,73 7 0 0.88 0,03 332 0 0.0 0,00 0,00 0,00	1.00 1844 60 0 0.88	1.00	1.00
1854 1836 7 73 593 0 0 18 0.88 0.88 2 1 1 6 758 0.87 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.4				20 20 20 1 1 263 0.23 1135 0.00 0.00	1763 0 0 0.88 1 1 77 77 0.23 332 0 0.0 0.0 0.0	1844 60 0 0.88	1826	1844
73 593  6 1 1 1  146 758  70 173 694  716 1602  717 73 00  71 173 00  71 00  71 00  71 00  71 00  71 00  8) NehVilh 70 00  86 97 000  eh 9.7 0.0  9h 0.0  88 674  70 0.0  100 0.0  1100 0.0  89 NehVilh 70 0.0  89 NehVilh 70 0.0  80 NehVilh 70 0.0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			20 0.08 0.08 0.03 0.03 0.00 0.00	0 0.023 332 0.00 0.00 0.00 0.00	0.88	000	156
6 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.8	0 0 12 17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			0.00 0.00 0.00 0.00	0.088 177 77 0.23 332 0 0 0.0 0.0 0.0 0.0	0.88	100	25.
6 188 088 088 184 146 146 146 146 146 146 146 146 146 14				0.88 0.23 0.23 1135 0 0 0 0.00 0.00	0.88 0.23 332 0.0 0 0.0 0.0 0.0 0.0	0.88	<del>-</del>	0
6 14 758 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47				263 0.23 1135 0 0 0 0.0 0.0	1 0.23 332 0 0 0.0 0.0 0.0	,	0.88	0.88
146 758 0.47 116 1602 674 0 1739 0 1739 0 14,0 0.0 14,0 0.0 1740 0.0 1784 0 1784 0 1784 0 1780 0.0 1780 0.0 188 0 188 0 198 0 188 0 188 0 188 0 188 0 188 0 188 0 188 0 188 0 188 0 188 0 188 0				263 0.23 1135 0 0 0.0 0.0 0.0	0.23 332 0 0 0 0.0 0.0 0.20	_	-	-
116 1602 674 0 0 116 1602 674 0 0 11.9 0.0 1140 0.0 0.11 0 1.00 0.00 eh 9.7 0.0 eh 9.7 0.0 eh 9.7 0.0 eh 9.7 0.0 eh 9.7 0.0 eh 9.7 0.0 8 674				0.23 0 0 0.0 0.0 0.0	0.23 0 0 0.0 0.0 0.0	145	143	186
116 1602 7/10 1739 0.0 1.9 0.0 1.14 0.0.0 1.11 0.0.1 1.384 0.0 1.384 0.0 1.00 0.00 eh 9.7 0.0 eh 9.7 0.0 eh 0.7 0.0 eh 9.7 0.0 eh 9.7 0.0 eh 1.2 0.0 eh 9.7 0.0 8 674				0 0 0.0 0.0 0.0 0.0	332 0 0.0 0.0 0.20 0.20	0.23	0.23	0.23
674 0 0 1739 0 0 1739 0 0 0 0 0 0 174 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				0.00	0 0.0 0.0 0.20	207	617	803
c.5.s 14.0 0.0  c.5.s 14.0 0.0  c.5.s 14.0 0.0  c.6.s 0.11  v. veh/h 914 0  oreh/h 1384 0  into 1.00  oreh 1.00 0.00  into 1.00 0.00  siveh 1.12 0.00  siveh 1.13 0.00  siveh 1.14 0.00  siveh 1.15 0.00  siveh 1.15 0.00				0.00	0.0 0.0 0.20	316	0	0
1,9 0.0 1, seh/lh 914 0 0.1 1, veh/lh 914 0 0.74 0.00 10 0.74 0.00 10 1.00 0.00 1) sheh 97 0.0 1, sheh 97 0.0 1, sheh 97 0.0 1, sheh 0.0 0.0 1	i i			0.0 0.00	0.0 0.20 0.20	1626	0	0
(g_c), s 14,0 0.0 11,0 0.11 914 0.00 91,veh/h 1384 0.00 10,0 1.00 1.00 er(l) 1.00 0.00 er(l) 1.00 0.00 y (d), siveh 1.2 0.0 y (d), siveh 1.2 0.0 y (d), siveh 1.2 0.0 y (d), siveh 1.2 0.0 y (d), siveh 1.0 0.0 g, siveh 1.0 0.0 g, siveh 1.0 0.0 h, siveh 1.0 0.0 g, siveh 1.0 0.0	, i			0.00	0.0	4.9	0.0	0.0
0.1, veh/h 914 0 0, veh/h 974 0.00 0, veh/h 1384 0 Ratio 1.00 1.00 er(l) 1.00 0.00 y (d), siveh 9.7 0.0 y (d3), siveh 0.0 0.0 (d3), siveh 10.9 0.0 0, siveh 10.9 0.0 10.5/veh 10.9 0.0 10.5/veh 10.9 0.0 10.5/veh 10.9 0.0	,			0.00	0.20	8.1	0.0	0.0
914 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	,			0.00	0	0.19		0.49
0.74 0.00 ( 1384 0 1 100 100 1 1 100 0.00 ( 1 1 1 1 2 0.0 1 1 2 0.0 1 2 0.0 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3	,			0.00		474	0	0
/h 1384 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					0.00	0.67	0.00	0.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00				0	0	199	0	0
(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(				1.00	1.00	1.00	1.00	1.00
(d) Siveh 9.7 0.0 Siveh 1.2 0.0 3),Siveh 0.0 0.0 26165%),vehlin 7.0 0.0 Siveh B 674 rehh 674 7, Siveh 10.9 B	1.00	0.00	0.00 1.00	0.00	0.00	1.00	0.00	0.00
skeh 1.2 0.0 39.5veh 0.0 0.0 261658),vetvin 7.0 0.0 5.veh B 674 vetvin 10.9 0.0 vetvin 10.9 1.0 vetvin 10.9				0.0	0.0	16.1	0.0	0.0
13), Sveh 0.0 0.0 26165%), vehlin 7.0 0.0 , Sveh 10,9 0.0 B 674 vehlin 674 f., Sveh 10,9 B B	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0
26165%), vehVin 7,0 0.0 .s/veh 10,9 0.0 B 674 .s/veh 10,9 I 2				0.0	0.0	0.0	0.0	0.0
sveh 10.9 0.0  B	0.0 5.8	0.0	0.0 0.3	0.0	0.0	3.8	0.0	0.0
B wervh y, s/veh				0.0	0.0	17.7	0.0	0.0
verkh y, s/veh	В		В			В		
y, síveh		265		32			316	
-		10.2		13.3			17.7	
Timer 1 2 3		В		В			В	
	3 4	വ	7 9	∞				
Assigned Phs 2	4		9	∞				
Phs Duration (G+Y+Rc), s 27.3	16.7	2.	27.3	16.7				
	0.9		0.9	0.9				
Max Green Setting (Gmax), s 34.0	16.0	č	34.0	16.0				
	2.7	~	9.0	10.1				
Green Ext Time (p_c), s 5.5	1.	_,	5.3	0.7				
ntersection Summary								
HCM 2010 CH Dalay	2.0							
	2.U							

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HCM 2010 Signalized Intersection Summary 33: Williams Rd/Garrett Ave & Conestoga Rd

3/10/2015

3/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		4			4			4			4	
Volume (veh/h)	27	498	6	12	496	29	16	, <del>-</del>	=	28	12	52
Number	2	2	12	-	9	16	co	00	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1872	1872	1872	1872	1872	1872	1800	1800	1800	1728	1728	1728
Adj Flow Rate, veh/h	29	541	10	13	539	32	17	_	12	30	13	57
Adj No. of Lanes	0	_	0	0	_	0	0	<del></del>	0	0	_	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	86	1245	22	19	1230	72	147	25	26	101	26	71
Arrive On Green	0.71	0.71	0.71	0.71	0.71	0.71	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	42	1747	31	13	1726	101	669	298	999	334	307	849
Grp Volume(v), veh/h	280	0	0	584	0	0	30	0	0	100	0	0
Grp Sat Flow(s),veh/h/ln	1820	0	0	1840	0	0	1662	0	0	1490	0	0
O Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	2.9	0.0	0.0
Cycle Q Clear(g_c), s	8.3	0.0	0.0	8.4	0.0	0.0	<del></del>	0.0	0.0	4.2	0.0	0.0
Prop In Lane	0.05	c	0.02	0.02	c	0.05	0.57	c	0.40	0.30	c	0.57
Lane Grp Cap(c), veryn	1356	0 0	0 0	1368	0 0	0 0	228	0 0	0 8	66.	0 0	0 0
V/C Kall0(A)  Avail Can(c a) veh/h	1356	0.00	0.00	1368	000	000	0.13	0.00	0.00	385	0.00	9.0
HCM Platnon Ratio	100	100	100	100	100	100	100	100	100	100	100	100
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	00:0	00:0	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.8	0.0	0.0	3.9	0:0	0.0	27.3	0.0	0.0	28.7	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.0	1.0	0.0	0.0	0.4	0.0	0.0	2.8	0.0	0.0
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(-26165%),veh/ln	4.6	0.0	0.0	4.6	0.0	0.0	0.5	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	4.8	0.0	0.0	4.8	0.0	0:0	27.6	0.0	0.0	31.5	0.0	0.0
LnGrp LOS	A			A			ပ			ပ		
Approach Vol, veh/h		280			284			30			100	
Approach Delay, síveh		4.8			4.8			27.6			31.5	
Approach LOS		A			V			O			O	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs		2		4		9		8				
Phs Duration (G+Y+Rc), s		52.0		11.9		52.0		11.9				
Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
Max Green Setting (Gmax), s		46.0		14.0		46.0		14.0				
Max Q Clear Time (g_c+IT), s		10.3		6.2		10.4		3.				
Green Ext Time (p_c), s		9.9		0.3		9.9		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			7.4									
HCM 2010 LOS			۷									
			ζ									

User approved pedestrian interval to be less than phase max green.

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HCM 2010 Signalized Intersection Summary 3: County Line Rd & Spring Mill Rd

ш	EBL	FBT	נים	IOW	-			-				
			EBK	WDL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
		4			4			4			4	
	64	306	95	26	245	25	72	203	38	99	398	45
	2	2	12	-	9	16	3	80	18	7	4	14
	0	0	0	0	0	0	0	0	0	0	0	0
nn 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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
,	300	1789	1800	1800	1766	1800	1800	1800	1800	1800	1773	1800
Adj Flow Rate, veh/h	68	340	110	78	282	81	68	260	28	98	447	99
Adj No. of Lanes	0	-	0	0	-	0	0	-	0	0	-	0
Peak Hour Factor 0.7	0.72	06:0	98.0	0.72	0.87	0.64	0.81	0.78	99.0	97.0	0.89	69.0
Percent Heavy Veh, %	-	_	<del>-</del>	3	3	m	0	0	0	-	-	_
Cap, veh/h	143	416	125	139	403	106	151	377	75	134	498	69
_	.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h 18	187	1063	320	175	1030	271	198	196	193	166	1271	175
veh/h	339	0	0	441	0	0	407	0	0	298	0	0
Grp Sat Flow(s),veh/h/ln 157	1570	0	0	1475	0	0	1352	0	0	1613	0	0
	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0
_c), s	19.0	0.0	0.0	15.1	0.0	0.0	14.7	0.0	0.0	21.5	0.0	0.0
	0.17		0.20	0.18		0.18	0.22		0.14	0.14		0.11
Lane Grp Cap(c), veh/h 68	685	0	0	648	0	0	603	0	0	701	0	0
V/C Ratio(X) 0.7	.79	0.00	0.00	89.0	0.00	0.00	89.0	0.00	0.00	0.85	0.00	0.00
/h	982	0	0	648	0	0	627	0	0	727	0	0
	00:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	0.46	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh 16	16.6	0.0	0.0	15.3	0.0	0.0	15.0	0.0	0.0	17.4	0.0	0.0
Incr Delay (d2), s/veh 4	4.3	0.0	0.0	2.7	0.0	0.0	2.2	0.0	0.0	8.9	0.0	0.0
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	0.0
%ile BackOfQ(-26165%),veh/ln 9	9.1	0.0	0.0	7.3	0.0	0.0	0.9	0.0	0.0	11.2	0.0	0.0
LnGrp Delay(d),s/veh 21	1.0	0.0	0.0	21.0	0.0	0.0	17.1	0.0	0.0	26.3	0.0	0.0
LnGrp LOS	ပ			ပ			В			ပ		
Approach Vol, veh/h		539			441			407			268	
Approach Delay, s/veh		21.0			21.0			17.1			26.3	
Approach LOS		ပ			ပ			В			ပ	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs		2		4		9		∞				
Phs Duration (G+Y+Rc), s		30.0		30.0		30.0		30.0				
Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
Max Green Setting (Gmax), s		23.0		25.0		23.0		25.0				
Max Q Clear Time (g_c+I1), s		21.0		23.5		17.1		16.7				
Green Ext Time (p_c), s		1.0		9.0		2.4		1.8				
Intersection Summary												
HCM 2010 Ctrl Delay			21.8									
HCM 2010 LOS			ပ									

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HCM 2010 TWSC 79: Garrett Rd & Lancaster Ave

3/10/2015

Int Delay, Syeh 16  Movement 16  Movement 1227 47 48 918 00 38  Conflictable Set, Mr 1227 47 48 918  Conflictable Set, Mr 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Intersection							
## FBR WISH WBT NISH    127		9.1						
## Comparison of the compariso								
# 1127 47 48 918 0 0	Movement	EBT	EBR	WBL	WBT	NBL	NBR	
# Free Free Free Stop  - None - None - None  - None - None  - None - Non	Vol, veh/h	1227	47	48	918	0	38	
# Free Free Free Free Stop  - None - None - Stop  - O - O - O O O O  - O O O O O O  - O O O O	Conflicting Peds, #/hr	0		0	0	0	0	
# 0 None	Sign Control	Free		Free	Free	Stop	Stop	
# 0 0 0 0  82 82 82 82 82 82  82 82 82 82 82  1496 57 59 1120 0  1496 57 59 1120 0  1554 0 2202  1755 0 1555 0  1755 0 1556 0  1755 0 1556 0  1755 0 1556 0  1757 0 136 0 1  171 0 146 24  171 0 146 24  171 0 146 24  172 0 15 146 24  173 0 15 146 24  175 0 1 146 24	RT Channelized		None	•	None		None	
# 10 0 0 0 82 82 82 82 82 82 82 82 82 82 82 83 82 82 82 82 84 82 82 82 82 85 82 82 82 86 82 82 82 87 82 82 82 88 82 82 82 87 82 82 82 87 82 82 87 82 82 87 82 82 87 82 82 87 82 82 87 82 82 87 82 82 87 82 82 87 82 82 87 82 82 87 83 82 87 84 84 841 887 87 84 84 842 842 87 84 84 842 843 87 84 84 842 843 87 84 84 842 843 87 84 84 84 843 87 84 84 84 84 84 84 84 84 84	Storage Length			٠			0	
3	Veh in Median Storage, #	0		•	0	0		
NBLn1   EBT   EBR   WBL   WBT     NBLn1   EBT   EBT   WBT   WBT     NBLN	Grade, %	ς'n		•	33	0		
1496   57   59   1120   0     Majort	Peak Hour Factor	82	82	82	82	82	82	
1496   57   59   1120   0	Heavy Vehicles, %	0	0	0	0	0	0	
Majort   Major2   Mirort	Mvmt Flow	1496	22	26	1120	0	46	
0 0   1554   0   2202   1555	Major/Minor	Major1		Major2		Minor1		
1525	Conflicting Flow All	0	0	1554	0	2202	777	
NBLn1   EBT   EBR   WBL   WBT     NBLn1   EBT   EBR   WBT     NBLn1   EBT   EBT   WBT     NBLn1   EBT   EBT   EBT     NBLn1     NBLn1   EBT	Stage 1			•		1525		
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	Stage 2			•		119		
17.1   1.0	Critical Hdwy			4.1		8.9	6.9	
10	Critical Hdwy Stg 1			•		2.8		
10	Critical Hdwy Stg 2	•		•		5.8		
169   169	Follow-up Hdwy	•		2.2		3.5	3.3	
169   169	Pot Cap-1 Maneuver	•		432		39	344	
NBIN ER WEL WRT   NB     NBIN ER WEL WRT   NB     NBIN	Stage 1			•		169		
1	Stage 2	•		•		472		
NBLn1   EBT   EBR   WBL   WBT     NBLn1   EBT   E R   WBT     O	Platoon blocked, %							
EB WB  0 3  NBLn1 EBT EBR WBL WBT  344 - 432 - 0.135 - 0.136 - 1.171 - 1.146 2.4  C B B A  0.5 - 0.5 - 0.5	Mov Cap-1 Maneuver			432		25	344	
EB WB  0 3  NBLn1 EBT EBR WBL WBT  344 - 432 - 0135 - 0.146 2.4  C - B A  0.5 - 0.5 - 0.5	Mov Cap-2 Maneuver	•		•		25		
EB WB  0 3  11  NBLn1 EBT EBR WBL WBT  344 - 432 - 0.135 - 0.136 - 0.136 - 0.136 - 0.136 - 0.136 - 0.136 - 0.136 - 0.5 - 0.05 -	Stage 1			•		169		
NBLn1   EBT   EBR   WBT     344	Stage 2			•		302		
NBLn1   EBT   EBR   WBL     NBLn1   EBT   EBR   WBL   WBT     344								
0 3    NBIn1 EBT EBR WBL WBT     344	Approach	EB		WB		NB		
NBLn1 EBT EBR WBL M 344 - 432 0.135 - 0.136 17.1 - 14.6 C - B 0.5 - 0.5	HCM Control Delay, s	0		3		17.1		
NBLn1 EBT EBR WBL N 344 - 432 0.135 - 0.136 17.1 - 146 C - B 0.5 - 0.5	HCM LOS					O		
344 432 0.135 0.136 17.1 14.6 C B 0.5 0.5	Minor Lane/Major Mvmt							
0.135 - 0.136 17.1 - 14.6 C - B 0.5 - 0.5	Capacity (veh/h)	344 -	- 43:	2 -				
17.1 - 14.6 C - B 0.5 - 0.5	HCM Lane V/C Ratio	0.135 -	- 0.13	- 9				
C - B 0.5 - 0.5	HCM Control Delay (s)		- 14.					
0.5	HCM Lane LOS	U .						
	HCM 95th %tile Q(veh)	0.5	-					

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HCM 2010 TWSC 15: Conestoga Rd & Spring Mill Rd

TOWN TOWN								
Int Delay, s/veh 0.5								
Movement	EBL	EBT			WBT	WBR	SWL	SWR
Vol, veh/h	10	629			619	က	17	6
Conflicting Peds, #/hr	0	0			0	0	0	0
Sign Control	Free	Free Free			Free Free	Free	Stop	Stop
RT Channelized		None			-	None		None
Storage Length		•			٠		0	
Veh in Median Storage, #		0			0		0	
Grade, %		0			0		0	
Peak Hour Factor	96	96			96	96	96	96
Heavy Vehicles, %	<u></u>	_			<del></del>	_	-	<del>-</del>
Mvmt Flow	10	989			645	က	18	6
Major/Minor N	Major1			Z	Major2		Minor2	
Conflicting Flow All	648	0			٠	0	1353	646
Stage 1		•			٠		646	
Stage 2		•			٠		707	
Critical Hdwy	4.11	'			٠		6.41	6.21
Critical Hdwy Stg 1		•			1		5.41	
Critical Hdwy Stg 2		•			٠		5.41	
Follow-up Hdwy	2.209	1			1		3.509	3.309
Pot Cap-1 Maneuver	943	•					166	473
Stage 1		1			1		524	
Stage 2		'			٠		491	
Platoon blocked, %		1			1			
Mov Cap-1 Maneuver	943	•			٠		163	473
Mov Cap-2 Maneuver	•	•			•		163	
Stage 1		•					524	
Stage 2		•			•		483	
Approach	EB				WB		SW	
HCM Control Delay, s	0.1				0		24.6	
HCM LOS							ပ	
Minor Lane/Major Mvmt	EBL	EBT	WBT WB	WBRSWLn1				
Capacity (veh/h)	943			- 211				
	0.011	•		- 0.128				
HCM Control Delay (s)	8.9			- 24.6				
HCM Lane LOS	A	A		ں -				
HCM 95th %tile O(veh)	0	•		- 0.4				

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HCM 2010 TWSC 29: Strathmore Dr/Lowrys Ln & Conestoga Rd

3/10/2015

Intersection													
Int Delay, s/veh 2.	2.6												
	Ē	Ė	6				9	2	Ė		č	i c	Č
Movement	EBL	EBI	EBK	>			WBK	NBL	NBI	NBK	SBL	SBI	SBR
Vol, veh/h	37	204	17		11	465	16	15	00	17	6	17	
Conflicting Peds, #/hr	0	0	0		0	0	0	0	0		0		
Sign Control	Free	Free	Free	Œ	Free F	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized		٠	None			-	None	•					None
Storage Length	•	•	٠			٠		•					
Veh in Median Storage, #	•	0	٠			0		•	0			0	
Grade, %	•	0	٠			0		•	0			0	
Peak Hour Factor	96	96	96		96	96	96	96	96	%	96	96	%
Heavy Vehicles, %	<del></del>	<del></del>	-		<del></del>	-	<del>-</del>	_	_	<del>-</del>	<del></del>	_	
Mvmt Flow	39	525	18		18	484	17	16	00	18	6	18	22
Major/Minor	Major1			Major2	or2			Minor1			Minor2		
Conflicting Flow All	201	0	0		543	0	0	1176	1147	534	1152	1148	493
Stage 1		•	٠			٠		611	611		528	528	
Stage 2	•							299	536		624	620	
Critical Hdwy	4.11	•	٠	4	4.11	٠		7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	•	•	٠			٠		6.11	5.51		6.11	5.51	
Critical Hdwy Stg 2	•		٠			٠		6.11	5.51		6.11	5.51	
Follow-up Hdwy	2.209	٠	٠	2.2	2.209			3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1068		٠	1(	1031			169	200	548	175	200	578
Stage 1	•	•	•			٠		483	486		236	529	
Stage 2	•	•	•			٠	,	511	525		475	481	
Platoon blocked, %		•	٠			٠							
Mov Cap-1 Maneuver	1068	•	٠	1	1031	٠		134	185	548	154	185	578
Mov Cap-2 Maneuver	•	•	•		÷	٠		134	185		154	185	
Stage 1	•	•	٠					458	461		208	516	
Stage 2		•	•					436	512		428	456	
Approach	EB			_	WB			NB			SB		
HCM Control Delay, s	9.0				0.3			25.7			19.7		
HCM LOS								D			ပ		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR W	WBL V	WBT \	WBR SBLn1	1					
Capacity (veh/h)	215	1068	٠	- 1	1031	٠	- 326	9					
HCM Lane V/C Ratio	0.194 0.036	0.036	٠	- 0.017	117	٠	- 0.252	2					
HCM Control Delay (s)	25.7	8.5	0	,	9.8	0	- 19.7	7					
HCM Lane LOS	٥	A	A	·	V	V		S					
HCM 95th %tile Q(veh)	0.7	0.1	'		0.1	٠		_					

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NB 18 pm 9/16/2014 Baseline	

Lanes, Volumes, Timings 38: County Line Rd & N Ithan Ave

3/10/2015

	-	*_	>	<b>→</b>	<b>\</b>	4	
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	
Lane Configurations	*			÷	>		
Volume (vph)	569	117	183	493	114	62	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.959				0.952		
Flt Protected				0.987	696:0		
Satd. Flow (prot)	1804	0	0	1857	1735	0	
Flt Permitted				0.987	696.0		
Satd. Flow (perm)	1804	0	0	1857	1735	0	
Link Speed (mph)	30			30	30		
Link Distance (ft)	295			1901	824		
Travel Time (s)	6.7			43.2	18.7		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	%	
Adj. Flow (vph)	286	124	195	524	121	99	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	410	0	0	719	187	0	
Enter Blocked Intersection	9	9	No No	8	2	8	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			0	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		6	15		15	6	
Sign Control	Free			Stop	Stop		
Intersection Summary							
Area Type:	Other						
Control Type: Unsignalized							
Intersection Capacity Utilization 77.5%	ion 77.5%			ਹ	U Level o	ICU Level of Service D	
Analysis Period (min) 15							

No Right 162 1900 1.00 0 0.94 1.00 1900 1.00 0.994 1649 0.994 1649 30 2014 45.8 0.94 196 No Left 12 0 0 24 1.00 15 Stop No Right 308 328 0.94 1.00 SBL 302 302 1100 0.932 0.976 1711 30 295 6.7 0.94 321 1.00 15 Free No No 12 12 10 Lanes, Volumes, Timings 2: County Line Rd & N Ithan Ave 275 0 No No Left Right 22 0 0.94 37 1900 1.00 1.00 ۲ Area Type:
Control Type: Unsignalized
Intersection Capacity Utilization 71.5%
Analysis Period (min) 15 EBL 222 222 1900 1.00 0.981 1.00 0.959 1.763 30 973 22.1 0.94 1.% 1 236 1.01 15 Stop FIT How (prot)

Said. Flow (prot)

FIT Permitted
Said. Flow (prot)

FIT Permitted
Said. Flow (perm)
Link Speed (mph)
Link Speed (mph)
Link Distance (f)
Travel Time (s)
Peak Hour Factor
Heavy Vehicles (%)
Bus Blockages (#In/)
Adj. Flow (vph)
Shared Lane Traffic (%)
Lane Group Flow (vph)
Finter Blocked Intersection
Median World (f)
Link Offsel(f)
Crosswalk Width(f)
Link Offsel(f)
Crosswalk Width(f)
Link Offsel(f)
Finter Speed (mph)
Sign Control Intersection Summary Lane Configurations Volume (vph) Ideal Flow (vphpl) Lane Util. Factor

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ICU Level of Service C

3/10/2015 HCM 2010 TWSC 53: County Line Rd & Lowrys Ln

HCM 2010 TWSC 52: Airdale Rd & County Line Rd

3/10/2015

118 0 Stop None

WBT WBR 345 16 0 0 Free Free - None

169 215 0 0 Free Free - None

EBL EBT

3.5

Intersection Int Delay, s/veh

120

98 - 9 0 0 98 1 352

0 98 1 219

Vol, vetvin
Conflicting Pecks, #/hr
Sign Control
RT Channelized
Storage Length
Veh in Median Storage, #
Grade, %
Grade, %
Median Yether Feck Heavy Vehicles, %
Mmmt Flow

98

Major1 368

0 0 0 0 0 12

nt Delay, s/veh 1.5	.0					
Movement	FB	FRR	NBI	NBT	SBT	SBR
Vol. veh/h	16	18	52		156	
Conflicting Peds, #/hr	0	0			0	
Sign Control	Stop	Stop	Free	Ξ	Free	Free
RT Channelized		None				- None
Storage Length	0	•				
Veh in Median Storage, #	0			0 -	0	
Grade, %	0	•			0	
Peak Hour Factor	96	96	96		96	
Heavy Vehicles, %	0	0		0 0	0	
Mvmt Flow	17	19	ù	191	162	129
Major/Minor	Minor2		Major1	_	Major2	
Conflicting Flow All	526	227	292	0 0		0
Stage 1	227	٠				
Stage 2	299					
Critical Hdwy	6.4	6.2	4.1			
Critical Hdwy Stg 1	5.4	•				
critical Hdwy Stg 2	5.4					
ollow-up Hdwy	3.5	3.3	2.2	2	•	
Pot Cap-1 Maneuver	516	817	1281			
Stage 1	815	•				
Stage 2	757					
Platoon blocked, %						
Mov Cap-1 Maneuver	492	817	1281			
Mov Cap-2 Maneuver	492	•			•	
Stage 1	815	•				
Stage 2	721					
Approach	EB		NB	3	SB	
HCM Control Delay, s	11.1		1.8	3	0	
HCM LOS	В					
Winor Lane/Major Mvmt	NBL	NBT EBLn1	SBT SBR	~		
Capacity (veh/h)	1281	- 623				
HCM Lane V/C Ratio	0.042	- 0.057				
HCM Control Delay (s)	7.9	0 11.1				
HCM Lane LOS	٥					

6.21

924 360 360 564 6.41 5.41 5.41 3.509 300 708

360

3.309

2.209

Major/Minor
Conflicting Flow All
Stage 1
Stage 1
Stage 2
Critical Hdwy
Critical Hdwy Sig 1
Critical Hdwy Sig 2
Follow-up Hdwy
Pot Cap 1 Maneuver
Stage 1
Stage 2
Platroon blocked, %
Mov Cap 2 Maneuver
Mov Cap 2 Maneuver
Stage 1
Stage 2
Stage 2
Stage 2
Stage 2
Stage 2

687

1196

251 251 708 477

SB 12.8 B

WB

EB 3.7

Approach HCM Control Delay, s HCM LOS

inor Lane/Major Mvmt	NBL	NBT EBLn	SBT	SBR	
apacity (veh/h)	1281	1281 - 623		ļ '	
CM Lane V/C Ratio	0.042	- 0.05		,	
CM Control Delay (s)	7.9	0 11.1			
CM Lane LOS	V	A B	. ~	,	
CM 95th %tile Q(veh)	0.1	- 0.2	۰	ľ	

Capacity (veh/h) HCM Lane V/C Ratio						
HCM Lane V/C Ratio	1196		•		265	
	0.144		•	,	0.224	
HCM Control Delay (s)	8.5	0			12.8	
HCM Lane LOS	A	A	•		В	
HCM 95th %tile Q(veh)	0.5	'	'		6.0	
NB 18 pm 9/16/2014 Baseline	seline					Synchro 8 Report
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NB 18 pm 9/16/2014 Baseline

HCM 2010 TWSC 43: County Line Rd & Roberts Rd

	3.2												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBI	L NBT		NBR	SBL	SBT	SBR
Vol, veh/h	37	26	_	6	26	11		4 511	_	29	11	654	9
Conflicting Peds, #/hr	0	0	0	0	0	0		0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	e Free		Free	Free	Free	Free
RT Channelized	٠		None						ž	None	٠		None
Storage Length	٠				•	٠			ì		٠		ľ
Veh in Median Storage, #		0			0	٠			0		٠	0	ľ
Grade, %	٠	0		•	0	٠			0		٠	0	
Peak Hour Factor	95	95	95	95	95	95	6	65 6	95	95	95	95	95
Heavy Vehicles, %	<del>-</del>	<del>-</del>	-	<del>-</del>	_	-		_	_	<del>-</del>	-	<del></del>	_
Mvmt Flow	36	27	-	6	27	12		4 538	φ	31	12	889	63
Major/Minor	Minor2			Minor1			Major1	<del>-</del>			Major2		
Conflicting Flow All	1034	1320	376	943	1337	284	752	2	0	0	268	0	0
Stage 1	743	743		562	562	٠					٠	•	
Stage 2	291	217		381	775	٠		ļ,	į,		٠	1	ľ
Critical Howy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	2			4.12		ľ
Critical Hdwy Stg 1	6.52	5.52		6.52	5.52	٠					٠	•	ľ
Critical Hdwy Stg 2	6.52	5.52		6.52	5.52	٠					٠		
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	_		ì	2.21	•	
Pot Cap-1 Maneuver	188	157	624	219	153	716	860	0			1007	•	
Stage 1	375	422		481	210	•		ì	í	ì	•	1	
Stage 2	969	502		616	408	٠					٠		
Platoon blocked, %												•	ľ
Mov Cap-1 Maneuver	156	153	624	185	149	716	860	0			1007	•	
Mov Cap-2 Maneuver	156	153		185	149	•		į.	į,	,	•	1	
Stage 1	372	413		478	206	٠					•	•	
Stage 2	642	498		295	399	•		į,	į,		•	1	
Approach	EB			WB			Z	NB			SB		
HCM Control Delay, s	44.1			29.8			0.	0.1			0.2		
HCM LOS	ш												
Minor Lane/Major Mvmt	NBL	NBT	NBR EBLn1WBLn1	WBLn1	SBL	SBT	SBR						
Capacity (veh/h)	098		- 157	193	1007	٠							
HCM Lane V/C Ratio	0.005	1	- 0.429	0.429 0.251	0.011	•							
HCM Control Delay (s)	9.2	0	- 44.1	29.8	9.8	0.1							
HCM Lane LOS	⋖	⋖			۷	<							
			_		C	ζ							

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6/2014 Baseline	
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Intersection											
Int Delay, s/veh 2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Vol, veh/h	32	133		51	272	21	∞		37	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop Stop
RT Channelized			None			None			None		
Storage Length	•		٠			٠		•	٠	•	
Veh in Median Storage, #		0			0						0
Grade, %	•	0			0			0			0
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	146		29	299	23	6	က	41	4	0
Major/Minor	Major1			Major2			Minor1			Minor2	
Conflicting Flow All	322	0	0	152	0	0	929	099	149	1/9	652
Stage 1						٠	226			423	423
Stage 2	1	1	•	•	Ť		430			248	229
Critical Hdwy	4.12	'		4.12			7.12		6.22	7.12	6.52
Critical Hdwy Stg 1	•		٠		1		6.12	5.52		6.12	5.52
Critical Hdwy Stg 2	•						6.12			6.12	5.52
Follow-up Hdwy	2.218		٠	2.218		٠	3.518	4	3.318	3.518	4.018
Pot Cap-1 Maneuver	1238		٠	1429			379		868	370	387
Stage 1	1	1	•	•	Ť		LLL			609	288
Stage 2	•		٠	•	'		903	581		756	715
Platoon blocked, %		•				٠					
Mov Cap-1 Maneuver	1238			1429			349		868	329	326
Mov Cap-2 Maneuver	•	•		•	1	,	349			329	356
Stage 1	•		٠				751			288	290
Stage 2	•	1		•	1	·	563	553		694	691
Approach	EB			WB			NB			SB	
HCM Control Delay, s	1.6			1.1			10.9			11.6	
										2	

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NB 18 pm 9/16/2014 Baseline	

Minor Lane/Major Mwmt Capacity (vehth) HCM Lane V/C Ratio HCM Control Delay (s) HCM Lane LOS HCM 95th %tite Q(veh)

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

-ane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations		je s	‡		¥C.		p 3	₩.				
Volume (vph)	2	227	860	82	222	4	=	986	_	13	33	20
deal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
ane Width (ft)	10	10	=	=	14	10	12	12	12	12	10	10
Grade (%)			3%					-2%				
Storage Length (fl)		300		0			75		0			0
Storage Lanes		<del></del>		<del></del>			<del></del>		0			0
Faper Length (ft)		22					25					25
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	0.95	1.00	1.00
Ĭ.			986.0		0.850			0.998				
Flt Protected		0.950					0.950					
Satd. Flow (prot)	0	1497	3058	0	1531	0	1645	3283	0	0	0	0
Flt Permitted		0.075					0.275					
Satd. Flow (perm)	0	118	3058	0	1531	0	476	3283	0	0	0	0
Right Turn on Red					Yes					Yes		
Satd. Flow (RTOR)					200			_				
ink Speed (mph)			32					32				
ink Distance (ft)			211					903				
ravel Time (s)			11.2					17.6				
Peak Hour Factor	96:0	96.0	96.0	96.0	96.0	0.96	96.0	96.0	96.0	96.0	96.0	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	2	236	968	68	231	4	=	1027	<b>—</b>	14	3	52
Shared Lane Traffic (%)												
ane Group Flow (vph)	0	238	982	0	231	0	15	1042	0	0	0	0
Enter Blocked Intersection	9	9N	No No	9	2	8	S	9	N	8	N	S
ane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Wedian Width(ft)			12					12				
-ink Offset(ft)			0					0				
Crosswalk Width(ft)			10					10				
wo way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.06	1.18	1.18
urning Speed (mph)	15	15		6	6	15	15		6	6	15	15
Number of Detectors	-	-	-		0	-	-	-			-	-
Detector Template	Left	Left	Thru		Right	Left	Left	Thru			Left	Left
Leading Detector (ft)	20	37	37		0	70	37	37			20	20
railing Detector (ft)	0	ကု	ကု		0	0	ကု	ب			0	0
Detector 1 Position(ft)	0	ς'n	ကု		0	0	ကု	ڊ <u>-</u>			0	0
Detector 1 Size(ft)	20	40	40		37	70	40	40			20	20
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	Cl+Ex	CI+Ex	CI+Ex			CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Turn Type	pm+pt	pm+pt	A		Perm	Perm	Perm	NA			Perm	Perm
Protected Phases	2	വ	2					9				
Permitted Phases	2	2			2	9	9				10	10
Detector Phase	D.	ω	2		2	9	9	9			10	10
Switch Phase												
Minimum Initial (c)	3.0	3.0	15.0		15.0	15.0	15.0	15.0			3.0	3.0

0.950 1573 0.595 985

0 2

1575

0 2

0

0

1575

0.950 1604 0.179 302

0

0

1.00 0.983 0.958 1499 0.742

1.00

1.00

1.00

1.00

1.00

1.00

1.00

1.00

250 25 1.00

1800

1800

51 1800 11

196 11800 3%

1800

184 1800 12

12 1800

1800

4 - 08 - 4

1800

**4** 0 00 0 5 % 5 % 1

Lane Configurations Volume (vph) Ideal Flow (vphpf) Lane Width (ft)

4

•

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

0.96 5% 8

0.96 5% 21

0.96

0.96 5% 53

0.96

0.96 5% 192

0.96 5% 12

0.96 5% 3

0.96 5% 8

25 597 16.3 0.96 5%

25 492 13.4 0.96 5% 0

40 1336 22.8 0.96 5% 204

29 No Left

No Left

No Right

No No Right

192 No Left

No Left

Right 0

No Right

No Right

-3 CI+Ex Synchro 8 Report Page 2 0.0 Left 20 0 0 20 CI+Ex 0.0 0.0 0.0 3.0 1.14 1.14 37 -3 -3 -3 -40 CI+Ex 266 No No 12 12 0 0.0 0.0 8 3.0 1 Left 37 37 -3 40 CI+Ex 0.0 0.0 0.0 pm+pt 3.0 1 Left 20 0 0 0 20 CI+Ex 0.0 0.0 0.0 pm+pt 3.0 1.15 1.15 37 -3 -3 40 CI+Ex 0.0 0.0 NA 9 6 3.0 1.18 1 37 37 -3 -3 40 CI+Ex 1.18 0.0 0.0 NA 10 10 3.0 Projected 23 am 9/15/2014 Baseline Grade (%)
Storage Length (ft)
Storage Length (ft)
Storage Length (ft)
Lane Util. Factor
Fit
Fit Permitted
Satd. Flow (prod)
Right Turn on Red
Satd Flow (perm)
Right Turn on Red
Satd Flow (RTOR)
Link Speed (mpt)
Link Distance (ft)
Travel Time (s)
Ag. Flow (vpt)
Shared Lane Tactor
Heavy Vehicles (%)
Ad. Flow (vpt)
Shared Lane Tactor
Heavy Vehicles (%)
Crosswalk Width(ft)
Link Offset(ft)
Crosswalk Width(ft)
Link Offset(ft)
Two way Left Turn Lane
Headway Factor
Turnin Speed (mpt)
Number of Delectors Detector Template Leading Detector (ft) Trailing Detector (ft) Detector 1 Position(ft) Detector 1 Size(ft) Detector 1 Channel
Detector 1 Extend (s)
Detector 1 Queue (s)
Detector 1 Delay (s) Minimum Initial (s) Protected Phases Detector 1 Type Switch Phase

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

ane Group	- MS	SVVR	
Lanesconfigurations	2		
Volume (vph)	135	157	
deal Flow (vphpl)	1800	1800	
-ane Width (ft)	10	10	
Grade (%)	-1%		
Storage Length (ft)		0	
Storage Lanes		0	
Faper Length (ft)			
Lane Util. Factor	1.00	1.00	
	0.919		
Flt Protected			
Satd. Flow (prot)	1522	0	
Flt Permitted			
Satd. Flow (perm)	1522	0	
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)	22		
Link Distance (ft)	3168		
Fravel Time (s)	86.4		
Peak Hour Factor	96:0	96.0	
Heavy Vehicles (%)	2%	2%	
Adi. Flow (vph)	141	164	
Shared Lane Traffic (%)			
ane Group Flow (vph)	305	0	
Enter Blocked Intersection	No	9N	
Lane Alignment	Left	Right	
Median Width(ft)	12	,	
Link Offset(ft)	0		
Crosswalk Width(ft)	10		
I wo way Left Turn Lane			
Headway Factor	1.12	1.12	
Furning Speed (mph)		6	
Number of Detectors	-		
Detector Template	Thru		
Leading Detector (ft)	37		
railing Detector (ft)	ς'n		
Detector 1 Position(ft)	ကု		
Detector 1 Size(ft)	40		
Detector 1 Type	CI+Ex		
Detector 1 Channel			
Detector 1 Extend (s)	0.0		
Detector 1 Queue (s)	0.0		
Detector 1 Delay (s)	0.0		
Turn Type	NA		
Protected Phases	4		
Dermitted Dhases			
Detector Phase	4		
Switch Phase			
Minimum Initial (s)	3.0		

13.0 15.0 9.4% 9.0 3.0 3.0 3.0 None 3.0 None 113.0 113.0 115.0 9.4% 9.0 3.0 3.0 Lag ٧J 47.0 3.0 3.0 0.5 6.5 Lag 3.0 None 7.0 20.0 0 46.6 0.31 1.04 88.9 0.0 88.9 F F WBL 21.0 53.0 33.1% 47.0 3.0 3.0 0.5 6.5 Lag 3.0 None 7.0 20.0 0 0.31 0.10 42.8 D Intersection LOS: E ICU Level of Service G 21.0 21.0 53.0 33.1% 47.0 3.0 3.0 3.0 None 7.0 20.0 Lag 21.0 21.0 78.0 78.0 72.0 3.0 3.0 0.5 6.5 3.0 Max 7.0 20.0 0 71.6 0.47 0.28 5.8 0.0 21.0 78.0 78.0 72.0 3.0 3.0 0.5 6.5 3.0 Max 7.0 20.0 71.6 0.47 0.68 35.3 0.0 0.0 0.44.7 3.0 None EBL2 EBL 13.0 13.0 25.0 25.0 15.6% 15.6% 19.0 19.0 3.0 3.0 3.0 6.5 Lead Lead 71.6 0.47 1.07 121.8 0.0 Maximum vic Ratio: 1.07 Intersection Signal Delay: 71.7 Intersection Capacity Utilization 108.4% Analysis Period (min) 15 3.0 None Control Type: Actuated-Uncoordinated Area Type:
Cycle Length: 160
Actuated Cycle Length: 152.2
Natural Cycle: 150 Lane Group

Minimum Split (s)

Total Split (%)

Maximum Green (s)

Yellow Time (s)

Lost Time (s)

Lost Time Adjust (s)

Total Lost Time (s)

Lead.ag Optimize?

Vehicle Extension (s)

Recall Mode

Walk Time (s)

Flash Dort Walk (s)

Pedessirán Calk (#Im)

Adualed g/C Ratio

Control Delay

Couto Delay

Lost Delay

Total Delay

Approach Delay

Approach LOS

Splits and Phases:	Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave	Iworth Rd & La	ncaster Ave		
<b>1</b>		£ ₩	<sup>50</sup>	69	100 €
78 s		17 s	37.5	13 s	15 s
<b>★</b>	9,6	8ø **			
25 s	53.5	54 s			

Projected 23 am 9/15/2014 Baseline Synchro 8 Report Page 4

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

	7	0	0	%	0.	0.	0.	.5	rč.	ag		0.	Je				9:	50	15	54.6	0:	9.	D			
•	SWL							0	9	ت		3.0	Nor				30	0.7	0.	54	0	54				
•	SWL2	13.0	37.0	23.1%	31.0	4.0	2.0			Lag		3.0	None													
4	NER2																									
*	NER																									
×	NET	13.0	54.0	33.8%	48.0	4.0	2.0	0.5	6.5			3.0	None	7.0	25.0	0	47.6	0.31	0.54	49.2	0.0	49.2	Ω	79.5	ш	
*	NEL	13.0	17.0	%9.01	11.0	4.0	2.0	0.5	6.5	Lead		3.0	None				47.6	0.31	1.04	121.5	0.0	121.5	ш			
•	NEL2	13.0	17.0	10.6%	11.0	4.0	2.0			Lead		3.0	None													
•	SBR2																									
¬ҳ	SBR																									
<b>→</b>	SBT	13.0	13.0	8.1%	7.0	3.0	3.0	0.5	6.5	Lead		3.0	None				6.1	0.04	0.29	86.1	0.0	86.1	ш	86.1	ш	
*_	NBR																									
<b>←</b>	NBT	13.0	15.0	9.4%	0.6	3.0	3.0	0.5	6.5	Lag		3.0	None				8.5	90:0	0.97	174.4	0.0	174.4	ഥ	174.4	ш	
	Lane Group	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	FOS	Approach Delay	Approach LOS	Intersection Summary

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/9/2015

Lane Group	SWT	SWR
Minimum Split (s)	13.0	
Total Split (s)	37.0	
Total Split (%)	23.1%	
Maximum Green (s)	31.0	
Yellow Time (s)	4.0	
All-Red Time (s)	2.0	
Lost Time Adjust (s)	0.5	
Total Lost Time (s)	6.5	
Lead/Lag	Lag	
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)	30.6	
Actuated g/C Ratio	0.20	
v/c Ratio	1.00	
Control Delay	111.2	
Queue Delay	0.0	
Total Delay	111.2	
TOS	ш	
Approach Delay	106.3	
Approach LOS	ш	
Interconfice Commerce		

Synchro 8 Report Page 5

Projected 23 am 9/15/2014 Baseline

Queues 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

3/9/2015

	ኘ	†	۴	Ļ	ţ	<b>←</b>	<b>→</b>	<b>~</b>	×	<b>\</b>	×
Lane Group	EBL	EBT	EBR2	WBL	WBT	NBT	SBT	NEL	NET	SWL	SWT
Lane Group Flow (vph)	238	985	231	15	1042	63	16	192	266	29	305
v/c Ratio	1.07	89.0	0.28	0.10	1.04	0.97	0.29	1.04	0.54	0.15	1.00
Control Delay	121.8	35.3	2.8	42.8	88.9	174.4	86.1	121.5	49.2	54.6	111.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	121.8	35.3	2.8	42.8	88.9	174.4	86.1	121.5	49.2	54.6	111.2
Queue Length 50th (ft)	~200	369	15	10	~528	19	15	~143	208	23	293
Queue Length 95th (ft)	#428	523	73	34	#186	#178	44	#317	338	26	#546
Internal Link Dist (ft)		497			823	412	217		1256		3088
Turn Bay Length (ft)	300			72				200		150	
Base Capacity (vph)	223	1439	826	145	1005	92	09	184	492	197	305
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.07	99.0	0.28	0.10	1.04	0.97	0.27	1.04	0.54	0.15	1.00
Intercoction Cummany											

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

9th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Synchro 8 Report Page 1 0 Yes 2 1800 12 0 0 No Right 0.92 1.07 13 37 -3 -40 CI+Ex 25 25 0.97 0.985 0.957 3227 3227 4.0 28.0 28.0 0.0 0.0 Prot 8 25 319 8.7 0.92 20 No No 24 24 0 1.07 -3 40 CI+Ex **MBT** \$999 35 1285 25.0 0.92 1086 No Left 11 0.0 0.0 NA 10.0 21.0 32.0 3241 3241 110 125 125 125 100 0.950 1621 0.278 474 0.92 10.0 21.0 32.0 A8 No Left 0.0 0.0 0.0 Perm Left 20 0 1.00 0.0 0.0 0.0 Perm 10.0 21.0 32.0 1450 1450 Yes 30 0.92 30 No Right 0.850 1029 No Left 11 0 -3 40 CI+Ex ## \$47 800 3241 3241 35 706 13.8 0.92 1029 Thru 37 Projected 23 am 9/15/2014 Baseline Ideal Flow (vphp)
Storage Langh (ft)
Storage Langh (ft)
Storage Langh (ft)
Storage Lanes
Taper Length (ft)
Fall Permitted
Sard Flow (prot)
Fill Permitted
Sard Flow (RTOR)
Link Distance (ft)
Travel Time (s)
Fash Hour Factor
Fand Thene (s)
Peak Hour Factor
Adj. Flow (ph)
Chocked Intersection
Lane Alignment
Median Wortfi(tt)
Link Offset(ft)
Crosswalk Width(ft)
Link Offset(ft)
Crosswalk Width(ft)
Link Offset(ft)
Crosswalk Width(ft)
Wow way Left Turn Lane
Headway Factor
Turning Speed (mpt)
Number of Detectors
Detector 1 Position(ft)
Detector 1 Type
Defector 1 Extend (s)
Detector 1 Queue (s)
Detector 1 Delay (s)
Turn Type
Protected Phases Lane Configurations Volume (vph) Switch Phase Minimum Initial (s) Minimum Split (s) Permitted Phases otal Split (s)

Synchro 8 Report Page 7

Projected 23 am 9/15/2014 Baseline

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

11: Chapel Dr & Lancaster Ave

Queues

3/10/2015

	†	/	-	<i>\</i>	•	•	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	
Total Split (%)	53.3%	53.3%	53.3%		46.7%		
Maximum Green (s)	27.0	27.0	27.0	27.0	23.0		
Yellow Time (s)	3.0	3.0	3.0		3.0		
All-Red Time (s)	2.0	2.0	2.0		2.0		
Lost Time Adjust (s)	0.5	0.5	0.5		0.5		
Total Lost Time (s)	5.5	5.5	5.5		5.5		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		
Recall Mode	C-Max	С-Мах	C-Max	C-Max	None		
Walk Time (s)	10.0 10.0 10.0	10.0	10.0	10.0	7.0		
Flash Dont Walk (s)	0.0	0.0	0.0	0.0	16.0		
Pedestrian Calls (#/hr)	0	0	0	0	0		
Act Effct Green (s)	9.99	9.99	9.99	9.99	5.5		
Actuated g/C Ratio	0.94	0.94	0.94	0.94	0.09		
v/c Ratio	0.34	0.02	0.11	0.36	0.07		
Control Delay	1.4	0.8	2.8	2.7	23.6		
Oueue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	1.4	0.8	2.8	2.7	23.6		
TOS	Α	A	٧	V	ပ		
Approach Delay	1.4			2.7	23.6		
Approach LOS	A			A	ပ		
Intersection Summary							

Intersection LOS: A ICU Level of Service A Intersection Summary
Area Type:
Cycle Length: 60
Actuated Cycle Length: 60
Offset E5 (92%), Referenced to phase 2-EBT and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.36 Intersection Signal Delay: 2.3 Intersection Capacity Utilization 51.1% Analysis Period (min) 15

Splits and Phases: 11: Chapel Dr & Lancaster Ave

**∞ →** 92 (R) 32 s à 32.5

Synchro 8 Report Page 2 Projected 23 am 9/15/2014 Baseline

20 20 23.6 0.0 23.6 23.6 11 11 1211 Intersection Summary m Volume for 95th percentile queue is metered by upstream signal. MBT 1086 0.36 2.7 2.7 2.7 0 0 317 1205 0.11 2.8 0.0 2.8 0.0 125 30 30 0.02 0.0 0.0 0.8 125 1029 0.34 1.4 0.0 0 88 626 Total Delay

Queue Length 50th (ft)

Queue Length 55th (tt)

Linn Bay Length (tt)

Turn Bay Length (tt)

Base Capacity (vph)

Sarvation Cap Reduch

Sorage Cap Reduch

Sorage Cap Reduch

Sorage Cap Reduch

Reduced v/c Ratio Lane Group Lane Group Flow (vph) v/c Ratio Control Delay Queue Delay

Projected 23 am 9/15/2014 Baseline

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Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/10/2015

ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	r	<del>*</del>		K	<b>*</b>		F	2		K	2	
/olume (vph)	107	819	23	29	874	22	94	190	9/	78	144	77
deal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
ane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		%0			3%			1%			%0	
Storage Length (ft)	200		0	250		0	190		0	92		0
Storage Lanes	-		0	-		0	<del></del>		0	-		0
aper Length (ft)	25			22			25			25		
ane 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
Ŧ.		966.0			0.991			0.957			0.948	
It Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	3028	0	1497	2967	0	1512	1524	0	1520	1517	0
- It Permitted	0.152			0.209			0.408			0.304		
Satd. Flow (perm)	243	3028	0	329	2967	0	920	1524	0	486	1517	0
Right Turn on Red			2			2			N <sub>o</sub>			N <sub>o</sub>
Satd. Flow (RTOR)												
ink Speed (mph)		32			32			25			25	
ink Distance (ft)		1285			311			344			973	
ravel Time (s)		25.0			6.1			9.4			26.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
4dj. Flow (vph)	114	871	24	09	930	19	100	202	81	83	153	82
Shared Lane Traffic (%)												
ane Group Flow (vph)	114	895	0	99	166	0	100	283	0	83	235	0
Enter Blocked Intersection	N	%	%	8	S	2	9	9	No No	9	No	No
ane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		=			11			12			12	
ink Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
wo way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	12		6	15		6	15		6	12		6
Number of Detectors	-	0		-	0		<del>-</del>	-		-	-	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
<ul> <li>eading Detector (ft)</li> </ul>	37	0		37	0		37	37		37	37	
railing Detector (ft)	ς'n	0		ကု	0		ကု	ç,		ကု	٠,	
Detector 1 Position(ft)	ကု	0		ကု	0		ကု	ကု		ကု	5-	
Detector 1 Size(ft)	40	9		40	9		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+EX	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	¥	
Protected Phases	വ	2		-	9			∞			4	
Permitted Phases	2			9			∞			4		
Detector Phase	2	2		-	9		∞	00		4	4	
Switch Dhaco												
WICH FIGSC												

Projected 23 am 9/15/2014 Baseline w same timings as 2025 Base

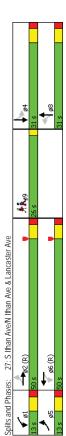
Lane Configurations  (Gade (%)  Lane Width (ft)  (Gade (%)  Storage Lanes  Storag	
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Permited Phases Detector Phase Award Phase	
Detector Phase Switch Phase	
Switch Phase	
Minimum Initial (s) 24.0	

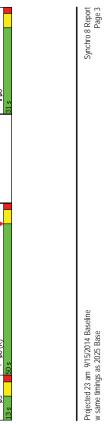
Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/10/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	
Fotal Split (s)	13.0	20.0		13.0	20.0		31.0	31.0		31.0	31.0	
Fotal Split (%)	10.8%	41.7%		10.8%	41.7%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	7.0	44.0		7.0	44.0		25.0	25.0		25.0	25.0	
rellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
ost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
otal Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
-ead/Lag	Lead	Lag		Lead	Lag							
-ead-Lag Optimize?												
/ehicle 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)												
-Tash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	57.2	52.0		9299	49.4		23.8	23.8		23.8	23.8	
Actuated g/C Ratio	0.48	0.43		0.46	0.41		0.20	0.20		0.20	0.20	
//c Ratio	0.62	89.0		0.28	0.81		0.78	0.94		0.86	0.78	
Control Delay	35.4	33.0		15.9	31.5		83.4	85.7		107.9	64.4	
Queue Delay	0:0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
otal Delay	35.4	33.0		15.9	31.5		83.4	85.7		107.9	64.4	
-0S	Ω	ပ		В	U		ш	ш		ш	ш	
Approach Delay		33.3			30.6			85.1			75.8	
Approach LOS		O			ပ			ш			ш	
ntersection Summary												
Area Type:	Other											
Sycle Length: 120												
Actuated Cycle Length: 120	50											
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection	d to phase 2:	EBTL and	i 6:WBTL	, Start of	Yellow, N	laster Inte	rsection					
Vatural Cycle: 105												
Control Type: Actuated-Coordinated	oordinated											
Maximum v/c Ratio: 0.94												
ntersection Signal Delay: 44.3 ntersection Capacity Utilization 76.3%	44.3 zation 76.3%			트모	Intersection LOS: D	LOS: D						
3							1					





Synchro 8 Report	Page 4
Projected 23 am 9/15/2014 Baseline	w same timings as 2025 Base

3/10/2015 Queues 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lane Group EBL EBT WBL WBT  Lane Group Flow (vph) 114 895 60 991  vit Ratio 0.62 0.68 0.28 0.81  Control Delay 0.0 0.0 0.0 0.0  Total Delay 35.4 33.0 15.9 31.5  Queue Length Soft (ft) 49 32.7 25 34.5  Oueue Length Soft (ft) 49 32.7 25 34.5  Turn Bay Length (ft) 200 2.50  Turn Bay Length (ft) 200 2.50  Stanwaldon Cap Reductin 0 0 0 0  Sylliback Cap Reductin 0 0 0 0	100 0.78 83.4 0.0		83 0.86 107.9 0.0 62	SBT 235 0.78 64.4 0.0 64.4
114 895 60 0.62 0.68 0.28 35.4 33.0 15.9 0.0 0.0 0.0 35.4 33.0 15.9 49 32.7 25.0 200 200 200 200 100 0 0 0 0 0 0	100 0.78 83.4 0.0		83 0.86 107.9 0.0 107.9	235 0.78 64.4 0.0 64.4
0.62 0.68 0.28 35.4 33.0 15.9 0.0 0.0 0.0 35.4 33.0 15.9 49 327 25 49 327 25 200 250 100 0 0 0	0.78 83.4 0.0 83.4		0.86 107.9 0.0 107.9 62	0.78 64.4 0.0 64.4 173
35.4 33.0 15.9 0.0 0.0 35.4 33.0 15.9 49 327 25 49 327 25 1205 200 200 250 In 0 0 0	83.4 0.0 83.4		0.0 107.9 62	64.4 0.0 64.4 173
35.4 33.0 15.9 35.4 33.0 15.9 4 9 32.7 25 1205 200 250 1205 250 100 0 0	83.4		0.0	0.0 64.4 173
35.4 33.0 15.9 49 327 25 37 25 10 #104 365 m35 200 250 185 1312 216 185 1312 216 186 1312 216 196 0 0	83.4		107.9	64.4
49 327 25 1 #104 365 m35 is 200 250 185 1312 216 In 0 0 0		216	62	173
#104 365 m35 1205 20 200 250 185 1312 216 In 0 0 0	73			
1205 200 250 185 1312 216 In 0 0 0	#169	#381	#160	#292
200 250 185 1312 216 122 In 0 0 0		264		893
185 1312 216 122 (In 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	190		92	
0 0 0 0 u	132	311	66	309
0 0 0	0	0	0	0
	0	0	0	0
Storage Cap Reductin 0 0 0 0	0	0	0	0
Reduced v/c Ratio 0.62 0.68 0.28 0.81	97.0	0.91	0.84	0.76

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

Queue shown is maximum after two cycles.

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

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/10/2015

	١	Ť	-	٠			-	-	-			
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	<b>₽</b>		r	<b>₽</b>		F	2,		r	2,	
Volume (vph)	107	819	23	26	874	22	94	190	9/	78	144	11
Ideal Flow (vphpf)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	2
Grade (%)		%0		į	3%			1%		!	%0	
Storage Length (ft)	200		0	250		0	190		0	92		0
Storage Lanes	-		0	-		0	-		0	-		٥
Taper Length (ft)	25			25			25			22		
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
Ē		966.0			0.991			0.957			0.948	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	3028	0	1497	2967	0	1512	1524	0	1520	1517	J
Fit Permitted	0.142	0	•	0.200		•	0.430		4	0.333	1	Ì
Satd. Flow (perm)	777	3028	0 ;	315	7967	0 .	689	1524	0 .	533	151/	2
Kigni Tum on Ked			0N			ON N			0N			2
Safd. Flow (KT UK)												
Link Speed (mph)		32			32			52			22	
Link Distance (ft)		1285			311			344			973	
Iravel lime (s)		25.0			9.			9.4			26.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	114	871	24	09	930	61	100	202	8	83	153	82
Silated Latte Hallic (%)	114	895	C	09	001	C	100	283	C	83	235	
Enter Blocked Intersection	S	8	S	8 8	N S	N	N N	S N	N	8 8	No.	N
Lane Alichment	- Ha	- Ha	Picht	- Ha	- Ha	Picht	the first	# # # # # # # # # # # # # # # # # # #	Diaht	#d	#d	Pinht
Median Width(#)		11	III N		11	life.		13	III M	בפו	13	
link Offset(fl)		-			-			2 0			2 0	
Crosswalk Width(ft)		01			01			10			01	
Two way Left Tirm Lane		2			2			2			2	
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	15		6	15		6	15		6	15		
Number of Detectors	-	0		<del>-</del>	0		<del>-</del>	-		-	-	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	37	0		37	0		37	37		37	37	
Trailing Detector (ft)	ကု	0		٠,	0		٠,	ڊ <u>،</u>		ς'n	ကု	
Detector 1 Position(ft)	ကု	0		ကု	0		ç	ကု		ကု	ကု	
Detector 1 Size(ft)	40	9		40	9		40	40		40	40	
Detector 1 Type	CI+EX	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel	d	0		d	d		0	0		d	0	
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	¥.		Perm	¥		Perm	NA	
Protected Phases	2	7		-	9			00			4	
Permitted Phases	2			9			00			4		
Detector Phase	2	2		-	9		∞	∞		4	4	
Switch Phase	c											
				0	0 1/0		0	000		000	000	

Projected 23 am 9/15/2014 Baseline w 5-sec shift to 4+8

Synchro 8 Report Page 5

Projected 23 am 9/15/2014 Baseline w same timings as 2025 Base

3/10/2015 Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lane Group	99
Lane Configurations	
Volume (vph)	
Ideal Flow (unbul)	
luear Filow (vpripr)	
Cardo (%)	
Clarace (70)	
Storage Lengin (ii)	
Tongr Lantes	
i apei Lengin (ii)	
Lalle UIII. rautui	
FIL Protected	
satd. Flow (prot)	
FIt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	6
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0
Projected 23 am 9/15/2014 Baseline	Baseline Synchro 8 Report
w 5-sec shift to 4+8	

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/10/2015

Septembroad   EBL   EBL   EBL   WBL   WBL   WBL   NBL   SBL   SBT   SBR   Mblinder   Split (s)   13.0		١	†	<b>&gt;</b>	*		/	_	-			•	•
13.0   13.0	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
(\$\(\cent{c}\) 130 450 130 360 360 360 360 360 360 (\$\(\cent{c}\) (\$\(\cent{c}\) 130 450 1308 3008 3008 3008 3008 3008 3008 8009 80	Minimum Split (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	
(%) 108% 375% 108% 375% 300% 300% 300% 300% 300% 300% 300% 30	Total Split (s)	13.0	45.0		13.0	45.0		36.0	36.0		36.0	36.0	
Care   (\$)   7.0   39.0   7.0   39.0   30.0   30.0   30.0   10.0   (\$)   4.0	Total Split (%)	10.8%	37.5%		10.8%	37.5%		30.0%	30.0%		30.0%	30.0%	
ne (\$) 4,0 4,0 4,0 4,0 4,0 4,0 4,0 4,0 4,0 4,0	Maximum Green (s)	7.0	39.0		7.0	39.0		30.0	30.0		30.0	30.0	
Adjust (s) 2.0 2.0 2.0 2.0 2.0 2.0 2.0 4.0 2.0 2.0 4.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Adjust (s) 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Time (s) 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	Lost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lead   Lag   Lead   Lag   Lead   Lag     Dalmize?   3.0   3.0   3.0   3.0   3.0     Lead   Lag   Lead   Lag   S.   3.0   3.0     Lead   S.   S.   S.   S.   S.   S.   S.   S	Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
polimize?  tension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 4ension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lead/Lag	Lead	Lag		Lead	Lag							
3.0   3.0   3.0   3.0   3.0   3.0	Lead-Lag Optimize?												
None C-Max   None C-Max   None   None   None	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
55.3 50.1 53.7 47.5 25.7 25.7 25.7 25.7 26.7 26.7 26.7 26.7 26.7 26.7 26.7 26	Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
55.3 50.1 53.7 47.5 25.7 25.7 25.7 3 6.0 46 0.42 0.45 0.40 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.2	Walk Time (s)												
55.3 50.1 53.7 47.5 25.7 25.7 25.7 26.7 26.0 0.46 0.42 0.45 0.40 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.2	Flash Dont Walk (s)												
55.3         50.1         53.7         47.5         25.7 <td< td=""><td>Pedestrian Calls (#/hr)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Pedestrian Calls (#/hr)												
0.46 0.42 0.45 0.40 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.2	Act Effct Green (s)	55.3	50.1		53.7	47.5		25.7	25.7		25.7	25.7	
0.66 0.71 0.30 0.84 0.68 0.87 0.73 ( 40,9 36,1 18,3 35,3 66,3 70.7 77.7 1   50 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Actuated g/C Ratio	0.46	0.42		0.45	0.40		0.21	0.21		0.21	0.21	
40.9 36.1 18.3 35.3 66.3 70.7 77.7 19.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	v/c Ratio	99.0	0.71		0.30	0.84		89.0	0.87		0.73	0.73	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	40.9	36.1		18.3	35.3		66.3	70.7		7.7.7	29.7	
40.9 36.1 18.3 35.3 66.3 70.7 77.7 2 2 6 6 6 6 6 6 6 6 6 6 7 77.7 77.	Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
D D B D E E E E 34.3 69.5 E  There  T	Total Delay	40.9	36.1		18.3	35.3		66.3	70.7		7.77	29.7	
36.7 34.3 69.5  Driver  Other  Other  Other  Intersection  Other	FOS		Ω		В	۵		ш	ш		ш	ш	
Approach LOS  Intersection Summary  Area Type: Other Other Other Cycle Length: 120 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cycle: 105 Maximum Vic Ratio: 03 Intersection Signat Delay: 43.3 Intersection Capacity Utilization 76.3% Othersection Capacity Utilization 76.3% Intersection Capacity Utilization 76.3% Othersection Capacity Utilization 76.3%	Approach Delay		36.7			34.3			69.5			62.2	
Intersection Summary  Area Type: Other Office Length: 120 Office Length: 120 Office: 0 (19%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Office: 0 (19%), Redeenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Office: 0 (19%), Redeenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cycle: 105 Maximum vic Ratic: 0.87 Intersection Signal Delay: 43.3 Intersection Capacity Utilization 76.3% Intersection Capacity Utilization 76.3% Intersection Capacity Utilization 76.3%	Approach LOS		О			O			ш			ш	
Area Type:  Other  Oycle Length: 120  Actualed Cycle Length: 120  Offset: 0 Correct Length: 120  Offset: 0 Correct Length: 120  Natural Cycle: 105  Maximum v/c Ratious Cycle: 0  Intersection Signal Delay: 43.3  Intersection Capacity Utilization 76.3%  ICU Level of Service D	Intersection Summary												
Oycle Length: 120  Chicached Cycle Length: 120  Offiset 0 (WS) Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  Natural Cycle: 105  Control Type: Actualet-Coordinated  Maximum v/c Ratio: 0.87  Intersection Signal Delay: 43.3  ICU Level of Service D		Other											
Actuated Cycle Length: 120  Actuated Cycle Length: 120  Notine Cycle: 106  Control Type: Actuated Coordinated  Maximum V. Ratio: 0.87  Intersection Signal Delay: 43.3  Intersection Capacity Utilization 76.3%  Intersection Capacity Utilization 76.3%  Incl. Level of Service D	Cycle Length: 120												
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Abtural Cycle: 105 Control Type: Actualed-Coordinated Maximum Vc Ratio: 0.87 Intersection Signal Delay: 43.3 Intersection Capacity Utilization 76.3% ICU Level of Service D	Actuated Cycle Length: 120												
Natural Cycle: 105 Control Type: Actualed-Coordinated Maximum v/c Ratio: Q3 Intersection Signal Delay; 43.3 ICU Level of Service D	Offset: 0 (0%), Referenced to	phase 2:	EBTL and	6:WBTL	Start of	Yellow, M	aster Inte	ersection					
	Natural Cycle: 105												
	Control Type: Actuated-Coor	dinated											
	Maximum v/c Ratio: 0.87												
	Intersection Signal Delay: 43	.3			=	tersection	LOS: D						
	Intersection Capacity Utilizat	ion 76.3%			೨	:U Level o	f Service	۵					

6ø **4** ₩ Splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave **1** № (R) **↑ →** ø5

Projected 23 am 9/15/2014 Baseline w 5-sec shift to 4+8

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Queues 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/10/2015

235 0.73 56.7 0.0 56.7 167 167 253 893

SBL 83 0.73 77.7 0.0 77.7 59 #135

283 283 0.87 70.7 70.7 209 #330 264

100 0.68 66.3 0.0 66.3 70 #137

991 991 0.84 35.3 0.0 402 402 #563

60 0.30 118.3 0.0 18.3 26 m38

EBL EBT 114 895 0.66 0.71 40.9 36.1 0.0 0.0 40.9 36.1 52 341 #119 #479 1205

Lane Group Lane Group Flow (vph) v/c Ratio 372 0 0 0 0 0

65 131 0 0 0 0 0

374

190

250 205 1173

Control Delay
Oueue Delay
Total Delay
Oueue Length 50th (ft)
Oueue Length 95th (ft)
Internal Link Dist (ft)
Turn Bay Length (ft)
Base Capacity (ph)
Slarvation Cap Reduch
Spillback Cap Reduch
Sorage Cap Reduch
Reduced v/c Ration

0 0 0 0.76

0 0 0 0.29

200 174 1263 0 0 0 0 0 0 0 0 0 0 0 0 # 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cydes.

The volume for 95th percentile queue is metered by upstream signal.

Lane Group	00
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	0.6
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

	Synchro 8 Report Page 4
	Projected 23 am 9/15/2014 Baseline w 5-sec shift to 4+8

Projected 23 am 9/15/2014 Baseline W 5-sec shift to 4+8

Queues 51: Lowrys Ln & Lancaster Ave

Ť	•	ţ	<b>-</b>	<b>→</b>	
EE	EBT	WBT	NBT	SBT	
ane Group Flow (vph) 120	1203	1249	207	123	
0.0	69.0	0.72	0.70	0.41	
6	0.6	11.4	36.2	25.5	
0	0.0	0.0	0.0	0.0	
6	0.6	11.4	36.2	25.5	
Queue Length 50th (ft) 10	109	150	69	38	
Queue Length 95th (ft) m170	20	224	#143	8	
16	1645	302	2747	520	
1751	21	1738	334	335	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
0.0	69.0	0.72	0.62	0.37	
ntersection Summary					
95th percentile volume exceeds capacity, queue may be longer.	s caps	city, que	ue may be	e longer.	
Queue shown is maximum after two cycles.	r two c	vcles.			

Queue shown is maximum after two cycles.

The volume for 95th percentile queue is metered by upstream signal.

HCM 2010 Signalized Intersection Summary 51: Lowrys Ln & Lancaster Ave

3/10/2015

ations	WBR         NBL           3         3           16         3           1         0           0         0           1         0           1         100           1         100           1         1           2         5           3         3           3         3           3         3           3         3           3         3           3         3           3         3           3         3           3         3           3         3           3         3           3         3           3         3           4         1           155         1           101         2           100         4           100         4           100         1           100         1           100         0           100         0	NBL NBT  48 105 3 0 0 1 0 0 1100 1400 1900 1845 52 113 3 3 3 3 1122 155 0.15 0.15 0.1705 0.0 1705 0.0 207 0.0 332 0.0 338 0.0 332 0.0 332 0.0 332 0.0 332 0.0 332 0.0 332 0.0 344 0.0	NBR 39 39 118 1200 1.100 1.100 0.03 3.46 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	SBL SBT  2 72 7 4 7 4 1.00 0.00 1881 1827 24 77 0.93 0.93 3 3 3 1101 185 195 1246 195 1246 175 0.05 0.00 0.02 0.02 0.02 0.03 0.03 0.03 0.03	SBT SBR 4 4 14 12 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
ions 19 175   175					
19 1080 20 17  th 0 0 0 0  sh 0 0 0 0  sh/hor 100 1.00  sh/hor 100 1.00  sh/hor 100 1.00  or 0,93 0,93 0,93 0,93 0,93  veh/hor 100 1.00  LO, S 0,65 0,65 0,65  veh/hor 100 1.00  LO, S 0,03 0,03 0,93 0,93  veh/hor 100 0,0 12.1 0.0  LO, S 0,03 0,03 0,03 0,03  veh/hor 100 0,0 12.1 0.0  lo, sveh/hor 1164 0 1029 1155  sh/hor 1.00 0,0 0,0 0,0  lo, sveh/hor 1.00 1.00 1.00  lo, sveh/hor 1.00 0,0 0,0 0,0  ,0  lo, sveh/hor 1.00 0,0 0,0 0,0 0,0 0,0  lo, sveh/hor 1.00 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0					
hth 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					
h					
phT) 1.00 1.00 1.00    1.00 1.00 1.00 1.00   1.00 1.00 1.00 1.00   1.00 1.00 1.00 1.00   2					
100   100					
Annual 1800 1748 1800 1773  Annual 1800 1748 1800 1773  Annual 1800 1748 1800 1773  O					
reh/h 20 1161 22 18  s 0 03 093 093 093  veh, % 3 3 3 3 3  veh, % 1 2080 39 72  n 065 065 065 065  veh/h 623 0 1580 1679  veh/h 164 0 1221 12.7  veh/h 1164 0 1229 1155  alio 1.00 0.00 0.00 0.5 sveh 15 0.00 0.00 0.5 sveh 15 0.00 0.00 0.5 sveh 15 0.00 0.00 0.5 sveh 17 0.00					
or 0,000  or 0,93 0,93 0,93 0,93 0,93 0,94 0,93 0,93 0,93 0,93 0,93 0,93 0,93 0,94 0,94 0,94 0,94 0,94 0,94 0,94 0,94		i i i i i i i i i i i i i i i i i i i			
or 0,93 0,93 0,93 0,93 0,94 0,94 0,94 0,94 0,94 0,94 0,94 0,94					
Veh, % 3 3 3 3 7 3 7 1					
14 2080 39 72 2080 39 72 2080 39 72 30 30 30 30 30 30 30 30 30 30 30 30 30					
weith 623 0.65 0.65 0.65 0.65 0.65 0.65 0.65 0.65		`			
verhin 623 0 580 16 3 verhilin 1692 0 1880 1679 LC), S 11,6 0.0 12.1 12.7 LC), S 11,6 0.0 12.1 12.7 LC), S 11,6 0.0 12.9 1155 LC), S 11,0 0.0 12.9 1155 LC), S 11,0 0.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.				=	
623 0 880 650 1692 0 1580 1679 0.0 0.0 12.1 0.0 11.6 0.0 12.1 12.7 0.03 0.04 0.03 1164 0 1029 1155 0.54 0.00 0.56 0.56 0.5 1164 0 1029 1155 1.00 0.00 1.00 1.00 0.0 5.7 0.0 5.8 5.9 1.8 0.0 0.2 2.0 0.0					
1692 0 1880 1679 10 0 0.0 121 0.0 11.6 0.0 12.1 12.7 0.03 0.04 0.03 1164 0 1029 1155 0.154 0.00 0.05 0.05 1.00 1.00 1.00 1.00 1.00 0.00 1.00 1.00	_ 0 10 17 6 17				
11.6 0.0 12.1 0.0 11.6 0.0 12.1 12.7 0.03 0.04 0.03 1164 0 1029 1155 100 1.00 1.00 1.00 1.00 1100 0.00 1.00 1	0 10 17 10				
11.0 0.0 12.1 12.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0 10 1 7 7 1				
h 1054 0.03 0.54 0.00 0.56 0.56 1054 0.00 0.56 0.56 1064 0.0 1029 1155 1000 1.00 1.00 1.00 eh 5.7 0.0 5.8 5.9 eh 0.0 0.0 0.0 0.0 %),wehvlin 6.1 0.0 5.8 6.6 A A A A A A A A A A A A A A A A A A A					
eh 5.7 0.0 0.56 0.56 0.56 0.56 0.56 0.56 0.56					
H164 0 1029 1155 1.00 1.00 1.00 1.00 eh 5.7 0.0 5.8 5.9 eh 0.0 0.0 0.0 0.0 %)veh/ln 6.1 0.0 8.8 6.6 7.4 0.0 8.0 7.8 h 7.7 A A A A A A A A A A A A A A A A A A					
eh 1.00 1.00 1.00 1.00 1.00 eh 2.7 0.0 5.8 5.9 eh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.					
veh 5.7 0.0 5.8 5.9 veh 6.7 0.0 5.8 5.9 veh 0.0 0.0 2.2 2.0 veh 0.0 0.0 0.0 0.0 5%)veh/ln 6.1 0.0 5.8 6.6 A A A A A 1203 eh 7.7 A 1203 A 1203 A 1203 A 1203		-	1.00	-	00.1
veh 5.7 0.0 5.8 5.9  1 18 0.0 2.2 2.0  veh 0.0 0.0 0.0 0.0  5%),veh/in 6.1 0.0 5.8 6.6  7 4 0.0 8.0 7.8  A A A  1203  1 2 3 4	7		0.00		
No. 1.8 0.0 2.2 2.0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		24.7 0.0	0:0		0.0 0.0
S%),veh/in 6.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		2.0 0.0	0:0		
5%)veh/in 6.1 0.0 5.8 6.6  7.4 0.0 8.0 7.8  A A A A 1203  7.7  1 2 3 4			0.0		
A 0.0 8.0 7.8 A A A A A A A A A A A A A A A A A A A			0:0		
A A A A A 1203		26.7 0.0	0.0		0.0 0.0
1203 - 7.7 A A A 4	A	၁		ပ	
y, sweh 7.1 A A 1 2 3 4		207		; =	123
A 1 2 3 4		26.7		24.1	<del>-</del> .
1 2 3 4		ပ			ن ن
	9	7 8			
Assigned Pits 2	9	∞			
45.6	45.6	14.4			
0.9	0.9	2.0			
36.0	36.0	13.0			
.l1), s 14.1	15.2	0.6			
sreen Ext Time (p_c), s 11.8 0.7	11.5	0.5			
ntersection Summary					
HCM 2010 Ctrl Delay 10.0					
HCM 2010 LOS B					
or to l					

Synctro 8 Report
Projected 2.3 am 9/15/2014 Baseline
Page 1 w same timings as 2025 Base

Projected 23 am 9/15/2014 Baseline w same limings as 2025 Base

Quenes

16: Sproul Rd & Conestoga Rd	ภาษรเบบูล	2						0.01
	ኘ	†	Ļ	ţ	€	×	×	
Lane Group	EBL	EBT	WBL	WBT	MEL	NET	SWT	
Lane Group Flow (vph)	166	771	40	731	237	329	367	
v/c Ratio	0.99	96:0	0.34	1.09	0.91	0.53	1.14	
Control Delay	89.0	46.9	30.3	90.4	9.89	25.4	129.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Total Delay	89.0	46.9	30.3	90.4	9.89	25.4	129.0	
Queue Length 50th (ft)	21	395	16	~472	86	140	~246	
Queue Length 95th (ft)	#180	099#	48	#692	#231	224	#416	
Internal Link Dist (ft)		601		178		715	1701	
Turn Bay Length (ft)	20		92		8			
Base Capacity (vph)	167	801	116	671	260	621	321	
Starvation Cap Reductn	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.99	96.0	0.34	1.09	0.91	0.53	1.14	
3								

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

- Volume exceeds capacity, queue is theoretically infinite.

- Volume schown is maximum after two cycles.

- Oueue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Summary 16: Sproul Rd & Conestoga Rd

3/10/2015

Feb   Feb   Feb   Wel   Wel   Wel   Ne   Ne   Ne   Ne   Ne   Ne   Ne	Ш	LOI											
151   562   139   36   607   58   216   271   28   57     151   562   139   36   607   58   216   271   28   57     1		EDL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
h h l l l l l l l l l l l l l l l l l l		je.	£,		r	2,		K	2,			4	
h h h h h h h h h h h h h h h h h h h		151	295	139	36	209	28	216	27.1	28	22	202	75
hth big		7	4	14	m	∞	18	-	9	16	2	2	12
Part   1,00		0	0	0	0	0	0	0	0	0	0	0	0
1.00		1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
1748   1748   1748   1800   1791   1791   1845   1739   1731   1809		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fehrh 166 618 0 40 667 0 237 298 31 63 5 5 5 5 6 6 6 6 18 0 40 667 0 237 298 31 63 5 5 5 5 6 6 6 18 0 6 1 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 18 0 6 1 6 1 6 18 0 6 1 6 1 6 18 0 6 1 6 1 6 18 0 6 1 6 1 6 18 0 6 1 6 1 6 1 6 18 0 6 1 6 1 6 1 6 18 0 6 1 6 1 6 1 6 18 0 6 1 6 1 6 1 6 18 0 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6		748	1748	1800	1791	1791	1845	1739	1739	1791	1809	1756	1809
s 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 1 0 0 1 1 0 1 1 1 0 0 1 1 0 1 1 1 1 0 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 0 1 1 1 0 1 1 0 1 1 1 1 0 1 1 0 1 1 1 1 0 1		166	618	0	40	299	0	237	298	31	63	222	82
Columbia		-	-	0	-	-	0	-	-	0	0	-	0
(eh, %         3 <td></td> <td>1.61</td> <td>0.91</td> <td>0.91</td> <td>0.91</td> <td>16.0</td> <td>16.0</td> <td>0.91</td> <td>0.91</td> <td>0.91</td> <td>0.91</td> <td>0.91</td> <td>0.91</td>		1.61	0.91	0.91	0.91	16.0	16.0	0.91	0.91	0.91	0.91	0.91	0.91
188   874   0   264   677   0   309   577   60   94     1664   1748   0   814   1791   0   1656   1549   161   200     1664   1748   0   814   1791   0   1656   1549   161   200     1664   1748   0   814   1791   0   1656   1549   161   200     1664   1748   0   814   1791   0   1656   0   1710   1557     15	%	co	3	c	3	3	3	c	c	3	m	3	c
10.06   0.50   0.00   0.38   0.38   0.00   0.07   0.37   0.23		188	874	0	264	119	0	309	277	09	94	235	81
1664   1748   0   814   1791   0   1656   1549   161   200   166   1748   0   814   1791   0   1255   154   1748   0   814   1791   0   1255   162   1748   0   814   1791   0   1255   0   1755   162   1748   0   814   1791   0   1255   0   135   162   1755   162   1755   162   1755   162   1755   162   1755   162   1755   162   1755		90.0	0.50	0.00	0.38	0.38	0.00	0.07	0.37	0.37	0.23	0.23	0.23
verlyh         166         618         0         40         667         0         237         367           verlyh         1664         1748         0         864         0         172         332         0         658         0         173         185           c), s         5.4         24.6         0.0         17.2         33.2         0.0         6.5         0.0         135         210           i, verlyh         1.88         874         0         264         677         0         309         0         637         410           j, verlyh         1.88         874         0         264         677         0         309         0         637         410           verlyh         1.88         874         0         264         677         0         309         0         637         410           werlyh         1.88         874         0         264         677         0         309         0         637         410           werlyh         1.88         874         0         264         677         0         309         0         637         410           werlyh         1.9		664	1748	0	814	1791	0	1656	1549	161	200	1009	348
verbirbin 1664 1748 0 814 1791 0 1656 0 1710 1557  C) S 5.4 24.6 0.0 3.6 33.2 0.0 6.5 0.0 13.5 16.2  C) S 5.4 24.6 0.0 17.2 33.2 0.0 6.5 0.0 13.5 16.2  C) S 1.0 0 10.0 1.0 0.0 1.0 0.0 1.0 0.0 0.7 0 0.0 0.1  In 0.88 874 0 264 677 0 309 0 637 410  In 0.10 1.00 0.01 1.00 0.00 1.00 0.07 0 0.0 0.0  In 0.10 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00  In 0.10 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		166	618	0	40	199	0	237	0	329	367	0	0
C), S	.veh/h/ln	664	1748	0	814	1791	0	1656	0	1710	1557	0	0
5.4 246 0.0 172 332 0.0 65 0.0 135 210 100 0.00 1.00 0.00 1.00 0.00 0.17 188 874 0 264 677 0 309 0.07 1.00 1.00 1.00 0.15 0.99 0.00 0.77 0.00 0.52 0.89 1.00 1.00 0.00 0.10 1.00 1.00 1.00 1.00		5.4	24.6	0.0	3.6	33.2	0.0	6.5	0.0	13.5	16.2	0.0	0.0
1100 0.00 1.00 0.00 1.00 0.00 0.00 0.00		5.4	24.6	0.0	17.2	33.2	0.0	6.5	0.0	13.5	21.0	0.0	0.0
188 874 0 264 677 0 309 0 637 410 188 874 0 0 615 099 0 0077 000 052 089 188 874 0 264 677 0 309 0 637 410 100 1.00 0.00 1.100 1.00 1.00 1.00 1.		00.		0.00	1.00		0.00	1.00		0.09	0.17		0.22
0.88 0.71 0.00 0.15 0.99 0.00 0.77 0.00 0.52 0.89 1.88 874 0 2.64 6.77 0.0 3.09 0 6.37 410 1.00 1.00 1.00 1.00 1.00 1.00 1.00	p(c), veh/h	188	874	0	264	219	0	309	0	637	410	0	0
1.08 874 0 264 677 0 309 0 637 410 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.		9.88	0.71	0.00	0.15	0.99	0.00	0.77	0.00	0.52	0.89	0.00	0.0
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		188	874	0	264	219	0	309	0	637	410	0	0
1100 1000 0000 1100 1000 0000 1100 0000 1100 1100 1100 1100 0000 1100 1100 0000 1100 1100 1100 1100 1110 1100 1100 1100 1100 1100 1110 1100 1110 1100 1110 1100 1110 1100 1110 1100 1110 1100 1110 1100 1110 1		0.0	1.00	1.00	1.00	1.00	1.00	1:00	1:00	1.00	1.00	1.00	1.00
21.7 17.4 0.0 28.3 27.8 0.0 26.5 0.0 22.0 34.4 35.0 0.0 0.0 0.0 0.0 0.0 1.2 31.3 0.0 11.4 0.0 0.7 21.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
35.0 4.8 0.0 1.2 31.3 0.0 11.1 0.0 0.7 21.4  95.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  56.7 22.2 0.0 29.5 59.0 0.0 37.6 0.0 22.7 55.8  E		21.7	17.4	0.0	28.3	27.8	0.0	26.5	0.0	22.0	34.4	0.0	0:0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		35.0	8.4	0.0	1.2	31.3	0.0	11.1	0.0	0.7	21.4	0.0	0.0
Fig. 18		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fe	%),veh/ln	4.2	13.0	0.0	6.0	22.2	0.0	3.9	0.0	6.4	11.5	0.0	0.0
C C E D C	-	26.7	22.2	0.0	29.5	29.0	0.0	37.6	0:0	22.7	22.8	0.0	0:0
784 707 566  29,5 57,4 28,9  C E E C C  1 2 3 4 5 6 7 8  12,5 27,0 50,5 39,5 11,0 39,5 5,5 5,5 5,0 5,0 5,0 5,8 85 23,0 24,6 15,5 7,4 35,2  0,0 0,0 8,5 2,4 0,0 0,0	LnGrp LOS	ш	ပ		ပ	ш		٥		ပ	ш		
1 2 3 4 5 6 7 88 C C C C C C C C C C C C C C C C C	Approach Vol, veh/h		784			707			266			367	
1 2 3 4 5 6 7 1 1 2 3 4 5 6 7 1 1 2 3 4 5 6 7 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	Approach Delay, s/veh		29.5			57.4			28.9			55.8	
1 2 3 4 5 6 7 12,5 27,0 50,5 39,5 11,0 5,5 5,5 5,5 5,0 5,5 5,0 1,8 7,0 21,5 45,5 34,0 6,0 1,8 8,5 23,0 26,6 15,5 7,4 0,0 0,0 8,5 24 0,0	Approach LOS		ပ			ш			ပ			ш	
1 2 4 6 6 7 1 1.0 2 1.0 4 1.0 5 1.0	Timer	_	2	3	4	2	9	7	8				
12.5 27.0 50.5 39.5 11.0 5.5 5.5 5.0 5.0 5.0 5.5 5.0 5.0 5.0 5	Assigned Phs	-	2		4		9	7	8				
5.5 5.5 5.6 5.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6		12.5	27.0		50.5		39.5	11.0	39.5				
max), s 70 215 455 340 60 3 c+I1), s 85 23.0 26, 15,5 7,4 3 , s 00 0.0 8.5 2.4 0.0 41.5		5.5	5.5		2.0		5.5	2.0	2.0				
C+f), s 85 23.0 26.6 15.5 7.4 3 (s 0.0 0.0 8.5 2.4 0.0 41.5		7.0	21.5		45.5		34.0	0.9	34.5				
, s 0.0 0.0 8.5 2.4 0.0 / / 41.5		3.5	23.0		76.6		15.5	1.4	35.2				
41		0.0	0.0		8.5		2.4	0.0	0.0				
41	Intersection Summary												
	HCM 2010 Ctrl Delay												
A SOLOTOS MOLL	HCM 2010 LOS												

Projected 23 am 9/15/2014 Baseline w same timings as 2025 Base

Synchro 8 Report Page 1

Projected 23 am 9/15/2014 Baseline w same timings as 2025 Base

Synchro 8 Report Page 2

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3/10/2015 Queues 25: S Ithan Ave & Conestoga Rd

23. 3 Itilali Ave & Collesioga Na	Ollesio	ya Nu			01.02101.16
	†	ţ	<b>←</b>	<b>→</b>	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	669	732	231	323	
v/c Ratio	1.12	0.77	69.0	0.88	
Control Delay	91.6	17.5	33.8	44.5	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	91.6	17.5	33.8	44.5	
Queue Length 50th (ft)	~315	185	11	82	
Queue Length 95th (ft)	#424	260	126	#177	
Internal Link Dist (ft)	1194	2907	717	3163	
Turn Bay Length (ft)					
Base Capacity (vph)	625	946	326	388	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	1.12	0.77	0.64	0.83	
Intersection Summary					

- Volume exceeds capacity, queue is theoretically infinite.
- Oulume shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Summary 25: S Ithan Ave & Conestoga Rd

3/10/2015

Movement   EBL   EBL   WBL		•	t	~	<b>&gt;</b>	ţ	4	•	<b>←</b>	•	٠	<b>→</b>	*
169   355   2   458   134   14   161   12   64   58   14   161   15   15   54   58   14   161   15   15   15   15   15   15   1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
169   395   2   2   458   134   14   161   12   64   58   10	Lane Configurations		4			4			4			4	
1 6 16 5 2 12 7 4 14 3 8 8 1 100 100 100 100 100 100 100 100 1	Volume (veh/h)	169	395	2	2	458	134	14	161	12	64	28	139
1,00	Number	-	9	16	2	2	12	7	4	14	33	00	18
100	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
190	Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
1854 1783 1854 1764 1696 1764 1763 1695 1763 1844 1773 209 488 2 2 5 65 165 177 1799 115 79 72 209 488 2 2 5 65 165 170 17 199 115 79 72 209 488 2 2 2 5 65 165 170 1 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 0	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
209         488         2         565         165         17         199         15         79         75           0         1         0.82         0.82         0.23         0.	Adj Sat Flow, veh/h/ln	1854	1783	1854	1764	1696	1764	1763	1695	1763	1844	1773	1844
0.81 0.81 0.81 0.81 0.81 0.81 0.81 0.81	Adj Flow Rate, veh/h	209	488	2	2	292	165	17	199	15	79	72	172
081         081         081         081         081         081         081         081         081         081         081         081         081         081         081         081         081         4	Adj No. of Lanes	0	_	0	0	<del>-</del>	0	0	<del>-</del>	0	0	<del>-</del>	0
4         4	Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
225         438         2         59         713         208         75         341         25         140         99           0.56         0.56         0.56         0.56         0.56         0.56         0.56         0.56         0.56         0.05         0.03         0.23         0.23         0.23         0.23         0.23         0.23         0.23         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.04         0.04         0.04         0.04         0.05         0.00         <	Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
0.56 0.56 0.56 0.56 0.56 0.56 0.23 0.23 0.23 0.23 0.23 0.23 0.24 780 3 1 1270 370 0.25 0.23 0.23 0.23 0.23 0.23 0.23 0.24 437 0.26 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Cap, veh/h	225	438	2	26	713	208	75	341	25	140	66	189
264         780         3         1         1270         370         54         1503         108         294         437           699         0         0         732         0         0         231         0         0         1562         0           12.6         0.0         0.0         0.0         0.0         0.0         1645         0         0         1562         0           12.6         0.0         0.0         0.0         0.0         0.0         4.6         0.0         1562         0         1562         0         1562         0         1562         0         1562         0         1562         0         1562         0         1562         0         1562         0         0         1562         0         1562         0         0         1562         0         0         1562         0         0         1562         0         0         1562         0         0         1562         0         1562         0         1562         0         0         1562         0         1562         0         0         0         0         0         0         0         0         0         0 <td< td=""><td>Arrive On Green</td><td>0.56</td><td>0.56</td><td>0.56</td><td>0.56</td><td>0.56</td><td>0.56</td><td>0.23</td><td>0.23</td><td>0.23</td><td>0.23</td><td>0.23</td><td>0.23</td></td<>	Arrive On Green	0.56	0.56	0.56	0.56	0.56	0.56	0.23	0.23	0.23	0.23	0.23	0.23
699         0         732         0         231         0         1582         0           12.6         0         0         1640         0         0         1685         0         0         1582         0           12.6         0.0         0         0         0         0         0         0         1582         0           345         0.0         0.0         21.9         0.0         0.0         17.2         0.0         0         17.2         0         0         17.2         0         0         17.2         0         0         17.2         0         0         17.2         0         0         17.2         0         0         17.2         0         0         17.2         0         0         17.2         0         0         17.2         0         0         17.2         0         0         17.2         0         0         17.2         0 <td< td=""><td>Sat Flow, veh/h</td><td>264</td><td>780</td><td>3</td><td>1</td><td>1270</td><td>370</td><td>54</td><td>1503</td><td>108</td><td>294</td><td>437</td><td>832</td></td<>	Sat Flow, veh/h	264	780	3	1	1270	370	54	1503	108	294	437	832
1048 0 0 1640 0 0 1665 0 0 1562 0 0 1264 0 0 1264 0 0 1264 0 0 127	Grp Volume(v), veh/h	669	0	0	732	0	0	231	0	0	323	0	0
12.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 46 0.0 0.0 0.0 0.0 0.0 34.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Grp Sat Flow(s),veh/h/ln	1048	0	0	1640	0	0	1665	0	0	1562	0	0
34.5 0.0 0.0 21.9 0.0 0.0 7.6 0.0 0.0 12.2 0.0 0.0 0.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Q Serve(g_s), s	12.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0
0.30 0.00 0.00 0.24 0.04 0.05 0.05 0.04 0.04 0.04 0.00 0.05 0.00 0.05 0.04 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0		34.5	0.0	0.0	21.9	0.0	0.0	7.6	0.0	0.0	12.2	0.0	0.0
664 0 0 0 980 0 0 0 441 0 0 0 427 0 0 644 0 0 0 000 0.00 0.00 0.75 0.00 0.00 0.00	Prop In Lane	0.30		0.00	0.00		0.23	0.07		90:0	0.24		0.53
1.05 0.00 0.00 0.75 0.00 0.052 0.00 0.00 0.76 0.00 0.644 0 0 0 980 0 0 0 4,85 0 0 0 0.04 41 0 0 0 0.00 0.00 0.00 0.00	Lane Grp Cap(c), veh/h	664	0	0	086	0	0	441	0	0	427	0	0
1,00	V/C Ratio(X)	1.05	0.00	0.00	0.75	0.00	0.00	0.52	0.00	0.00	0.76	0.00	0.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	664	0	0	086	0	0	455	0	0	441	0	0
1,00 0,00 0,00 1,00 0,00 0,00 1,00 0	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
15.8 0.0 0.0 10.7 0.0 0.0 21.3 0.0 0.0 22.9 0.0 49.4 0.0 0.0 0.3.2 0.0 0.0 1.0 0.0 0.0 0.0 22.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
49.4 0.0 0.0 3.2 0.0 0.0 1.0 0.0 0.0 7.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	15.8	0.0	0.0	10.7	0.0	0.0	21.3	0.0	0.0	22.9	0.0	0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	49.4	0.0	0.0	3.2	0.0	0.0	1.0	0.0	0.0	7.1	0.0	0.0
10	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
65.1 0.0 0.0 13.9 0.0 0.0 22.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	%ile BackOfQ(-26165%),veh/ln		0.0	0.0	10.6	0.0	0.0	3.6	0.0	0.0	6.1	0.0	0.0
F B C C C C C C C C C C C C C C C C C C	LnGrp Delay(d),s/veh	65.1	0.0	0.0	13.9	0.0	0:0	22.3	0:0	0.0	30.0	0.0	0.0
699 732 231 65.1 13.9 22.3 E	LnGrp LOS	L			В			ပ			ပ		
65.1 13.9 22.3 E B C C 2 4 5 6 7 8 41.0 20.4 41.0 20.4 60 6.0 6.0 6.0 6.0 35.0 15.0 35.0 15.0 23.9 9.6 36.5 14.2 5.5 1.2 0.0 0.2	Approach Vol, veh/h		669			732			231			323	
1 2 3 4 5 6 7 8 C 2 4 6 7 8 C 41.0 20.4 41.0 20.4 6 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Approach Delay, s/veh		65.1			13.9			22.3			30.0	
1 2 3 4 5 6 7 2 4 6 6 7 41.0 20.4 41.0 2 6 0 6.0 6.0 6.0 35.0 15.0 35.0 1 23.9 9.6 36.5 1 5.5 1.2 0.0	Approach LOS		ш			В			S			S	
2 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Timer	_	2	3	4	2	9	7	8				
410 20.4 41.0 2 6.0 6.0 6.0 35.0 35.0 15.0 35.0 1 35.0 15.0 35.5 1.2 0.0 35.5 1 35.6 1.2 0.0 D	Assigned Phs		2		4		9		∞				
6.0 6.0 6.0 35.0 15.0 85.0 1 23.9 9.6 36.5 1 5.5 1.2 0.0 35.6	Phs Duration (G+Y+Rc), s		41.0		20.4		41.0		20.4				
35.0 15.0 35.0 23.9 9.6 36.5 5.5 1.2 0.0 35.6 D	Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
C+f), s 23.9 9.6 36.5 , s 5.5 1.2 0.0 7 35.6 D D	Max Green Setting (Gmax), s		32.0		12.0		32.0		12.0				
, s 5.5 1.2 0.0 35.6 D	Max Q Clear Time (g_c+l1), s		23.9		9.6		36.5		14.2				
	Green Ext Time (p_c), s		2.5		1.2		0.0		0.5				
	Intersection Summary												
	HCM 2010 Ctrl Delay			35.6									
	HCM 2010 LOS			۵									

Projected 23 am 9/15/2014 Baseline w same timings as 2025 Base

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Projected 23 am 9/15/2014 Baseline w same timings as 2025 Base

Queues
33: Williams Rd/Garrett Ave & Conestoga Rd
33: Williams Rd/Garrett Ave & Conestoga Rd

	†	ţ	×	×	
Lane Group	EBT	WBT	NET	SWT	
Lane Group Flow (vph)	538	498	24	63	
v/c Ratio	0.35	0.31	0.14	0.41	
Control Delay	4.4	4.1	29.9	37.1	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	4.4	4.1	29.9	37.1	
Queue Length 50th (ft)	82	9/	10	79	
Queue Length 95th (ft)	131	116	53	26	
Internal Link Dist (ft)	1396	1273	368	1816	
Turn Bay Length (ft)					
Base Capacity (vph)	1547	1601	198	175	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.35	0.31	0.12	0.36	
Intersection Summary					

Projected 23 am 9/15/2014 Baseline
w same timings as 2025 Base
Page 1

HCM 2010 Signalized Intersection Summary 33: Williams Rd/Garrett Ave & Conestoga Rd

Movement   EB1	•	í	t	*	Ĺ		ļ	`	`	`	•	i.	
2 446 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
26 446 1 4 429 4 6 6 9 9 15 3 8 18 18 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Lane Configurations		4			4			÷			4	
5	Volume (veh/h)	56	446	-	4	429	4	9	9	6	15	m	38
1.00	Number	2	2	12	-	9	16	c	∞	18	7	4	14
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
100 100 100 100 100 100 100 100 100 100		1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
1872   1872   1872   1872   1872   1800   1800   1728   1728   30   807   1   5   488   5   7   7   10   17   3   3   10   10   10   10   17   3   3   10   10   10   10   10   10		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
30 507 1 5 488 5 7 7 7 10 17 3  0 8 08 08 08 08 08 08 08 08 08 08 08 08	_	872	1872	1872	1872	1872	1872	1800	1800	1800	1728	1728	1728
08 0 18 0 08 08 08 08 08 08 08 08 08 08 08 08	Adj Flow Rate, veh/h	30	203	<del>-</del>	2	488	2	7	7	10	17	3	43
0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88	Adj No. of Lanes	0	-	0	0	-	0	0	<b>-</b> -	0	0	-	0
9 131 3 5 8 132 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
93 1331 3 5 8 1382 14 88 35 37 86 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	%	0	0	0	0	0	0	0	0	0	0	0	0
0.75 0.75 0.75 0.75 0.75 0.75 0.05 0.05		93	1331	3	28	1382	14	88	35	37	98	00	54
48 1775 3 4 1842 19 333 655 706 325 147  1828 0 0 0 498 0 0 0 24 0 0 63 0  0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		0.75	0.75	0.75	0.75	0.75	0.75	0.05	0.05	0.05	0.05	0.05	0.05
1826   0   498   0   0   24   0   0   63   0   0   1865   0   0   1695   0   0   1485   0   0   0   1695   0   0   0   1485   0   0   0   0   0   0   0   0   0	Sat Flow, veh/h	48	1775	က	4	1842	19	333	929	90/	325	147	1014
1826 0 0 1865 0 0 1695 0 0 1485 0 0 1485 0 0 0 1485 0 0 0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Grp Volume(v), veh/h	538	0	0	498	0	0	24	0	0	63	0	0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Grp Sat Flow(s),veh/h/ln 1	826	0	0	1865	0	0	1695	0	0	1485	0	0
6.7 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0
0.06	Cycle Q Clear(g_c), s	6.7	0.0	0.0	0.9	0.0	0.0	6.0	0.0	0.0	2.7	0.0	0.0
1427 0 0 0 1454 0 0 0 160 0 0 148 0 0 0 0 148 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		90:0		0.00	0.01		0.01	0.29		0.42	0.27		0.68
0.38 0.00 0.00 0.34 0.00 0.015 0.00 0.03 0.03 0.00 0.1427 0 0 0 0 1454 0 0 0 0 301 0 0 0 0 280 0 0 0 0 0 0 0 0 0 0 0 0 0 0		427	0	0	1454	0	0	160	0	0	148	0	0
1427 0 0 0 1454 0 0 0 301 0 0 0 280 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.0		0.38	0.00	0.00	0.34	0.00	0.00	0.15	0.00	0.00	0.43	0.00	0.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		427	0	0	1454	0	0	301	0	0	280	0	0
1.00 0.00 0.00 1.00 0.00 0.00 1.00 0		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2.9 0.0 0.0 2.8 0.0 0.0 30.0 0.0 30.9 0.0 0.0 3.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
0.8 0.0 0.0 0.6 0.0 0.0 0.6 0.0 0.0 0.2 8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	5.9	0.0	0.0	2.8	0:0	0.0	30.0	0.0	0.0	30.9	0.0	0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	incr Delay (d2), s/veh	0.8	0.0	0.0	9.0	0.0	0.0	9.0	0.0	0.0	2.8	0.0	0.0
3.6 0.0 0.0 3.3 0.0 0.0 0.4 0.0 0.0 1.3 0.0 3.7 0.0 0.0 3.5 0.0 0.0 30.6 0.0 0.0 33.6 0.0  A A A C C C C C C C C C C C C C C C C	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
3.7 0.0 0.0 3.5 0.0 0.0 30.6 0.0 0.0 33.6 0.0  5.38	%ile BackOfQ(-26165%),veh/ln	3.6	0.0	0.0	3.3	0.0	0.0	0.4	0.0	0.0	1.3	0.0	0.0
A         A         C         C           538         498         24         C           3.7         3.5         30.6         30.6           A         A         A         C         C           1         2         3         4         6         8         C         C           56.0         10.0         56.0         10.0         6.0         7.0         7.0 <td>LnGrp Delay(d),s/veh</td> <td>3.7</td> <td>0.0</td> <td>0.0</td> <td>3.5</td> <td>0.0</td> <td>0.0</td> <td>30.6</td> <td>0.0</td> <td>0.0</td> <td>33.6</td> <td>0.0</td> <td>0.0</td>	LnGrp Delay(d),s/veh	3.7	0.0	0.0	3.5	0.0	0.0	30.6	0.0	0.0	33.6	0.0	0.0
538 498 24  3.7 3.5 306  A A B C C  2 4 5 6 7 8  56.0 10.0 56.0 10.0  6.0 6.0 6.0 6.0  50.0 10.0 50.0 10.0  8.7 4.7 8.0 2.9  4.7 0.1 4.7 0.2	LnGrp LOS	A			A			ပ			ပ		
37 35 306  A A A C  2 3 4 5 6 7 8  560 100 560 100  6.0 6.0 6.0 6.0  500 100 500 100  8.7 4.7 8.0 2.9  4.7 0.1 4.7 0.2	Approach Vol, veh/h		538			498			24			63	
1 2 3 4 5 6 7 8 2 4 5 6 7 8 56.0 10.0 56.0 10.0 50.0 10.0 50.0 10.0 8.7 4.7 8.0 2.9 4.7 0.1 4.7 0.2 5.8	Approach Delay, s/veh		3.7			3.5			30.6			33.6	
1 2 3 4 5 6 7 2 4 6 6 7 56.0 10.0 56.0 1 6.0 6.0 6.0 6.0 8.7 4.7 8.0 4.7 8.0 5.8 A	Approach LOS		A			A			O			O	
2 4 6 560 100 560 1 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Timer	_	2	က	4	2	9	7	8				
56.0 10.0 56.0 1 6.0 6.0 6.0 6.0 8.7 4.7 8.0 8.1 4.7 8.1 8.1 4.7 8.1 8.1 8.1 8.1 8.1 8.1 8.1 8.1 8.1 8.1	Assigned Phs		2		4		9		8				
6.0 6.0 6.0 50.0 10.0 50.0 10.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0	Phs Duration (G+Y+Rc), s		26.0		10.0		26.0		10.0				
500 100 500 8.7 4.7 8.0 4.7 0.1 4.7 5.8	Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
8.7 4.7 8.0 4.7 0.1 4.7 5.8 A	Max Green Setting (Gmax), s		20.0		10.0		20.0		10.0				
5 4.7 0.1 4.7 5.8 A A	Max Q Clear Time (g_c+I1), s		8.7		4.7		8.0		2.9				
ımary Jelay	Green Ext Time (p_c), s		4.7		0.1		4.7		0.2				
Jelay	Intersection Summary												
	HCM 2010 Ctrl Delay			5.8									
	HCM 2010 LOS			A									

User approved pedestrian interval to be less than phase max green.

Projected 23 am 9/15/2014 Baseline w same limings as 2025 Base

3/10/2015 Queues 3: County Line Rd & Spring Mill Rd

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	†	ţ	<b>←</b>	<b>→</b>	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	410	439	358	436	
v/c Ratio	0.59	89.0	0.76	0.87	
Control Delay	17.2	20.9	28.6	37.5	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	17.2	20.9	28.6	37.5	
Queue Length 50th (ft)	107	122	108	139	
Queue Length 95th (ft)	204	#272	189	#270	
Internal Link Dist (ft)	3088	1481	1821	1084	
Turn Bay Length (ft)					
Base Capacity (vph)	692	648	543	579	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.59	89.0	99.0	0.75	
Intersection Summary					

<sup># 95</sup>th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Summary 3: County Line Rd & Spring Mill Rd

	4	†	>	<b>/</b>	Ļ	4	•	<b>←</b>	•	۶	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Volume (veh/h)	32	283	71	69	569	79	43	253	45	33	327	54
Number	2	2	12	-	9	16	33	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
obT)	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
_	1800	1617	1800	1800	1731	1800	1800	1731	1800	1800	1731	1800
Adj Flow Rate, veh/h	37	298	75	73	283	83	45	266	47	32	344	57
	0	<del>-</del>	0	0	<del>-</del>	0	0	<del>-</del>	0	0	<del></del>	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	66	285	138	155	244	147	66	366	09	84	401	64
Green	0.50	0.50	0.50	0.50	0.50	0.50	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	71	1167	277	175	1091	295	117	1255	207	74	1375	218
Grp Volume(v), veh/h	410	0	0	439	0	0	358	0	0	436	0	0
Grp Sat Flow(s),veh/h/ln 1	1515	0	0	1560	0	0	1579	0	0	1667	0	0
O Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0:0	2.8	0.0	0.0
Cycle Q Clear(g_c), s	11.0	0.0	0.0	11.0	0.0	0.0	12.6	0.0	0.0	15.4	0.0	0.0
	60.0		0.18	0.17		0.19	0.13		0.13	0.08		0.13
p(c), veh/h	819	0	0	846	0	0	526	0	0	549	0	0
V/C Ratio(X)	0.50	0.00	0.00	0.52	0.00	0.00	89.0	0.00	0.00	0.79	0.00	0.00
Avail Cap(c_a), veh/h	819	0	0	846	0	0	099	0	0	689	0	0
0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	0.52	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.01	0.0	0.0	9.01	0.0	0.0	19.8	0.0	0.0	21.0	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	2.3	0.0	0.0	1.1	0.0	0.0	3.9	0.0	0.0
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(-26165%),veh/ln	4.9	0.0	0.0	5.5	0.0	0.0	2.7	0.0	0.0	7.7	0.0	0.0
LnGrp Delay(d),s/veh	11.7	0.0	0.0	12.8	0.0	0.0	21.0	0.0	0.0	24.9	0.0	0.0
LnGrp LOS	В			В			ပ			ပ		
Approach Vol, veh/h		410			439			358			436	
Approach Delay, s/veh		11.7			12.8			21.0			24.9	
Approach LOS		В			В			S			ပ	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs		2		4		9		8				
Phs Duration (G+Y+Rc), s		37.4		24.6		37.4		24.6				
Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
Max Green Setting (Gmax), s		26.0		24.0		26.0		24.0				
Max Q Clear Time (g_c+I1), s		13.0		17.4		13.0		14.6				
Green Ext Time (p_c), s		3.1		1.2		3.1		1.4				
Intersection Summary												
HCM 2010 Ctrl Delay			17.5									
HCM 2010 LOS			Ω									

Projected 23 am 9/15/2014 Baseline w same timings as 2025 Base

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Projected 23 am 9/15/2014 Baseline w same limings as 2025 Base

HCM 2010 TWSC 79: Garrett Rd & Lancaster Ave

	77						
Movement	H	EBT E	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	11	1116	25	70	1150	0	26
Conflicting Peds, #/hr		0	0	0	0	0	0
Sign Control	Ā	Free Free	ree	Free	Free Free	Stop	Stop
RT Channelized		2	None	•	None		None
Storage Length		÷					0
Veh in Median Storage, #		0			0	0	
Grade, %		-3		1	co	0	
Peak Hour Factor		22	29	19	29	19	19
Heavy Vehicles, %		0	0	0	0	0	0
Mvmt Flow	1666	99	37	30	1716	0	39
Major/Minor	Major1	드	_	Major2		Minor1	
Conflicting Flow All		0	0	1703	0	2602	851
Stage 1				•		1684	
Stage 2		ï		1		918	
Critical Hdwy				4.1		8.9	6.9
Critical Hdwy Stg 1				•		2.8	
Critical Hdwy Stg 2				•		2.8	
Follow-up Hdwy				2.2		3.5	3.3
Pot Cap-1 Maneuver				379		21	308
Stage 1				•		139	
Stage 2				•		354	
Platoon blocked, %		÷					
Mov Cap-1 Maneuver				379		21	308
Mov Cap-2 Maneuver		ï				21	
Stage 1				•		139	
Stage 2		ï		1		354	
Approach	1	EB		WB		NB	
HCM Control Delay, s		0		7.5		18.4	
HCM LOS						O	
Minor Lane/Major Mvmt	NBLn1 EBT		EBR WBL	WBT			
Capacity (veh/h)	308		- 379				
HCM Lane V/C Ratio	0.126		- 0.079	1			
HCM Control Delay (s)	18.4		- 15.3	7.4			
HCM Lane LOS	ပ		ပ ·	A			
4. 44 11.4							

Baseline Synchro 8 Report	Se Page 1
Projected 23 am 9/15/2014 Baseline	w same timings as 2025 Base

HCM 2010 TWSC 15: Conestoga Rd & Spring Mill Rd

3/10/2015

Int Delay, s/veh 0.2	7							
Movement	EBL	EBT	Λ	WBT WBR	WBR	SWL	SWR	
Vol, veh/h	2	648		669	3	4	8	
Conflicting Peds, #/hr	0	0		0	0	0	0	
Sign Control	Free	Free	_	Free	Free	Stop	Stop	
RT Channelized		None		-	None		None	
Storage Length	•					0		
Veh in Median Storage, #	•	0		0		0		
Grade, %	•	0		0		0		
Peak Hour Factor	98	98		98	98	98	98	
Heavy Vehicles, %	4	4		4	4	4	4	
Mvmt Flow	2	753		813	23	വ	6	
Major/Minor	Major1	ı	M	Major		Minor	ı	
Majorivillo	Iviajui I		INIC	JU12		2F75	140	
COIIIICIIIIG FIOW AII	010	0			0	5/61	010	
Stage 1						812		
Stage 2	•			٠		758		
Critical Hdwy	4.14					6.44	6.24	
Critical Hdwy Stg 1	•			٠		5.44		
Critical Hdwy Stg 2	•			٠		5.44		
Follow-up Hdwy	2.236	,		٠		3.536	3.336	
Pot Cap-1 Maneuver	803			٠		120	374	
Stage 1	•			٠		432		
Stage 2	•					459		
Platoon blocked, %				٠				
Mov Cap-1 Maneuver	803			٠		120	374	
Mov Cap-2 Maneuver	•	,		٠		120		
Stage 1	•			٠		432		
Stage 2	•			÷		457		
Approach	EB			WB		SW		
HCM Control Delay, s	0			0		22.6		
HCM LOS						O		
Minor Lane/Major Mvmt	EBL	EBT WBT	WBRSWLn1					
Capacity (veh/h)	803		- 219					
HCM Lane V/C Ratio	0.003		- 0.064					
HCM Control Delay (s)	9.5	0	- 22.6					
HCM Lane LOS	A	Α	ں					
V-1	٥							

Projected 23 am 9/15/2014 Baseline
W same timings as 2025 Base
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HCM 2010 TWSC 29: Strathmore Dr/Lowrys Ln & Conestoga Rd

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Lanes, Volumes, Timings 38: County Line Rd & N Ithan Ave

3/10/2015

Novement	EBL	EBT	EBR		WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
/ol, veh/h	48	430	14		6	473	2	13	14	12	2	15	84
Conflicting Peds, #/hr	0	0			0	0	0	0			0		
Sign Control	Free	Free	Free		Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized		•	None		٠	٠	None	ľ					None
Storage Length	٠		٠			٠		•			•	•	·
/eh in Median Storage, #		0	٠		٠	0			0			0	ľ
Grade, %	٠	0	٠		•	0		•	0	٠	•	0	ľ
Peak Hour Factor	8	8	8		8	8	8	80	8	8	80	8	8
Heavy Vehicles, %	3	3	3		3	3	က	3	3	33	3	3	3
Mvmt Flow	99	538	18		=	261	9	16	9	15	2	19	105
					-								
Major/Minor	Major1			2	Major2			Minor1			Minor2		
Conflicting Flow All	298	0	0		222	0	0	1345	1286	546	1300	1292	594
Stage 1	•		•		•	•		999	999		617	617	
Stage 2		•	٠		٠			619	620		683	675	ľ
Critical Hdwy	4.13	•	٠		4.13	٠		7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	•		٠			٠		6.13	5.53		6.13	5.53	·
Critical Hdwy Stg 2		1	•		•	•		6.13	5.53		6.13	5.53	ľ
Follow-up Hdwy	2.227		٠		2.227	•		3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	974		٠		1010	٠		128	164	536	138	162	503
Stage 1		1	•		1	1		447	456		476	480	
Stage 2	•	'	•		•	•		440	478		438	452	
Platoon blocked, %		1	•			•							
Mov Cap-1 Maneuver	974		٠		1010	٠		84	147	536	112	145	503
Nov Cap-2 Maneuver	•		•		•	1		84	147		112	145	
Stage 1	•	•	•		•	•		407	415		434	472	
Stage 2			•			•		329	470		371	412	
Approach	B				WB			8			SBS		
HCM Control Delay, s	0.9				0.5			42.7			21		
HCM LOS								ш			O		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR SBLn1	1					
Capacity (veh/h)	143	974	٠	•	1010	٠	- 350	0					
HCM Lane V/C Ratio	0.341	0.062	•	1	0.011	•	- 0.361	_					
HCM Control Delay (s)	42.7	8.9	0	1	9.8	0	- 21	_					
HCM Lane LOS	ш	A	A	1	4	⋖	· ·	()					
/ / / mid mid and													

		Synchro 8 Report Page 1
ပ	1.6	
A		
A	0	
	•	
4	•	
A	0.2	
ш	4:	Baseline Ise
HCM Lane LOS	HCM 95th %ille Q(veh)	Projected 23 am 9/15/2014 Baseline w same timings as 2025 Base
	HCMLane LOS E A A - A A - C	H 4:

Synchro 8 Report Page 1 ICU Level of Service D No Right 1.00 102 1900 1.00 0.91 SWL 161 1900 0.948 0.970 1713 30 824 18.7 0.91 289 No Left 12 0 1.00 15 Stop 0.983 1831 0.983 1831 30 1901 43.2 0.91 344 313 1900 1.00 S30 No Left 1.00 Stop 169 1900 1.00 Left No 0 0.91 1.00 115 1900 1.00 No Right 0 0.91 1.00 Area Type:
Control Type: Unsignalized
Intersection Capacity Utilization 76.5%
Analysis Period (min) 15 351 1900 1.00 0.967 30 295 6.7 0.91 386 512 No Left 0 0 0 1.00 1801 Projected 23 am 9/15/2014 Baseline w same timings as 2025 Base Other Frt
IP Protected
Sald. Flow (prol)
Fill Permitted
Sald. Flow (prol)
Fill Permitted
Sald. Flow (prom)
Link Speed (mph)
Link Distance (if)
Travel Time (s)
Peak Hour Factor
Agi, Flow (uph)
Shared Lane Traffic (%)
Lane Group, Flow (uph)
Enter Blocked Intersection
Lane Alignment
Median Width(it)
Link Offset(it)
Crosswalk Width(it)
Crosswalk Width(it)
Link Offset(it)
Link Offset(it)
Crosswalk Width(it)
Flow way Left Turn Lane
Headway Factor
Turning Speed (mph)
Sign Control Lane Configurations Volume (vph) Ideal Flow (vphpl) Lane Util. Factor

Lanes, Volumes, Timings 2: County Line Rd & N Ithan Ave

	•	7	_≉	•	4	~	
ane Group	EBL	EBR	SBL	SBR	NWL	NWR	
-ane Configurations	×		×		×		
Volume (vph)	211	15	143	353	38	258	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
<u>+</u>	0.991		0.904		0.882		
-It Protected	0.955		986.0		0.994		
Satd. Flow (prot)	1763	0	1660	0	1633	0	
It Permitted	0.955		986.0		0.994		
Satd. Flow (perm)	1763	0	1660	0	1633	0	
ink Speed (mph)	30		30		30		
Link Distance (ft)	973		295		2020		
ravel Time (s)	22.1		6.7		45.9		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	224	16	152	376	40	274	
Shared Lane Traffic (%)							
-ane Group Flow (vph)	240	0	528	0	314	0	
Enter Blocked Intersection	No	No	N <sub>o</sub>	S	8	9	
ane Alignment	Left	Right	Left	Right	Left	Right	
Median Width(ft)	77		12		12		
-ink Offset(ft)	0		0		0		
Crosswalk Width(ft)	10		10		10		
wo way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	6	15	6	15	6	
Sign Control	Stop		Free		Stop		
ntersection Summary							
Area Type:	Other						
Control Type: Unsignalized	ion 70 3%			Ξ	o lava I	Corrice Corrice	
Analysis Period (min) 15	200			2	2		

Projected 23 am 9/15/2014 Baseline Synchro 8 Report w same linings as 2025 Base Page 1

Int Delay s/veh 3.7  Movement EBL EBR NBL NBT SBT SBR  Conflicting Pecks, #frv 6 2 82 59 241 152 31  Conflicting Pecks, #frv 6 0 0 0 0 0 0  Sign conflicting Pecks, #frv 6 0 0 0 0 0 0  Sign conflicting Pecks, #frv 6 0 0 0 0 0 0  Sign conflicting Pecks, #frv 6 0 0 0 0 0 0  Sign conflicting Pecks, #frv 6 0 0 0 0 0 0  Sign conflicting Flow All 600 193 210 0 0 0  Move flow, % 0 193 210 0 0 0 0  Move flow, % 0 4 6 4 6.2 4.1 0 0 0 0  Critical Holwy Sig 2 5.4 0 0 0 0 0  Critical Holwy Sig 2 5.4 0 0 0 0 0 0  Sign conflicting Flow All 600 193 210 0 0 0  Critical Holwy Sig 2 5.4 0 0 0 0 0 0 0  Critical Holwy Sig 2 5.4 0 0 0 0 0 0 0 0  Sign conflicting Flow All 600 193 210 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0								
SBT	Intersection							
FBL   FBR   NBL   NBT		3.7						
Pe, # Sup	Movement	ā	EBD	a a	NBT	CBT	CBD	
Be, # Stop Stop Free Free Free Free Free Free Free Fre	Vol. veh/h	62	82	59	241	152	31	
Stop   Stop   Free Free   Free	Conflicting Peds, #/hr	0	0	0	0	0	0	
9e,# 0	Sign Control	Stop	Stop	Free	Free	Free	Free	
9e,# 0	RT Channelized		None		None		None	
99,# 0	Storage Length	0						
Ninot2   S   S   S   S   S   S   S   S   S	Veh in Median Storage, #	0		•	0	0		
Ninor2   Najor1   Najor2   Najor2   Najor2   Najor2   Najor3   N	Grade, %	0	•	•	0	0		
Minor2	Peak Hour Factor	87	87	87	87	87	87	
Minor2 Major1 Major2 175 3  606 193 210 0	Heavy Vehicles, %	0	0	0	0	0	0	
Minor   Major   Major   Major   Major     413	Mvmt Flow	71	94	89	277	175	36	
Minor2 Major1 Major2  606 193 210 0								
Mark	Major/Minor	Minor2		Major1		Major2		
193	Conflicting Flow All	909	193	210	0		0	
413	Stage 1	193				•		
6.4 6.2 4.1	Stage 2	413		•				
5.4	Critical Hdwy	6.4	6.2	4.1				
3.54   3.3   2.2	Critical Hdwy Stg 1	5.4		•		•		
Asia 3.5 3.3 2.2	Critical Hdwy Stg 2	5.4		•				
Wer 4643 884 1373	Follow-up Hdwy	3.5	3.3	2.2		•		
% 645	Pot Cap-1 Maneuver	463	854	1373				
% 6/12	Stage 1	845						
%     436     854     1373     -     -       auver     436     -     -     -     -       auver     436     -     -     -     -       632     -     -     -     -       ay, S     13.2     1.5     0       ay, S     13.2     1.5     0       ratio     0.049     -     0.274     -       ay(s)     7.8     0.324     -     -       ay(s)     7.8     0.324     -     -       ay(s)     7.8     0.324     -     -	Stage 2	672		•		'		
Auver 436 854 1373	Platoon blocked, %							
And the control of th	Mov Cap-1 Maneuver	436	824	1373				
Section   Sect	Mov Cap-2 Maneuver	436				•		
Ay, S 13.2	Stage 1	845						
ay, s 13.2 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	Stage 2	632						
ay, s		É		1		Č		
ay, s 13.2 1.5  RMmI NBL NBTEBLn1 SBT SBR 1373 - 604	Approach	EB		NB		SB		
B  rMvmt NBL NBTEBLn1 SBT  1373 - 604 - 34 (s) 7.8 0 13.2 - A A A B -	HCM Control Delay, s	13.2		1.5		0		
TrMvmt NBL NBT EBLn1 SBT 1373 - 604 - 604 - 6049 - 0.274 - ay (s) A A A B - 604 - 6049	HCM LOS	B						
Ritio 0.049 - 0.374 - 39 (s) A A B - 1								
1373 - 604  tatio 0.049 - 0.274  ay (s) 7.8 0 13.2  A A B	Minor Lane/Major Mvmt							
0.049 - 0.274 7.8 0 13.2 A A B	Capacity (veh/h)	1373	- 604					
7.8 0 13.2 A A B	HCM Lane V/C Ratio	0.049	- 0.274					
A A B	HCM Control Delay (s)	7.8						
כ	HCM I and I OS	<						

HCM 2010 TWSC 52: Airdale Rd & County Line Rd

int Delay, swen	4							
Movement	EBL	EBT		WBT	WBR	SBL	SBR	
Vol, veh/h	206	223		291	21	15	66	
Conflicting Peds, #/hr	0			0	0	0	0	
Sign Control	Free	Free		Free F	Free	Stop	Stop	
RT Channelized		None		2	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, %	_	_		-	<del>-</del>	<b>—</b>	-	
Mvmt Flow	234	253		331	74	11	112	
Major/Minor	Major1		N	Major2		Minor2		
Conflicting Flow All	355	0			0	1065	343	
Stage 1	•					343		
Stage 2						722		
Critical Howy	4.11					6.41	6.21	
Critical Hdwy Stg 1	•					5.41		
Critical Hdwy Stg 2						5.41		
- ollow-up Hdwy	2.209				ì	3.509	3.309	
Pot Cap-1 Maneuver	1209					248	702	
Stage 1	•				·	721		
Stage 2	•			٠		483		
Platoon blocked, %					·			
Mov Cap-1 Maneuver	1209					192	702	
Mov Cap-2 Maneuver	•				,	192	,	
Stage 1	•					721		
Stage 2						374		
	í					é		
Approach	EB			WB		SB		
HCM Control Delay, s	4.2			0		14.2		
HCM LOS						В		
Winor Lane/Major Mvmt	EBL	EBT WBT	WBR SBLn1					
Capacity (veh/h)	1209		520					
HCM Lane V/C Ratio	0.194		0.249					
HCM Control Delay (s)	8.7	0	14.2					
HCM Lane LOS	A	A	B					

	р
HCM 2010 TWSC	43: County Line Rd & Roberts Rd

3/10/2015

Moyomont	d	LDT	CDD	WDI	TOW	M/DD	av	Tan	L NBD	Q	CDI	CDT	CDD
Movernerit	EDL	EDI	EDK	WDL	WDI	WDK	IND		Ž	אַנ	SDL	SBI	SDI
Vol, veh/h	89	101	œ	2	24	9		14 627		76	œ	479	ਨੌ
Conflicting Peds, #/hr	0	0	0	0	0	0	_	0 0		0	0	0	_
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	e Free	Free		Free	Free	Free
RT Channelized			None			None		Ċ	- None	Je	٠	٠	None
Storage Length	•	•									٠	٠	
Veh in Median Storage, #	•	0			0	•		0 -	_		٠	0	
Grade, %	•	0		•	0	•		0 -	_		٠	0	
Peak Hour Factor	88	88	88	88	88	88	88	88 88		88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2		2 2		2	2	2	
Mvmt Flow	77	115	6	2	27	7	-	16 712		30	6	244	43
MojorfMisor	Minor		ı	Minort			PAGIO	_		Y	Moior		
Iviajul/iviii lui	ZINIIINI			INIIIN		į	Iviajui		ı,		3012		
Conflicting Flow All	986	1358	294	1107	1365	371	288		0	0	742	0	_
Stage 1	584	584		759	759	•			,		٠	•	
Stage 2	402	774		348	909	1			į.		1	1	
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14				4.14	٠	
Critical Hdwy Stg 1	6.54	5.54		6.54	5.54						٠	٠	
Critical Hdwy Stg 2	6.54	5.54		6.54	5.54	٠		ĺ			٠	٠	
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22			,	2.22	1	
Pot Cap-1 Maneuver	202	148	702	165	146	626	983				861	•	
Stage 1	465	496		365	413	1			į.		1	1	
Stage 2	296	406		641	485	'		Ì	,		٠	•	
Platoon blocked, %												٠	
Mov Cap-1 Maneuver	164	142	702	52	140	626	983				861	•	
Mov Cap-2 Maneuver	164	142		52	140			Ì			٠	1	
Stage 1	452	488		322	401						٠	٠	
Stage 2	534	395		476	477			Ì			٠	•	
Approach	EB			WB			NB	m			SB		
HCM Control Delay, s	225.9			37.6			0.3	3			0.2		
HCM LOS	ш			Е									
Minor Lane/Major Mvmt	NBL	NBT	NBR EBLn1WBLn1	11WBLn1	SBL	SBT	SBR						
Capacity (veh/h)	983		- 18	156 146	861								
HCM Lane V/C Ratio	0.016	•	- 1.289	39 0.249	0.011	1							
HCM Control Delay (s)	8.7	0.1	- 225.9	.9 37.6	9.5	0.1							
HCM Lane LOS	V	V		F	A	V							

Projected 23 am 9/15/2014 Baseline	
w same timings as 2025 Base	

HCM 2010 TWSC 61: Dwy/Aldwyn Ln & S Ithan Ave

Majord Form Form Form Form Form Form Form Form	ntersection														
PedS, #Mr   PedS, #Mel WBI WBI WBR NBL NBI NBR NBL NBI		2.1													
Fig.   Fig.   Fig.   Wel   W															
Peds.#hr	Novement	EBL	EBT	EBR				WBR	NBL	NBT	NBR	SE			SBR
Peds, #hr	'ol, veh/h	6	373	6		16	200	13	7	_	12	_			61
Free	conflicting Peds, #/hr	0	0	0		0	0	0	0	0	0			0	0
Factor   None    sign Control	Free				Free		Free	Stop			Stc			Stop	
Hand Storage, #	RT Channelized		,	None		٠	-	None	·		None		,	- None	Э
Itelastrictage,#   0   0   0   0   0   0   0   0   0	storage Length		•	•			٠			'	٠			į,	
Fedor 81 81 81 81 81 81 81 81 81 81 81 81 81	'eh in Median Storage, #		0			٠	0		ľ	0	٠		,	0	1
Factor 81 81 81 81 81 81 81 81 81 81 81 81 81	srade, %	•	0				0			0			,	0	
Majort   Major   Major   Major   Minor   Major   Minor   Major   Minor   Major   Minor   Major   Minor   Min	eak Hour Factor	8	81	8		81	81	81	81		8	ω			2
Majort   Major   Major   Minor   Min	leavy Vehicles, %	4	4	4		4	4	4	4		4				4
Majort	1vmt Flow	11	460	Ξ		70	247	16	6	-	15	7			75
Majort						-									
283   0   472   0   0   820   790   466   790     4.14	1ajor/Minor	Major1			2	lajor2			Minor1			Mino			
414	onflicting Flow All	263		0		472	0	0	820			75			255
1.5   1.5	Stage 1	•	•	•		٠	٠		488			53		4	•
4.14     4.14     7.14   6.54   6.24   7.14     2.236           6.14   5.54     6.14     2.236           6.14   5.54     6.14     1.290     .   .   .   .   .   .   .   .	Stage 2		•						332		•	46		4	
2.236	ritical Hdwy	4.14	•	٠		4.14	٠		7.14			7.1			6.24
12936	ritical Hdwy Stg 1		•	•		٠	٠		6.14		٠	6.1		4	
2.236	ritical Hdwy Stg 2			٠		٠	٠		6.14			6.1		4	
1290     1079     292   320   592   305       588   547     710       578   547     710       578   547     710       571   561     552       571   309   592   289       571   309   592   289       571   540     289       571   540     581       571   540     581       571   540     581       578   540     581       578   540     581       578   540     581       578     581       578     581       578     581	ollow-up Hdwy	2.236	,	•		2.236	٠		3.536			3.53		6 3.336	36
1290	ot Cap-1 Maneuver	1290	•	٠		1079	٠		292			30			779
1290	Stage 1		•						558		•	71		9	
1290     1079     257   309   592   289   289     257   309   592   289   289     257   309   592   289   289     257   309   289   289     257   200     257   200     258   246     251   240     251   240     251   240     251   240     251   240     251   240     251   240     251   240     281	Stage 2		•	٠		٠	٠		677			55		က	
1290     1079     257   309   592   289	latoon blocked, %		•	•			٠								
FB	lov Cap-1 Maneuver	1290		٠		1079	٠		257			28			779
FB	lov Cap-2 Maneuver		,	•		٠	٠		257		٠	28		0	
EB   WB   NB   SB   646   531	Stage 1		•	٠		٠	٠		551			2/		-	
EB   WB   NB   NB	Stage 2								298		•	23		9	
FB   WB   NB   NB															
0.2 0.6 14.7  14. NBLn1 EBL EBT EBR WBL WBT WBRSBLn1 394 1290 - 1079 - 576 0.063 0.009 - 0.018 - 0.165 14.7 7.8 0 - 8.4 0 - 12.5 B A A A A A A A B 0.2 0 - 0.1 - 0.6	pproach	EB				WB			BB			S	В		
B  1 NBLn1 EBL EBT EBR WBL WBT WBRSBLn1 384 1290 - 1079 - 576 0.063 0.009 - 0.018 - 0.165 14.7 7.8 0 - 8.4 0 - 12.5 B A A A B B 0.2 0 - 0.1 - 0.6	ICM Control Delay, s	0.2				9.0			14.7			12	.5		ı
1 NBLn1 EBL EBT EBR WBL WBT WBRSS 394 1290 - 1079 - 1 0.063 0.009 - 0.018 - 0 14.7 7.8 0 - 8.4 0 - 8 B A A A A O O.2 0.2 0 - 0.1 - 0.1	ICM LOS								В				<b>B</b>		
1 NBLIN EBI EBI EBI WEL WEL WELS WELS WELS WELS WELS WELS W		Š	i	Ė				0	,						
394 1290 · · · 1079 · · · · · · · · · · · · · · · · · · ·	linor Lane/Major Mvmt	NBLn1		EBI				WBR SB	Lu]						
0.063 0.009 - 0.0018	apacity (veh/h)	394	1290	•	•	1079	٠		976						
14.7 7.8 0 - 8.4 0 - 8.4 0 - 9.4 B A A - A A - 0.2 0 - 0.1 - 0.1	ICM Lane V/C Ratio	0.063	0	•	i	0.018	•	. 0	165						
B A A - A A - O.2 0.2 0 - 0.1	ICM Control Delay (s)	14.7		0	•	8.4	0	,	2.5						
0.2 0 - 0.1	ICM Lane LOS	В		⋖	٠	A	⋖		В						
	ICM 95th %tile Q(veh)	0.2		'		0.1			9.0						

Synchro 8 Report Page 1	
Projected 23 am 9/15/2014 Baseline w same timings as 2025 Base	

HCM 2010 TWSC	17: WLA Drive & Lancaster Ave

3/10/2015

and of the control of									
Movement	E	EBT	EBR	WE	WBL WB1	BT	NBL	NBR	
Vol, veh/h	6	972	64		0 10	1016	0	3	
Conflicting Peds, #/hr		0	0		0	0	0	0	
Sign Control	Ē	Free	Free	Fre	Free Fr	Free	Stop	Stop	
RT Channelized		-	None		≥	None		None	
Storage Length		·	125		ì			0	
Veh in Median Storage, #		0				0	0	·	
Grade, %		0				-2	0	·	
Peak Hour Factor		92	92	5.		92	92	92	
Heavy Vehicles, %		2	2		7	2	2	2	
Wvmt Flow	10	1057	20			1104	0	C)	
Major/Minor	Major1	E		Major2	12		Minor1		
Conflicting Flow All		c	c	1057	1.5	c	1609	528	
Stage 1		, ,	,	-			1057		
Stage 2							552	·	
Critical Hdwv				4.1	4.14		6.84	6.94	
Critical Hdwy Stg 1							5.84	·	
Critical Hdwy Stg 2					ı,		5.84	ľ	
Follow-up Hdwy			,	2.2	2.22		3.52	3.32	
Pot Cap-1 Maneuver				39	655		95	495	
Stage 1							295	·	
Stage 2							541	·	
Platoon blocked, %									
Mov Cap-1 Maneuver				99	929		95	495	
Mov Cap-2 Maneuver		ï	,		,		95		
Stage 1							295		
Stage 2							541		
Approach		B		>	WB		NB		
HCM Control Delay, s		c			  -		12.3		
HCM LOS							В		
Minor Lane/Major Mvmt	NBLn1 E	EBT	EBR N	WBL WBT	<u></u>				
Capacity (veh/h)	495		,	929					
HCM Lane V/C Ratio	0.007								
HCM Control Delay (s)	12.3			0					
HCM Lane LOS	В			V					
V.1 70 -11.0	<			c	١,				

HCM 2010 TWSC 6: PAC Drive & Lancaster Ave

HCM 2010 TWSC 76: Pike Garage & S Ithan Ave & LAH Drive

3/10/2015

acito contra									
Int Delay, sheh 0.6									
Movement		SET	SER		- JWN	NWT	NEL	NER	
Vol, veh/h		910	63		9/	886	0	29	
Conflicting Peds, #/hr		0	0		0	0	0	0	
Sign Control		Free	Free		Free	Free	Stop	Stop	
RT Channelized		٠	None		-	None		None	
Storage Length		•	٠		72			0	
Veh in Median Storage, #		0			٠	0	0		
Grade, %		0	٠		٠	co	0		
Peak Hour Factor		92	92		35	92	92	92	
Heavy Vehicles, %		2	2			2	2	2	
Mvmt Flow		686	89		83	1074	0	32	
Major/Minor	M	Major1		⊠	Major2		Minor1		
Conflicting Flow All		0	0		1058	0	1725	529	
Stage 1		•	,		٠		1023		
Stage 2		1	1		ì		702		
Critical Hdwy		٠	,		4.14		6.84	6.94	
Critical Hdwy Stg 1		٠	•		ì		5.84		
Critical Hdwy Stg 2		٠	٠		٠		5.84		
Follow-up Hdwy		٠	٠		2.22		3.52	3.32	
Pot Cap-1 Maneuver		•	٠		654		80	494	
Stage 1		1	1		1		308		
Stage 2		٠	٠		٠		453		
Platoon blocked, %		٠	٠						
Mov Cap-1 Maneuver		•	•		654		70	494	
Mov Cap-2 Maneuver		٠			٠		70		
Stage 1		•	,		٠		308		
Stage 2					٠		396		
Approach		SE			ΝN		NE		
HCM Control Delay, s		0			8.0		12.8		
HCM LOS							В		
Minor Lane/Major Mvmt P	NELn1	NWL	NMT	SET	SER				
Capacity (veh/h)	464	654	ŀ						
HCM Lane V/C Ratio	0.064 0.126	0.126	•	٠	٠				
HCM Control Delay (s)	12.8	11.3	٠	٠	٠				
HCM Lane LOS	В	В	٠	٠					
HCM 95th %tile Q(veh)	0.2	0.4	٠	•	٠				

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Int Delay, s/veh 3	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR		SBL	SBR	SBR NWU	NWL	NWR
Vol, veh/h	16	320	36	09	195	2		99	2	9	œ	_
Conflicting Peds, #/hr	0	0	0	0	0	0		0	0	0	0	
Sign Control	Free	Free	Free	Free	Free	Free		Stop	Stop	Stop	Stop	Stop
RT Channelized			None	·		None			None	•		
Storage Length			٠	20	· ~			0	•		0	
Veh in Median Storage, #		0		ľ	0	ľ		0			0	
Grade, %	•	_	٠	•				0	٠	•	0	
Peak Hour Factor	92	35	92	92	92	0.		92	92	92	92	92
Heavy Vehicles, %	2	2	2	2		2		2	2	2	2	
Mvmt Flow	17	380	39	99				72	2	7	6	ľ
Major/Minor	Major1			Major2			2	Minor2	_	Minor1		
Conflicting Flow All	214	0	0	420	0	0		785	213	0	815	400
Stage 1				ľ	ľ	ľ		343		0	435	
Stage 2			٠			Ť		442	٠	0	380	
Critical Hdwy	4.12			4.12	,	ľ		7.12	6.22		7.12	6.22
Critical Hdwy Stg 1								6.12		•	6.12	
Critical Hdwy Stg 2		٠	٠	·				6.12			6.12	
Follow-up Hdwy	2.218	•		2.218	~			3.518	3.318	•	3.518	3.318
Pot Cap-1 Maneuver	1356		٠	1139	_			310	827	0	296	929
Stage 1	٠							672		0	009	
Stage 2	•	•						294		0	642	
Platoon blocked, %			,		•	Ť				1		
Mov Cap-1 Maneuver	1356	•	٠	1139	•			283	827	0	227	920
Mov Cap-2 Maneuver	•	1	•					283	•	0	227	
Stage 1	•		٠					199	•	0	2	
Stage 2		•						270	•	0	532	
Approach	EB			WB	~			SB		N		
HCM Control Delay, s	0.3			2				20.9		21.5		
HCM LOS								O		S		
Minor Lane/Major Mvmt		EBI	EBT	EBR WBL	WBT	WBR SBLn1	SBLn1					
Capacity (veh/h)	227	1356		- 1139	•		301					
HCM Lane V/C Ratio	0.038 0.013	0.013	٠	- 0.057			0.249					
HCM Control Delay (s)	21.5	7.7	0	- 8.4			20.9					
HCM Lane LOS	S	V	A	Α .	'	•	ပ					
HCM 95th %tile O(veh)	0.1	C	,	- 02			,					

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Keniiworth Rd & Lancaster Ave

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

-ane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Lane Configurations		je s	‡		*-		je z	₩				4
Volume (vph)	4	252	1020	31	285	2	23	904	33	7	53	0
deal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
-ane Width (ft)	10	10	Ξ	=	14	10	12	12	12	10	10	10
Grade (%)			3%					-5%				1%
Storage Length (ft)		300		0			75				0	
Storage Lanes		<del>-</del>		<del></del>			_				0	
Taper Length (ft)		25					25				25	
ane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00
T.			966.0		0.850			0.995				0.975
Fit Protected		0.950					0.950					0.961
Satd. Flow (prot)	0	1541	3180	0	1576	0	1693	3370	0	0	0	1536
FIt Permitted		0.093					0.193					0.752
Satd. Flow (perm)	0	151	3180	0	1576	0	344	3370	0	0	0	1202
Right Turn on Red					Yes				Yes			
Satd. Flow (RTOR)					228			196				
Link Speed (mph)			32					35				25
ink Distance (ff)			577					864				492
ravel Time (s)			11.2					16.8				13.4
Doak Hour Eactor	0 07	0.07	0 0	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Tion (mph)		070	1010		700		0.0		0.70			
Rdj. r Iow (vpri) Shared Lane Traffic (%)	4	700	7001	25	7.44	7	74	437	96	,	00	0
and Group Flow (vob)	c	797	1084	c	707	c	3%	940	c	c	c	76
Enter Blocked Intersection	8	No No	N S	8	2.74 N	2	07 S	S S	2	N S	S S	2 8
o Alizandari	0 10	ON -	000	2 1	2 3	2 40	2 40	2 4	2 1	0 40	2 40	0 0
Lane Allgnment Median Width(ft)	Len	Leit	TS 12	Kign	Kign	Leit	Fei	12 12	Kigh	Lei	Lei	Len
Link Offset(ft)			0					0				0
Crosswalk Width(ft)			10					10				10
rwo way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.18	1.18	1.18
urning Speed (mph)	15	15		6	6	15	15		6	15	15	
Number of Detectors		<del>-</del>	<del>-</del>		<del>-</del>	-	<del>-</del>	<del>,</del>		<del>-</del>	-	<del></del>
Detector Template	Left	Left	Thru		Right	Left	Leff	Thru		Left	Left	Thru
<ul> <li>eading Detector (ft)</li> </ul>	70	37	37		37	70	37	37		70	20	37
railing Detector (ft)	0	ς'n	ç.		ç,	0	ç,	-3		0	0	-3
Detector 1 Position(ft)	0	5-	د.		د.	0	د.	-3		0	0	-3
Detector 1 Size(ft)	20	40	40		40	20	40	40		70	20	40
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	Cl+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Extend (c)	00	0	00		0	0	0	0		0	0	00
Detector 1 One in (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	000
Circuit Louis (3)	tu-ma	nm+mt	SZ		Dorm	Dorm	Dorm	25 2		Dorm	Dorm	25 2
Full Lype	id a	1	2		Ē	<u></u>	Ē	4		<u></u>		5 5
weeted Hases	0 0	0 0	7		c	7	7	>		7	7	2
Pellilleu Filases	7 1	7 1	•		7	0 .	0 .	•		2 ;	2 ;	4
Detector Phase	2	2	7		2	9	9	9		10	10	10
Switch Phase	30	20	15.0		15.0	7,00	7	15.0		2.0	20	2.0
viii iii iididi (3)	0.5	2	0.0		0.0	0.0	2	0.5		0.5		
100	,	0,00	5		2	5 6	5	5 5		5 6	2 0	,

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0 No Right 1.14 1800 71 Thru 37 -3 -3 -40 CI+Ex 40 1336 22.8 0.97 118 3.0 114 114 11 3% 1640 0.0 0.0 NA 8 0.950 1651 0.097 1.09 15 16 17 16 17 37 -3 -3 -3 -40 CI+Ex 0.97 0.0 0.0 0.0 pm+pt 3.0 25 Left 8 o 0.0 0.0 0.0 pm+pt 193 1.00 199 3.0 0 1.00 1.15 1.00 Thru 37 -3 -3 40 CI+Ex 1800 25 597 16.3 0.97 3.0 1.00 0.879 0.995 1462 0.983 0.0 0.0 NA 9 0 0.0 0.0 0.0 Perm 0 Left 8 o 3.0 0.97 1.15 15 16 16 20 0 0 0 20 20 CI+EX 3.0 1800 0 0 0.0 0.0 0.0 1.00 ٤ 0.97 1.00 100 0 1.18 1.00 Fit Protected Said. Flow (prot)
Fit Permitted Said. Flow (prot)
Fit Permitted Said. Flow (prom)
Right Tum on Red Said. Flow (RTOR)
Link Speed (mph)
Link Distance (ii)
Peak Hour Factor
Adi. Flow (ph)
Shared Lane Trafific (%)
Lane Group Flow (rph)
Shared Lane Trafific (%)
Link Distance (iii)
Coxyak with (iii)
Link Offset(iii)
Coxsavalk width((iii)
Link Offset(iii)
Coxsavalk width((iii)
Link Offset(iii)
Coxsavalk width((iiii)
Two way Left Turn Lane
Headway Factor Detector 1 Type
Detector 1 Channel
Detector 1 Extend (s)
Detector 1 Queue (s)
Detector 1 Delay (s) Turning Speed (mph)
Number of Detectors
Detector Template Leading Detector (ft)
Trailing Detector (ft)
Detector 1 Position(ft)
Detector 1 Size(ft) Lanes onfigurations Volume (vph) Grade (%)
Storage Length (ft)
Storage Lanes
Taper Length (ft)
Lane Util. Factor Switch Phase Minimum Initial (s) Turn Type Protected Phases Ideal Flow (vphpl) Lane Width (ft)

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

Lane Group SV  Lane Configurations  Volume (vph) 11  deal Flow (vphp) 11  Grade (%) Storage Length (ft) 19  Storage Langth (ft) 19  Taper Length (ft) 19	SWL2	1410				
		SWL	SWT	SWR	SWR2	
		K	£3			
	36	6	168	238	_	
	1800	1800	1800	1800	1800	
	10	10	10	10	10	
			-1%			
æ 5		120		0		
				0		
		22				
	1.00	1.00	1.00	1.00	1.00	
Frt			0.912			
Fit Protected		0.950				
Satd. Flow (prot)	0	1619	1555	0	0	
Flt Permitted		899.0				
Satd. Flow (perm)	0	1139	1555	0	0	
Right Turn on Red					No	
Satd. Flow (RTOR)						
Link Speed (mph)			22			
Link Distance (ft)			3168			
Travel Time (s)			86.4			
ior	0.97	0.97	0.97	0.97	76:0	
	40	6	173	245	_	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	46	419	0	0	
ion	8	9	8	8	No	
	Left	Left	Left	Right	Right	
Median Width(ft)			12			
Link Offset(ft)			0			
Crosswalk Width(ft)			10			
rn Lane						
_	1.12	1.12	1.12	1.12	1.12	
Furning Speed (mph)	12	12		6	6	
S	<b>—</b>	<del>-</del>	<b>-</b>			
	Left	Left	Thru			
Leading Detector (ft)	20	37	37			
Trailing Detector (ft)	0	ကု	ကု			
Detector 1 Position(ft)	0	ကု	ကု			
t)			40			
	CI+Ex	CI+Ex	CI+Ex			
	0.0	0.0	0.0			
	0.0	0.0	0:0			
Delay (s)	0.0	0.0	0.0			
	Perm	Perm	Ā.			
Protected Phases			4			
Permitted Phases	4	4				
Detector Phase	4	4	4			
Switch Phase						
	3.0	3.0	3.0			
Minimum Split (s) 1	13.0	13.0	13.0			

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/10/2015

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Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Total Split (s)	24.0	24.0	0.79		0.79	43.0	43.0	43.0		14.0	14.0	14.0
Total Split (%)	16.0%	16.0%	44.7%		44.7%	28.7%	28.7%	28.7%		9.3%	9.3%	9.3%
Maximum Green (s)	18.0	18.0	61.0		61.0	37.0	37.0	37.0		8.0	8.0	8.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				0.5
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				6.5
Lead/Lag	Lead	Lead				Lag	Lag	Lag		Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None		None	None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		9.09	9.09		9.09		36.6	36.6				7.5
Actuated g/C Ratio		0.42	0.42		0.42		0.25	0.25				0.05
v/c Ratio		1.14	0.81		0.37		0.30	0.97				1.23
Control Delay		140.2	43.9		8.7		57.3	64.5				241.0
Queue Delay		0.0	0.0		0.0		0.0	0.0				0.0
Total Delay		140.2	43.9		8.7		57.3	64.5				241.0
ros		ш	٥		⋖		ш	ш				ш
Approach Delay			53.1					64.3				241.0
Approach LOS			O					ш				ш.
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												
Actuated Cycle Length: 144.8	2											
Natural Cycle: 150												
Control Type: Actuated-Uncoordinated	ordinated											
Maximum v/c Ratio: 1.37												
Intersection Signal Delay: 80.0	0.			Ξ	Intersection LOS: E	LOS: E						
Intersection Capacity Utilization 117.5%	ion 117.59	. 0		೨	U Level o	CU Level of Service H	I					
Analysis Period (min) 15												

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

<b>\$</b>		<b>*</b>	<b>≯</b>	60	<b>★</b>
e7 s		15 s	415	13 s	14 s
<b>≯</b>	9,6	89			
24 s	43 s	56 s			

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Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

Lane Group         NBR         SBL2         SBL         SBR         SBR2         NEL2		*_	•	<b>&gt;</b>	٠	<b>→</b>	74	•	€	*	×	*	4
13.0 13.0 13.0 15.0 8.7% 8.7% 8.7% 10.0% 1	Lane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	RE	NET	NER	NER2
9.7% 8.7% 10.0% 10	Total Split (s)			13.0	13.0	13.0			15.0	15.0	26.0		
7.0 7.0 7.0 9.0 3.0 3.0 3.0 4.0 3.0 3.0 3.0 4.0 0.5 1ead Lead Lead Lead Lead 1 3.0 3.0 3.0 3.0 None None None None None None None None	Total Split (%)			8.7%	8.7%	8.7%			10.0%	10.0%	37.3%		
30 30 30 4.0 30 30 30 2.0 0.5 Lead Lead Lead Lead Lead I Lead 1 Lead None None None None None None None None	Maximum Green (s)			7.0	7.0	7.0			0.6	0.6	20.0		
30 30 30 2.0 0.5 0.5 0.5 1.ead Lead Lead Lead 1 3.0 3.0 3.0 3.0 None None None None None None None None	Yellow Time (s)			3.0	3.0	3.0			4.0	4.0	4.0		
(\$) 0.5 (\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$)	All-Red Time (s)			3.0	3.0	3.0			2.0	2.0	2.0		
(\$)	Lost Time Adjust (s)					0.5				0.5	0.5		
Lead	Total Lost Time (s)					6.5				6.9	6.5		
1	Lead/Lag			Lead	Lead	Lead			Lead	Lead			
(s) (#hr) (s) (hone None None None None (s) (#hr) (#hr) (s) (#hr) (s) (#hr) (s) (#hr) (s) (#hr) (s) (s) (d) (s) (s) (d) (s) (s) (d) (s) (s) (s) (s) (s) (s) (s) (s) (s) (s	Lead-Lag Optimize?												
(\$) (#In) (#	Vehicle Extension (s)			3.0	3.0	3.0			3.0	3.0	3.0		
(\$) (\$) (#hr) (\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$	Recall Mode			None	None	None			None	None	None		
(¢/Irr) (¢/Irr) (s) (s) (0.04) (0.02) (0.02) (0.02) (0.02) (0.03) (0.02) (0.03) (0.02) (0.03)	Walk Time (s)										7.0		
(#frt) (s) (s) (10 (0.04 (0.32 (0.02 (0.02 (0.02 (0.03) (0	Flash Dont Walk (s)										25.0		
s) 6.1 10 0.04 0.32 83.2 0.0 83.2 83.2 83.2 83.2	Pedestrian Calls (#/hr)										0		
tio 0.04 0.32 83.2 0.0 83.2 F 83.2 F 83.2	Act Effct Green (s)					6.1				49.6	49.6		
0,32 83.2 0.0 83.2 F F 83.2	Actuated g/C Ratio					0.04				0.34	0.34		
83.2 0.0 83.2 F F 83.2	//c Ratio					0.32				1.37	0.25		
0.0 83.2 F 83.2 F 83.2	Control Delay					83.2				237.8	36.9		
83.2 F 83.2 F	Queue Delay					0.0				0.0	0.0		
	Fotal Delay					83.2				237.8	36.9		
	TOS					ш				ш	Ω		
Approach LOS	Approach Delay					83.2					154.8		
	Approach LOS					ıL					ш		
ntersection Summary	ntersection Summary												

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave 27.3% 35.0 4.0 2.0 0.5 6.5 Lag 34.6 0.24 0.18 47.9 0.0 3.0 None 4.0 2.0 0.5 6.5 Lag Lag Total Spill (s)
Total Spill (s)
Total Spill (s)
Total Spill (%)
Waximum Green (s)
Vellow Time (s)
All-Red Time (s)
Lead/Lag
Lead-Lag Optimizer?
Vehicle Extension (s)
Recall Mode
Walk Time (s)
Flash Donti Walk (s)
Pedestrian Calls (#th)
Ad Efft Green (s)
Actuated g/C Ratio
W Ratio
Control Delay
Control Delay
LL OS
Approach Delay
Approach Delay
Approach LOS 3/10/2015

34.6 0.24 1.13 136.1 136.1

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Queues 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

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Lane Group	EBL	EBT	EBR2	WBL	WBT	NBT	SBT	NEL	NET	SWL	SWT
Lane Group Flow (vph)	264	1084	294	26	996	9/	19	199	140	49	419
v/c Ratio	1.14	0.81	0.37	0.30	0.97	1.23	0.32	1.37	0.25	0.18	1.13
Control Delay	140.2	43.9	8.7	57.3	64.5	241.0	83.2	237.8	36.9	47.9	136.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	140.2	43.9	8.7	57.3	64.5	241.0	83.2	237.8	36.9	47.9	136.1
Queue Length 50th (ft)	~265	201	40	71	417	~63	9	~215	100	39	~487
Queue Length 95th (ft)	#454	266	112	24	#571	#205	48	#386	160	79	#704
Internal Link Dist (ft)		497			784	412	517		1256		3088
Turn Bay Length (ft)	300			72				200		150	
Base Capacity (vph)	231	1331	792	98	266	62	64	145	261	271	371
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.14	0.81	0.37	0.30	0.97	1.23	0.30	1.37	0.25	0.18	1.13
Intercoction Cummery											

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

- Volume exceeds capacity, queue is theoretically infinite.

- Volume schown is maximum after two cycles.

- Oueue shown is maximum after two cycles.

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/10/2015

		ĺ		٠		•				-		
Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NB.
Lane Configurations		M.S.	‡		¥C.		je z	₩.				3
Volume (vph)	4	252	1020	31	285	2	23	904	33	7	23	
Ideal Flow (vphpf)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	7	7	14	10	12	12	12	10	10	)
Grade (%)			3%					-5%				1%
Storage Length (ft)		300		0			75				0	
Storage Lanes		_		<del></del>			<del>-</del>				0	
Taper Length (ft)		25					25				22	
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00
正			966.0		0.850			0.995				0.975
Fit Protected		0.950					0.950					0.961
Satd. Flow (prot)	0	1541	3180	0	1576	0	1693	3370	0	0	0	1536
Flt Permitted		0.097					0.182					0.752
Satd. Flow (perm)	0	157	3180	0	1576	0	324	3370	0	0	0	1202
Right Turn on Red					Yes				Yes			
Satd. Flow (RTOR)					223			196				
Link Speed (mph)			32					32				25
Link Distance (ft)			277					864				49
Travel Time (s)			11.2					16.8				13.4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	260	1052	32	294	2	24	932	34	7	22	
Shared Lane Traffic (%)	4			•		•	i		4	•	•	ľ
Lane Group Flow (vpn)	0 2	707	1084	0	294	0	97	306	0	0	0	9/
Enter Blocked Intersection	0N 9	ON -	ON -	9 <del>1</del>	0 F	0N -	ON S	ON -	ON I	ON -	ON -	ON -
Lane Alignment	E	E	E F	Kight	Kight	E	E	E F	Right	Let	Fet	E C
Median Width(ft)			12					12				
Link Offset(ft)			0					0				
Crosswalk Width(ft)			10					10				=
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.78	 2. i	1.18
Turning Speed (mpn)	<u>ਨ</u> -	<u>ت</u> 4		5	2, 4	<del>ن</del> 5	5 4		5	<del>ن</del> 5	<u>ح</u> 4	
Nutriber of Defectors Defector Template	- to	- <del>L</del>	- Thri		- tdoid	- #d	- #g			- #o	- #g	
Detector Template Leading Detector (ff)	200	37	37		37	20	37	37		200	20 00	37
Trailing Detector (ft)	0	5 67	5 67		5 67	07	5 07	5 67		07 0	90	, ,
Detector 1 Position(ft)	0	ς	ς		٠,	0	۲-	ςņ		0	0	ľ
Detector 1 Size(ft)	20	40	40		40	20	40	40		70	70	40
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+EX
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
lurn lype	pm+pt	pm+pt	NA C		Perm	Perm	Perm	₹,		Perm	Perm	NA
Protected Phases	ഹ	ഹ	7		c	,		9		ç	4	10
Permitted Phases	7	7			7	9	9			2	2	
Detector Phase Switch Phase	വ	2	2		2	9	9	9		10	10	10
Minimum Initial (s)	3.0	3.0	15.0		15.0	15.0	15.0	15.0		3.0	3.0	2.0
							5	5			2	2

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Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

-ane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2
Land onfigurations					4				KZ	2		
Volume (vph)	4	10	<del>-</del>	<del>-</del>	0	က	14	193	0	114	20	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
-ane Width (ft)	10	10	10	10	10	10	10	12	12	Ξ	=	=
Grade (%)					-3%					3%		
Storage Length (ft)	0			0		0			200		0	
Storage Lanes	0			0		0			<del>-</del>		0	
Faper Length (ft)				22					25			
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
芷					0.879					976.0		
Fit Protected					0.995				0.950			
Satd. Flow (prot)	0	0	0	0	1462	0	0	0	1651	1640	0	0
FIt Permitted					0.983				0.097			
Satd. Flow (perm)	0	0	0	0	1444	0	0	0	169	1640	0	0
Right Turn on Red		9					2					8
Satd. Flow (RTOR)												
ink Speed (mph)					25					40		
ink Distance (#)					507					1226		
n Distance (ii)					14.2					32.0		
Havel I line (3)	0	0	100	0	0.0	0	0	0	0	0.22	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	10	-	-	0	m	14	199	0	118	21	_
Shared Lane Traffic (%)												ľ
Lane Group Flow (vph)	0	0	0	0	16	0	0	0	199	140	0	0
Enter Blocked Intersection	8	8	8	2	2	2	2	2	8	9	8	S
Lane Alignment	Right	Right	Left	Left	Left	Right	Right	Leff	Left	Left	Right	Right
Wedian Width(ft)					0					1.5		
Link Offset(ft)					0					0		
Crosswalk Width(ft)					10					10		
rwo way Left Turn Lane												
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.15	1.15	1.09	1.09	1.14	1.14	1.14
Furning Speed (mph)	6	6	15	15		6	6	12	15		6	6
Number of Detectors			<del></del>	<del>-</del>	<del>-</del>			<del>-</del>	<del>-</del>	<del>-</del>		
Detector Template			Left	Left	Thru			Left	Left	Thru		
Leading Detector (ft)			70	20	37			20	37	37		
railing Detector (ft)			0	0	ς'n			0	5-	5-		
Detector 1 Position(ft)			0	0	5-			0	-3	-3		
Detector 1 Size(ft)			70	70	40			20	40	40		
Detector 1 Type			CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Queue (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Delay (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Furn Type			Perm	Perm	ΑN			pm+pt	tu+mu	NA		
Protected Phases					6			m	c	00		
Permitted Phases			6	6				00	00			
Detector Phase			6	6	6			~	~	00		
Switch Phase								•	•	•		
Minimum Initial (s)			3.0	3.0	3.0			3.0	3.0	3.0		
(1)												
aimin Calif (c)			12.0	13.0	13.0			12.0	13.0	13.0		

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Lane Group         SWL2         SN           Lane Configurations         30         18           Volume (vph)         30         18           Lane Width (ft)         10         10           Grade (%)         10         1           Storage Length (ft)         1         1           Storage Lanes         Taper Length (ft)         1           Lane Uil, Factor         1.00         1           Fri Permitted         0.9         16           Rif Permitted         0.0         16           Said. Flow (perm)         0         11           Right Tum on Red         0         1           Right Tum on Red         0         1           Right Tum on Red         0         1           Adj. Flow (perm)         0         1           Beak Hour Tactor         0         1           Adj. Flow (vph)         40         1           Adj. Flow (vph)         0         1           Adj. Flow (vph)         0         1           Braked Lane Tadfic (%)         0         1           Braked Lane Tadfic (%)         0         1           Braked Lane Tadfic (permitted)         0         1	SWL SWT 9 1680 1800 10 10 -7% 150 -7% 150 0.912 0.920 1.00 1.00 0.912 0.688 1139 1555 2.58 2.58 1.139 1555 0.688 1.139 1555 0.688 1.139 1555	SWT SWR 168 238 1800 1800		
tions 39 pt) 1800 (ft) 1800 (ft) 100  or 1.00 m) 0 0 (m) 0 0 (m) 0 0 (m) 0 0 (m) 0 0 (m) 0 0 (m) 0 0 0 (			SWR2	
(f) 1800 (f) 1800 (f) 100 (f) 100 (f) 0 0 (f)				
(f) 1800 (f) 10 (f) 1.00 (f) 1.00 (f) 0.00 (f) 0				
(f)  (f)  (f)  (f)  (f)  (f)  (f)  (f)			18	
(ff)  (f)  (f)  (g)  (h)  (ced  (ced  (ced  (ced  (ced  (d)  (d)  (d)  (d)  (d)  (d)  (d)  (			10	
(u)  (u)  (u)  (u)  (u)  (u)  (u)  (u)		%/-		
or 1.00  (1) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4				
or 1.00  (1) 0 (2)  (2) (3) (4)  (3) (4) (4)  (4) (4) (4) (4)  (4) (4) (4) (4)  (6) (6) (6) (6)  (7) (7) (7) (7) (7)  (8) (7) (7) (7) (7)  (9) (7) (7) (7) (7) (7) (7)  (10) (10) (10) (10) (10) (10)				
(m) 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1.00 1.00	1.00	
m) 0 0 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1		12		
m) 0 0  ted OR() hh) for 0.97  or 40  artic (%) 0  ntersection No				
m) 0 1.  end (end (end (end (end (end (end (end (		25 0	0	
m) 0 1 (ed				
(ed h)h)h)h)h)h)h)h)h)h)h)h)h)h)h)h)h)h)h)		25 0		
D(k)  (h)  (or 0.97 (  anfic (%)  (vph)  onersection No			No	
(1)  for 0.97 (  for 0.97 (  affic (%)  w (vph)  ntersection No				
0.97 (		52		
or 0.97 ( 40 40 w (vph) 0 w (vrb) 1 eff		28		
affic (%) 0.37 (%) 40 (vph) 0 (vph) 0 (vph) ntersection No		700 70		
affic (%) +0.0 w (vph) 0 ntersection No			1,37	
No No				
No		419 0	0	
eff		_	ON	
	Left	Left Right	~	
Median Width(ft)		12		
Link Offset(ft)		0		
Crosswalk Width(ft)		10		
m Lane				
1.12		1.12 1.12	1.12	
Turning Speed (mph) 15	15	6		
rs .		<del></del>		
Left 30	Len Ir	ı nru		
Trailing Detector (#) 20		3/		
Detector 1 Position(ff) 0	o cņ	o cņ		
		40		
CI+Ex	CI+Ex CI+Ex	×		
		0.0		
0.0		0.0		
Delay (s) 0.0		0.0		
Perm	Perm	NA .		
	,	4		
Permitted Phases	4 •			
Switch Dhace	4	4		
3.0		3.0		
13.0	13.0 13	13.0		

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

	1	ኘ	t	1	٩	4	Ļ	ţ	¥J	•	•	•
l and Ground	FBI 2	EB	FRT	- EBD	FBD3	WEI 2	WBI	WRT	WRD2	NBI 2	- IN	- NRT
Total Colit (c)	240	24.0	45.0	LDI	45.0	410	410	410	WDINZ	14.0	140	140
Total Split (3)	14.00/	14,007	42 20/V		42 20/V	700 70	700 20	700 70		0.50	0.50	0 20/
Maximim Green (s)	180	180	50.0		59.0	35.0	35.0	35.0		0.00	8.0	2.2.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				0.5
Total Lost Time (s)		6.5	6.9		6.5		6.5	6.5				6.5
Lead/Lag	Lead	Lead				Lag	Lag	Lag		Lag	Lag	Lag
Lead-Lag Optimize?						•	•	•		,		
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None		None	None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		58.6	9.89		9.89		34.6	34.6				7.5
Actuated g/C Ratio		0.40	0.40		0.40		0.24	0.24				0.05
v/c Ratio		1.15	0.84		0.38		0.34	1.01				1.23
Control Delay		141.9	46.9		9.6		62.2	75.4				241.0
Queue Delay		0.0	0.0		0.0		0.0	0.0				0.0
Total Delay		141.9	46.9		9.6		62.2	75.4				241.0
SOT		ш	Ω		A		ш	ш				-
Approach Delay			55.5					75.1				241.0
Approach LOS			ш					ш				ш
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												
Actuated Cycle Length: 144.8	8.1											
Natural Cycle: 150												
Control Type: Actuated-Uncoordinated	coordinated											
Maximum v/c Ratio: 1.23												
Intersection Signal Delay: 79.8	8.6			드	Intersection LOS: E	LOS: E						
Intersection Capacity Utilization 117.5%	ation 117.59	%		2	ICU Level of Service H	of Service	H					
Analysis Period (min) 15												

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

200		<b>♣</b>	<b>≥</b> Ø4	6ø	<b>→</b> ø10
65 s		17 s	415	13 s	14 s
₹	96	89			
24 s	41.5	58.5			

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NET 58.0 38.7% 52.0 4.0 2.0 0.5 6.5 3.0 None 7.0 25.0 51.6 0.36 0.24 35.3 0.0 NEL 17.0 11.3% 11.0 4.0 2.0 0.5 6.5 Lead 3.0 None 51.6 0.36 1.19 163.0 0.0 Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave 17.0 17.0 11.3% 11.0 4.0 2.0 Lead 3.0 None SBT 13.0 8.7% 7.0 3.0 3.0 0.5 6.5 Lead 3.0 None 6.1 0.04 0.32 83.2 0.0 83.2 F F F F 3.0 None SBL 13.0 8.7% 7.0 3.0 3.0 Lead 3.0 None SBL2 13.0 8.7% 7.0 3.0 3.0 Lead ٤ 

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Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

	•	<b>\</b>	×	<b>\</b>	4	
Lane Group	SWL2	SWL	SWT	SWR SWR2	WR2	
Total Split (s)	41.0	41.0				
Total Split (%)	27.3%	27.3%				
Maximum Green (s)	35.0	35.0	32.0			
Yellow Time (s)	4.0	4.0				
All-Red Time (s)	2.0	2.0				
Lost Time Adjust (s)		0.5				
Total Lost Time (s)		6.5				
Lead/Lag	Lag	Lag	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	None	None	None			
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)		34.6	34.6			
Actuated g/C Ratio		0.24	0.24			
v/c Ratio		0.18	1.13			
Control Delay		47.9	136.1			
Queue Delay		0.0	0.0			
Total Delay		47.9	136.1			
LOS		٥	ш			
Approach Delay			126.8			
Approach LOS			ш			
Intersection Summary						

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Queues 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/10/2015

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Lane Group	EBL	EBT	EBR2	WBL	WBT	NBT	SBT	NEL	NET	SWL	SWT	
Lane Group Flow (vph)	264	1084	294	26	996	9/	19	199	140	49	419	
//c Ratio	1.15	0.84	0.38	0.34	1.01	1.23	0.32	1.19	0.24	0.18	1.13	
Control Delay	141.9	46.9	9.6	62.2	75.4	241.0	83.2	163.0	35.3	47.9	136.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Total Delay	141.9	46.9	9.6	62.2	75.4	241.0	83.2	163.0	35.3	47.9	136.1	
Queue Length 50th (ft)	~266	514	44	22	~454	~63	18	~193	86	36	~487	
Queue Length 95th (ft)	#455	614	119	26	#263	#205	48	#363	156	79	#704	
Internal Link Dist (ft)		497			784	412	217		1256		3088	
Turn Bay Length (ft)	300			75				200		120		
Base Capacity (vph)	230	1287	770	77	954	62	64	167	584	271	371	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.15	0.84	0.38	0.34	1.01	1.23	0.30	1.19	0.24	0.18	1.13	
Intersection Summary												

	infinite	
	Volume exceeds capacity, queue is theoretically infinite	
ı	le is	
ı	guer	
	capacity, o	
	exceeds	
	Volume	
1	ı	

Oueue shown is maximum after two cycles.

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

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

			VVDL	2	NDL	NDN	
Lane Configurations	‡	*	*	#	N.		
Volume (vph)	1180	31	34	861	91	16	
ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
-ane Width (ft)	=	=	=	=	12	12	
Storage Length (ft)		125	125		0	0	
Storage Lanes		-	_		2	0	
Faper Length (ft)			22		22		
ane Util. Factor	0.95	1.00	1.00	0.95	0.97	0.95	
Į.		0.850			0.978		
Fit Protected			0.950	1	0.959	4	
satd. Flow (prot)	3241	1450	1621	3241	3211	0	
-It Permitted			0.193		0.959		
Satd. Flow (perm)	3241	1450	329	3241	3211	0	
Right Turn on Red		Yes			!	Yes	
Satd. Flow (RTOR)		32			17		
ink Speed (mph)	32			32	22		
-ink Distance (ft)	900			1433	319		
Fravel Time (s)	11.7			27.9	8.7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1283	34	37	936	66	17	
Shared Lane Traffic (%)							
-ane Group Flow (vph)	1283	34	37	936	116	0	
Enter Blocked Intersection	9	S	S	2	2	No	
ane Alignment	Left	Right	Left	Left	Left	Right	
Wedian Width(ft)	=			Ξ	24		
-ink Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Iwo way Left Turn Lane							
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07	
Furning Speed (mph)		6	15		15	6	
Number of Detectors	<del>-</del>	<del>-</del>	<del></del>	<del></del>	_		
Detector Template	Thru	Right	Left	Thru	Left		
<ul> <li>eading Detector (ft)</li> </ul>	37	70	20	37	37		
railing Detector (ft)	ς'n	0	0	ς'n	ကု		
Detector 1 Position(ft)	ကု	0	0	ς'n	ကု		
Detector 1 Size(ft)	40	70	20	40	40		
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Furn Type	NA	Perm	Perm	NA	Prot		
Protected Phases	2			9	∞		
Permitted Phases		2	9				
Detector Phase	2	2	9	9	∞		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0		
Minimum Split (s)	21.0	21.0	21.0	21.0	28.0		
1-1-1 C - 11 /- /	000	000	32.0	32.0	28.0		

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

3/10/2015

and Cond	Tan		IOW	TOW	Ī	- 2
Lane Group	EBI	EBK	WBL	WBI	NBL	NBK
Total Split (%)	53.3%	53.3%	53.3%	53.3%	46.7%	
Maximum Green (s)	27.0	27.0	27.0	27.0	23.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.5	0.5	0.5	0.5	0.5	
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	
Walk Time (s)	10.0	10.0	10.0	10.0	7.0	
Flash Dont Walk (s)	0.0	0.0	0.0	0.0	16.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	
Act Effct Green (s)	45.4	45.4	45.4	45.4	6.9	
Actuated g/C Ratio	0.76	0.76	0.76	97.0	0.12	
v/c Ratio	0.52	0.03	0.15	0.38	0.30	
Control Delay	5.2	1.5	1.4	0.7	22.7	
Oueue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.2	1.5	1.4	0.7	22.7	
SOT	Α	V	A	A	O	
Approach Delay	5.1			0.7	22.7	
Approach LOS	V			A	O	
Intersection Summary						
Area Type:	Other					
Cycle Length: 60						
Actuated Cycle Length: 60	0					
Offset: 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow	ced to phase	2:EBT a	nd 6:WB	T, Start o	of Yellow	
Natural Cycle: 60						
Control Type: Actuated-Coordinated	oordinated					
Maximum v/c Ratio: 0.52						
Intersection Signal Delay: 4.2	4.2			드	Intersection LOS: A	1LOS: A
Intersection Capacity Utilization 46.9%	zation 46.9%			$\subseteq$	:U Level o	ICU Level of Service A
Analysis Period (min) 15						
Splits and Phases: 11: (	11: Chapel Dr & Lancaster Ave	Lancaste	r Ave			
	-			ı		
₹ Ø2 (R)				1		
32 s						
<b>∳</b>				•	<u> </u>	89
				_	2	

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Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave 3/10/2015 Queues 11: Chapel Dr & Lancaster Ave

Lane Group         EBT         EBR         WBL           Lane Group Flow (vph)         1283         34         37           Wc Ratio         0.52         0.03         0.15           Control Delay         5.2         1.5         1.4           Oueue Delay         5.2         1.5         1.4           Oueue Length Softh (ft)         91         0         0.0           Oueue Length Softh (ft)         91         0         1           Inchanal Link Dist (ft)         520         m1         m1           Inchanal Link Dist (ft)         520         1.55         m1           Turn Bay Length (ft)         520         1.25         1.25		NBL 116 0.30 2.2.7 0.00 2.2.7
Jap Flow (vph) 1283 34 0.52 0.03 149 0.52 0.03 159 15 15 15 15 15 15 15 15 15 15 15 15 15		116 0.30 22.7 0.0 22.7
18by 0.52 0.03 18by 5.2 1.5 18by 0.0 0.0 18by 0.0 1.0 18by 5.2 1.5 18by 1.5		0.30 22.7 0.0 22.7
5.2 1.5 0.0 0.0 5.2 1.5 0.0 91 0 0.0 153 7 5.20 125 ·		22.7
0.0 0.0 5.2 1.5 ft) 91 0 ft) 153 7 520 125		0.0 22.7
5.2 1.5 (f) 91 0 153 7 520 125 ·		7.22
(t) 91 0 (t) 153 7 520 125	1 6	1,1
ft) 153 7 520 125		
520 125	1 m12	36
125	1353	239
	2	
Base Capacity (vph) 2450 1104 248	8 2450	1214
Starvation Cap Reductn 0 0 0	0 0	0
Spillback Cap Reductn 0 0 0	0 0	0
Storage Cap Reductn 0 0 0 (	0 0	0
Reduced v/c Ratio 0.52 0.03 0.15	5 0.38	0.10
Intersection Summary		

itersection S
m m

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	je-	₩		<i>y</i> -	₩.		*	÷		<i>y-</i>	<b>\$</b>	
Volume (vph)	105	1017	92	63	869	39	82	124	31	118	201	
Ideal Flow (vphpf)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	
Grade (%)		%0			3%			1%			%0	
Storage Length (ft)	200		0	250		0	190		0	99		
Storage Lanes	-		0	-		0	-		0	-		
Taper Length (ft)	25	L	i c	25	L	L	25		6	72	5	· ·
Lane Util. Factor	00.1	0.95	0.95	1.00	0.95	0.95	1.00 1.00	0.1.00	90.1	8.1	1.00	8.
FII FII Drotoctod	0 050	0.988		0.050	0.492		0.050	0.970		0.050	0.945	
Satd Flow (prot)	1565	3002	0	1541	3058	_	1557	1590	<b>C</b>	1565	1556	
Fit Permitted	0.236	7/00	>	0.101	0000	>	0.213	200	>	0.571	82	
Satd. Flow (perm)	389	3092	0	164	3058	0	349	1590	0	940	1556	
Right Turn on Red			No			N			No			
Satd. Flow (RTOR)												
Link Speed (mph)		32			32			25			22	
Link Distance (ft)		1433			265			344			973	
Travel Time (s)		27.9			5.2			9.4			26.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	111	1071	4	99	735	41	98	131	33	124	212	121
Shared Lane Traffic (%)	į	,	•			4	i		•		0	
Lane Group Flow (vph)	= =	1168	0	99	9//	0	98	164	0	124	333	
Enter Blocked Intersection	2	9 °	S :	% ·	8	2	و ا	9 .	S :	% .	ο	•
Lane Alignment	Leff	Left	Right	Leff	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(It)		≓ °			= °			12			7.7	
Link Offset(ft)		0 ;			0 9			0 ;			0 ;	
Crosswalk Width(ft)		01.			01			0.			0.	
Iwo way Leit Turn Lane	,	-	-	,	,	,	,	,	,	-	1	7
Timing Engloy				1.19	6	6	2 -	<u>8</u>	<u> </u>	1.1	1.1	
Turning speed (mpri)	0 -	-	٨	0 5	•	^	0 -	-	۲	0 5	-	
Number of Detectors Detector Template	- #a	- I		- t	_ I		- #g	- I		- <del>J</del> a	- H	
Leading Detector (ft)	37	37		37	37		37	37		37	37	
Trailing Detector (ft)	ကု	ς'n		ကု	ς'n		ကု	ကု		ကု	ကု	
Detector 1 Position(ft)	ကု	ကု		ကု	-3		ငှ	ငှ		ကု	ကု	
Detector 1 Size(ft)	40	40		40	40		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Protected Phases	+ + - - - - - - - - - - - - -	2		H H	<u> </u>			ξα			¥ <	
Permitted Phases		7		- 4	>		α	0		٧	٠	
Detector Phase	4 تر	2		- 0	9		000	00		4	4	
Switch Phase	•				>		•	•				
Minimum Initial (s)	3.0	34.0		3.0	34.0		3.0	3.0		3.0	3.0	
Minimum Sulit (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	

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B 23 pm 9/16/2014 Baseline

3/10/2015 Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

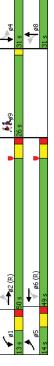
	<
raile Gioup	60
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ŧ	
Fit Protected	
Satd. Flow (prot)	
Fit Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector I Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	6
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0
Minimum Split (s)	26.0
B 23 pm 9/16/2014 Baseline	Synchro 8
	C 9560

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/10/2015

Total Cost Course   EBI   EBI   WBI   WBT   WBR   NBI   NBR   SBI   SB	EBL         EBT         EBR         WBL         WBT         WBL         NBT         NBT         NBT         NBT         SBL           1140         50.0         13.0         49.0         31.0         32.0         32.0         32.0         32.0         32.0         32.0         32.0         32.0         32.0         32.0         32.0         32.0         33.0         33.0         33.0         33.0         33.0         33.0         33.0         33.0         33.0         33.0         33.0         33.0         33.0         33.0		1	†	<i>&gt;</i>	<b>&gt;</b>	ţ	✓	•	•	•	۶	-	•
14.0 56.0 13.0 49.0 31.0 31.0 31.0 11.7% 41.7% 10.8% 40.8% 25.8% 25.8% 25.8% 25.8% 25.8% 25.8% 25.8% 25.8% 25.8% 25.8% 25.8% 25.8% 25.0 25.0 20.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	11.7% 41.7% 10.8% 49.0 31.0 31.0 31.0 11.7% 41.7% 10.8% 40.8% 25.8% 25.8% 25.8% 25.8% 25.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
11.7% 41.7% 10.8% 40.8% 25.8% 25.8% 25.8% 24.0 44.0 44.0 44.0 44.0 2.0 25.0 25.0 25.0 25.0 25.0 25.0 25.	11.7% 41.7% 10.8% 40.8% 25.8% 25.8% 25.8% 24.0 44.0 7.0 43.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25	Total Split (s)	14.0	50.0		13.0	49.0		31.0	31.0		31.0	31.0	
8.0 44.0 7.0 43.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25	8.0 44.0 7.0 43.0 25.0 25.0 25.0 25.0 25.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4	Total Split (%)	11.7%	41.7%		10.8%	40.8%		25.8%	25.8%		25.8%	25.8%	
40         50         60         50         60<	40 40 40 40 40 40 40 40 40 60 60 50 50 50 50 50 50 50 50 50 50 50 50 50	Maximum Green (s)	8.0	44.0		7.0	43.0		25.0	25.0		25.0	25.0	
2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	All-Red Time (s)	2.0	2.0		2.0	5.0		5.0	2.0		2.0	2.0	
6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	Lost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lead Lag Lead Lag  3.0 3.0 3.0 3.0 3.0 3.0 3.0  None C-Max None C-Max None None  57.3 51.3 54.3 48.0 24.5 24.5  0.48 0.48 0.45 0.40 0.20 0.20  0.40 0.40 0.40 0.20 0.20  0.20 0.20 0.20  0.20 0.20 0	Lead Lag Lead Lag  3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0  None C-Max None C-Max None None None  57.3 51.3 54.3 48.0 24.5 24.5 24.5  6.43 0.48 0.44 0.45 0.40 0.20 0.20  6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  73.2 43.9 24.4 26.0 216.4 48.7 61.0  70 0.0 0.0 0.0 0.0 0.0 0.0 0.0  72.1 42.1 25.9 F D E  42.1 C 5.9 F D  C D C F D C  C A 106.4 A8.7 61.0  F Harse 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  aled  Intersection LOS: D  181.5% ICM Level of Service D	Total Lost Time (s)	6.9	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
30   3.0	30   3.0	Lead/Lag	Lead	Lag		Lead	Lag							
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 None C-Max None C-Max None None None None None None None None	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 None C-Max None C-Max None None None None None None None None	Lead-Lag Optimize?												
None C-Max None C-Max None None None  57.3 51.3 54.3 48.0 24.5 24.5 24.5  0.48 0.43 0.45 0.40 0.20 0.20 0.20  0.49 0.40 0.40 0.20 0.20 0.20  0.40 0.40 0.40 0.20 0.20 0.20  0.40 0.40 0.40 0.40 0.61  0.40 0.40 0.40 0.40 0.40  0.40 0.40 0.	None C-Max None C-Max None None None  57.3 51.3 54.3 48.0 24.5 24.5 24.5  0.48 0.48 0.45 0.40 0.20 0.20  0.40 0.40 0.40 0.20 0.20  0.20 0.20 0.20 0.20  23.2 43.9 24.4 26.0 216.4 48.7 61.0  0.0 0.0 0.0 0.0 0.0 0.0 0.0  23.2 43.9 24.4 26.0 216.4 48.7 61.0  24.1 2.0 C C F F B.7 61.0  E C C C F F B.7 61.0  Intersection LOS: D  181.5% IDMENSECTION CS: D  181.5% IDMENSECTION	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
57.3 51.3 54.3 48.0 24.5 24.5 24.5 24.5 24.5 24.5 24.5 24.5	57.3     51.3     54.3     48.0     24.5     24.5     24.5       0.48     0.43     0.40     0.20     0.20     0.20       0.43     0.46     0.43     0.24     0.20     0.20       0.3     0.88     0.46     0.63     1.21     0.51     0.65       23.2     43.9     24.4     26.0     216.4     48.7     61.0       0.0     0.0     0.0     0.0     0.0     0.0       23.2     43.9     24.4     26.0     216.4     48.7     61.0       C     D     C     F     D     F       Intersection Los: D       Intersection Los: D       Intersection Los: D       Intersection Los: D	Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
57.3 51.3 54.3 48.0 24.5 24.5 24.5 0.40 0.48 0.43 0.48 0.44 0.42 0.40 0.20 0.20 0.20 0.20 0.20	57.3     51.3     54.3     48.0     24.5     24.5     24.5       0.48     0.43     0.45     0.40     0.20     0.20     0.20       0.48     0.45     0.40     0.20     0.20     0.20       0.31     0.88     0.46     0.63     1.21     0.51     0.65       23.2     43.9     24.4     26.0     216.4     48.7     61.0       0.0     0.0     0.0     0.0     0.0     0.0       2.2     43.9     24.4     26.0     216.4     48.7     61.0       C     D     C     C     F     D     E       A4.1     25.9     106.4     F       berner     C     F     F       branch     C     F     F       constant     C     F     F       constant     C     F     F       constant     C     C     F   <	Walk Time (s)												
57.3 51.3 54.3 48.0 24.5 24.5 24.5 24.5 24.5 0.48 0.48 0.43 0.48 0.42 0.20 0.20 0.20 0.20 0.20 0.20 0.20	57.3     51.3     54.3     48.0     24.5     24.5     24.5       0.48     0.43     0.46     0.40     0.20     0.20     0.20       0.43     0.88     0.46     0.63     1.21     0.51     0.65       2.32     43.9     2.44     26.0     216.4     48.7     61.0       0.0     0.0     0.0     0.0     0.0     0.0       0.2     2.44     26.0     216.4     48.7     61.0       0.0     0.0     216.4     48.7     61.0       0.0     0.0     2.0     7     F     F       1.0     1.06.4     4     1.06.4     F       1.0     1.0     1.0     F     1.0       1.0     1.0     1.0     1.0     1.0       1.0     1.0     1.0     1.0     1.0       1.0     1.0     1.0     1.0     1.0       1.0     1.0     1.0     1.0     1.0       1.0     1.0     1.0     1.0     1.0       1.0 <t< td=""><td>Flash Dont Walk (s)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Flash Dont Walk (s)												
57.3 51.3 54.3 48.0 24.5 24.5 24.5 24.5 24.5 24.5 24.5 24.5	57.3 51.3 54.3 48.0 24.5 24.5 24.5 24.5 24.5 24.5 24.5 24.5	Pedestrian Calls (#/hr)												
0.48 0.43 0.45 0.40 0.20 0.20 0.20 0.20 0.43 0.88 0.46 0.63 1.21 0.51 0.65 0.65 0.65 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0.48 0.43 0.45 0.40 0.20 0.20 0.20 0.20 0.43 0.88 0.44 0.63 1.21 0.51 0.65 0.65 0.00 0.00 0.00 0.00 0.00 0.00	Act Effct Green (s)	57.3	51.3		54.3	48.0		24.5	24.5		24.5	24.5	
0.43 0.88 0.46 0.63 1.21 0.51 0.65 23.2 43.9 24.4 26.0 216.4 48.7 61.0 0.0 0.0 0.0 0.0 0.0 0.0 23.2 43.9 24.4 26.0 216.4 48.7 61.0 0.2 2.2 43.9 24.4 26.0 216.4 48.7 61.0 0.2 2.2 24.4 26.0 216.4 48.7 61.0 0.3 2.2 24.4 26.0 216.4 48.7 61.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.43 0.88 0.46 0.63 1.21 0.51 0.65 3.23 43.9 24.4 26.0 216.4 48.7 61.0 0.0 0.0 0.0 0.0 0.0 0.0 0.23.2 43.9 24.4 26.0 216.4 48.7 61.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Actuated g/C Ratio	0.48	0.43		0.45	0.40		0.20	0.20		0.20	0.20	
23.2 43.9 24.4 26.0 216.4 487 610 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 3.2 43.9 24.4 26.0 216.4 487 610 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	23.2 43.9 24.4 26.0 216.4 487 61.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 23.2 43.9 24.4 26.0 216.4 487 61.0 24.1 C C C C F D F 42.1 C C C F D F 42.1 C C C F D F  Hase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  Taled  Intersection LOS: D  181.5% ICULevel of Service D	v/c Ratio	0.43	0.88		0.46	0.63		1.21	0.51		0.65	1.05	
23.2 43.9 24.4 26.0 216.4 48.7 61.0 C D C C F D E C D C C F D F D E C C F D F D F E C D C C F D F D F E C C F D F D F E C C F D F F D F E C C F D F F D F E C C F D F F D F E C C F D F F D F E C C F D F F D F E C C F D F F D F E C C F D F F D F E C C F D F F D F E C C F D F E C C F D F E C C F D F E C C F D F E C C F D F E C C F D F E C C F D F E C C F D F E C C F D F E C C C F D F E C C C F D F E C C C F D F E C C C F D F E C C C F D F E C C C F D F E C C C C F D F E C C C C C F D F E C C C C C C C C C C C C C C C C C C	23.2 43.9 24.4 26.0 216.4 48.7 61.0 C D C C F P D E C C F P D C C F F P F F F F F F F F F F F F F F F	Control Delay	23.2	43.9		24.4	26.0		216.4	48.7		61.0	110.7	
23.2 43.9 24.4 26.0 216.4 48.7 61.0 C D C C F D E 42.1 25.9 106.4 D C C F D E  Telf  hase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection 181.5% ICU Level of Service D  181.5% ICU Level of Service D	23.2 43.9 24.4 26.0 216.4 48.7 61.0 C D C C F D E  42.1 25.9 106.4 D C C B D C C F D E  F D E  F D E  Intersection LOS: D  INTERSECTION COS: D  INTERSECTION COS: D  INTERSECTION COS: D  INTERSECTION COS: D	Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
C D C C F D E  42.1 25.9 106.4 D C F  D C F  Hase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  1 Intersection LOS: D  181.5% ICU Level of Service D	C D C C F D E  42.1 25.9 106.4 D C C F D E  ref  thase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection rated Intersection LOS: D  181.5% ICU Level of Service D	Total Delay	23.2	43.9		24.4	26.0		216.4	48.7		61.0	110.7	
42.1 25.9 106.4 D C F  ner  hase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  nated  Intersection LOS: D  181.5% ICU Level of Service D	42.1 25.9 106.4 D C F  Inter  Taled  Intersection LOS: D  IOU Level of Service D	SOT	S	Ω		ပ	ပ		ш	Ω		ш	ш	
Approach LOS D C F F F F F Intersection Summary Other Other Order Length: 120 Office Length: 120 Office: 125 Octor Octor Office: 125 Octor Office: 125 Octor Octor Office: 125 Octor Octor Office: 125 Octor	Approach LOS  Intersection Summary  Area Type: Cycle Length: 120  Offiset: O (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cycle: 128  Confort Type: Actuated-Coordinated Confort Type: Actuated-Coordinated Intersection Signal Delay: 51.9  Intersection LOS: D Intersection Appair Utilization 81.5%  ICU Level of Service D	Approach Delay		42.1			25.9			106.4			97.2	
Area Type:  Other  Othe	Area Type:  Other  Other  Oyle Length: 120  Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  Natural Cycle: 122  Control Type: Actualed-Coordinated  Maximum vic Ratio: 1.21  Intersection Signal Delay: 51.9  Intersection Capacity Utilization 81.5%  Intersection Capacity Utilization 81.5%  ICU Level of Service D	Approach LOS		O			ပ			ı			ı	
Area Type: Cycle Length: 120 Actualed Cycle Length: 120 Actualed Cycle Length: 120 Offset: 0 (796), Referenced to phase 2:EBTL and &WBTL, Start of Yellow, Master Intersection Natural Cycle: 125 Control Type: Actualed-Coordinated Maximum vV. Ratio: 1.21 Intersection Signal Delay: 5:19 Intersection Capacity Utilization 81:5% ICU Level of Service D	Area Type: Cycle Length: 120 Cycle Length: 120 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cycle: 125 Control Type: Actuated-Coordinated Maximum wice Ratio: 1.21 Intersection Signal Delay: 51.9 Intersection Capacity Utilization 81.5% ICU Level of Service D	Intersection Summary												
Cycle Length: 120 Adduated Cycle Length: 120 Offise Lo(%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cycle: 135 Control Type: Actualed-Coordinated Maximum wite Batto, 1.21 Intersection Signal Delay: 5:19 Intersection Signal Delay: 5:19 Intersection Capacity Utilization 81:5% ICU Level of Service D	Cycle Length: 120 Actualed Cycle Length: 120 Offset. 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Offset. 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cycle: 125 Control Type: Actualed-Coordinated Maximum vic Ratio: 1.21 Intersection Signal Delay: 51.9 Intersection Capacity Utilization 81.5% ICU Level of Service D Analysis Perior (min) 15	Area Type:	Other											
Actualed Cycle Length: 120 Offset: (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cycle: 125 Confrol Type: Actualed-Coordinated Maximum vk Ratio: 1.21 Intersection Signal Delay: 51.9 Intersection Capacity Utilization 81.5% ICU Level of Service D	Actuated Cycle Length: 120 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cycle: 126 Maximum v/c Ratio: 1.21 Intersection Signal Delay: 51:9 Intersection Capacity Ullization 81.5% Intersection Capacity Ullization 81.5% ICU Level of Service D	Cycle Length: 120												
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cycle: 125 Control Type: Actuated-Coordinated Maximum vk Ratio: 1.21 Intersection Signat Delay: 51.9 Intersection Capacity Utilization 81.5% ICU Level of Service D	Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cyber. 128 Control Type: Actualed-Coordinated Maximum vic Ratio: 1,21 Intersection Signal Delay: 51,9 Intersection Capacity Utilization 81,5% Intersection Rapacity Utilization 81,5% ICU Level of Service D	Actuated Cycle Length: 120	0											
nated 181.5%	naled 1 1 1 1 1 1	Offset: 0 (0%), Referenced	to phase 2:	EBTL and	6:WBTL	Start of	Yellow, M	aster Int	ersection					
nated 181.5%	nated 1 181.5%	Natural Cycle: 125												
181.5%	181.5%	Control Type: Actuated-Coc	ordinated											
181.5%	181.5%	Maximum v/c Ratio: 1.21												
		Intersection Signal Delay: 5	51.9			⊒	ersection	LOS: D						
	Analysis Period (min) 15	Intersection Capacity Utiliza	ation 81.5%			೨	U Level o	f Service	۵					

Splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave



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Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Queues 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/10/2015

Lane Group	99
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	0.6
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
TOS	
Approach Delay	
Approach LOS	
3	
mersection summary	

Lane Group         EBI         EBI         WBI         WBI         SBI         SBI           Lane Group Flow (vph)         111         1168         66         776         86         164         113           Ver Ratio         0.43         0.84         0.64         0.63         1.05         0.05           Control Delay         23.2         43.9         24.4         26.0         216.4         48.7         61.0         110.7           Couleue Delay         0.0		١	<b>†</b>	<b>\</b>	ţ	•	<b>—</b>	۶	<b>→</b>	
86 164 124 121 0.51 0.65 10.0 0.0 0.0 10.0 0.0 0.0 10.4 48.7 61.0 1 4.89 -81 190 65 171 324 191 0 0 0 0 0 0 0 0 0 1.21 0.51 0.65	Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
1,21 0,51 0,65 1,065 1,000 0,00 0,00 0,00 0,00 0,00 0,00 0,	Lane Group Flow (vph)	111	1168	99	9//	98	164	124	333	
216.4 48.7 61.0 17 0.0 0.0 0.0 216.4 48.7 61.0 17 -81 114 89 -4 #189 185 #171 # 190 65 0 0 0 0 0 0 0 0 0 1.21 0.51 0.65 ··	v/c Ratio	0.43	0.88	0.46	0.63	1.21	0.51	0.65	1.05	
100 0.0 0.0 1.16.4 48.7 6.10 1.16.4 48.7 6.10 1.16.4 1.10 1.10 1.10 1.10 1.10 1.10 1.10 1.	Control Delay	23.2	43.9	24.4	26.0	216.4	48.7	61.0	110.7	
216.4 48.7 610 7.8 8.9 #189 185 #171 8.9 7.1 14.0 8.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Oueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
-81 114 89 #189 185 #171 190 65 77 324 191 0 0 0 0 0 0 1.21 0.51 0.65	Total Delay	23.2	43.9	24.4	26.0	216.4	48.7	61.0	110.7	
#189 185 #171 264 65 71 324 191 0 0 0 0 0 0 1.21 0.51 0.65	Queue Length 50th (ft)	47	~532	28	202	-81	114	86	~281	
264 65 71 324 191 0 0 0 0 0 0 1.21 0.51 0.65	Queue Length 95th (ft)	78	#673	m45	241	#189	185	#171	#464	
190 65 71 324 191 0 0 0 0 0 0 0 1.21 0.51 0.65	Internal Link Dist (ft)		1353		185		264		893	
71 324 191 0 0 0 0 0 0 0 0 0 1.21 0.51 0.65	Turn Bay Length (ft)	200		250		190		92		
1.21 0.51 0.65	Base Capacity (vph)	258	1321	149	1223	71	324	191	317	
121 051 0.65	Starvation Cap Reductn	0	0	0	0	0	0	0	0	
1.21 0.51 0.65 1	Spillback Cap Reductn	0	0	0	0	0	0	0	0	
1.21 0.51 0.65 1	Storage Cap Reductn	0	0	0	0	0	0	0	0	
Intersection Summary  - Volume exceeds capacity, queue is theoretically infinite.  Queue shown is maximum after two cycles.  # 95th precordille volume exceeds capacity, queue may be longer.  Queue shown is maximum after two cycles.  Queue shown is maximum after two cycles.  Maximum after two cycles.	Reduced v/c Ratio	0.43	0.88	0.44	0.63	1.21	0.51	0.65	1.05	
Volume exceeds capacity, queue is theoretically infinite.  Queue shown is maximum after two cycles.  # 95th precordille volume sexeeds capacity, queue may be longer.  Queue shown is maximum after two cycles.  Mere shown is maximum after two cycles.  The cycles is makered by upstream signal.	Intersection Summary									
Oueue shown is maximum after two cycles.  # 95th precondile volume sexeeds capacity, queue may be longer.  Queue shown is maximum after two cycles.  m Volume for 95th percentile queue is metered by upstream signal.	<ul> <li>Volume exceeds capacity</li> </ul>	; queue is	theoretic	ally infini	je.					
# 95th percentile volume exceeds capacity, queue may be longer.  Queue shown is maximum after two cycles.  m Volume for 95th percentile queue is metered by upstream signal.	Queue shown is maximum	after two	cycles.							
Queue shown is maximum after two cycles. m Volume for 95th percentile queue is metered by upstream signal.	# 95th percentile volume ex	ceeds cap	pacity, qui	ene may	be longer					
m Volume for 95th percentile queue is metered by upstream signal.	Queue shown is maximum	after two	cycles.							
	m Volume for 95th percentil	e queue is	s metered	by upstr	eam sign	al.				

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Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/10/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<i>y</i> -	₩		×	₩		je.	æ		je-	æ	
Volume (vph)	105	1017	92	63	869	36	82	124	31	118	201	115
deal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
ane Width (ft)	10	10	10	10	9	10	10	10	10	10	10	10
Srade (%)	000	%0	c	C	3%	c	000	%	c	Ļ	%0	C
Storage Length (It)	700		0 0	720		0 0	061		0 0	65		0 0
Storage Lanes	-		0	-		0	-		0	-		0
Faper Length (ft)	22			22			25			25		
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
E		0.988			0.992			0.970			0.945	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1565	3092	0	1541	3058	0	1557	1590	0	1565	1556	0
Flt Permitted	0.212			0.092			0.271			0.589		
Satd. Flow (perm)	349	3092	0	149	3058	0	444	1590	0	026	1556	0
Right Turn on Red			2			2			8			8
Satd. Flow (RTOR)												
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		1433			265			344			973	
ravel Time (s)		27.9			5.2			9.4			26.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	1071	45	99	735	41	98	131	33	124	212	121
Shared Lane Traffic (%)	7	0717	c	7	72.2	c	č	17.4	c	10,1	222	
Laire Gloup Flow (vpir)	= =	00 1	2	8 2	0//	2	8 2	5 S	2	47I	SSS S	2
itel blocked lillersection	ON -	ON -	ON THE	Q 40	0 10	2 1	Q 4	0 40	2 1	0N -	ON -	ON I
Lane Alignment	Lett	Lett	Kight	Lett	Lett	Right	Lett	Left	Kight	Left	Len	Kight
Median Width(ft)		= '			= '			12			17	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
wo way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Furning Speed (mph)	15		6	12		6	12		6	12		6
Number of Detectors	-	-		<del>-</del>	<b>—</b>		-	Ψ.		-	<del>-</del>	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Fell	Thru	
Leading Detector (ft)	37	37		37	37		37	37		37	37	
railing Detector (ft)	ကု	ς		ကု	ကု		ကု	ကု		ကု	ကု	
Detector 1 Position(ft)	ကု	۲-		ကု	ကု		ကု	ကု		ကု	ç,	
Detector 1 Size(ft)	40	40		40	40		40	40		40	40	
Detector 1 Type	CI+EX	CI+Ex		CI+Ex	Cl+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0:0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Furn Type	pm+pt	Ν		bm+pt	N A		Perm	A		Perm	¥	
Protected Phases	2	2		-	9			∞			4	
Permitted Phases	2			9			00			4		
Detector Phase	2	2		<del></del>	9		∞	00		4	4	
Switch Phase												
Vinimum Initial (s)	3	240		0	0 7 0		0	0				
( )	5	2		2.0	0.4.0		3.0	3.0		3.0	3.0	

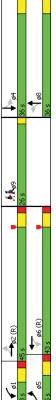
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Lane Comigurations		
Volume (vpn)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Grade (%)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Fit Protected		
Satd. Flow (prot)		
Fit Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Sneed (mph)		
Link Distance (ff)		
Travel Time (s)		
Peak Hour Factor		
Adi Flow (upb)		
Adj. riow (vpii)		
Snared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Turn Type		
Protected Phases	6	
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	24.0	
Minimum Split (s)	26.0	

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

## FBR WBL WBT WBR NBL NBT NBR SBL S450 450 450 450 450 450 450 450 450 450	FBI   FBI   FBI   WBI   WBI   WBI   NBI   NBI   NBI   SBI   SBI		1	†	<b>/</b>	<b>&gt;</b>	ţ	✓	•	<b>←</b>	•	۶	<b>→</b>	•
15.0   45.0   13.0   43.0   36.0	15.0   45.0   13.0   43.0   36.0	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
(\$) 90% 35.8% 30.0% 30.0% 30.0% 30.0% 30.0% 30.0% 30.0% 30.0 30.0	(\$) 125% 375% 108% 35.8% 30.0%	Total Split (s)	15.0	45.0		13.0	43.0		36.0	36.0		36.0	36.0	
(s)   9.0   39.0   7.0   37.0   30.	(s) 90 390 70 370 300 300 300 300 (s) 163 00 390 300 300 300 20 20 20 20 20 20 20 20 20 20 20 20 2	Total Split (%)	12.5%	37.5%		10.8%	35.8%		30.0%	30.0%		30.0%	30.0%	
(\$) 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	(\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$)	Maximum Green (s)	0.6	39.0		7.0	37.0		30.0	30.0		30.0	30.0	
(s) 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	(s) 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
(#M) 54.7 47.9 50.1 438 27.9 50.3 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	(\$\frac{1}{5} (\$5 \text{ (\$6 \text{ (\$	All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
(\$) 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 (\$)  Lead Lag Lead Lag 1.6  In (\$) 3.0 3.0 3.0 3.0 3.0 3.0 3.0  In (\$) 3.0 3.0 3.0 3.0 3.0 3.0 3.0  In (\$) 3.0 3.0 3.0 3.0 3.0 3.0  In (\$) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  In (\$) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  In (\$) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  In (\$) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  In (\$) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  In (\$) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  In (\$) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  In (\$) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  In (\$) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	(\$) 65 65 65 65 65 65 65 65 65 65 65 65 65	Lost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lead Lag Lead Lag  In (s)  (s)  (s)  (s)  (s)  (s)  (s)  (s)	Tee?  Lead Lag Lead Lag  In (s)  None C-Max  None None None None None None None None	Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
nn (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Integral 1899  Integration 1999  Integration 199	Lead/Lag	Lead	Lag		Lead	Lag							
(\$)  None C-Max None C-Max None None None None None None (\$)  (\$)  (\$(*)**  (\$(*)*  (\$(*)**	(\$)  (\$)  (\$)  (\$)  (\$)  (\$)  (\$)  (\$)	Lead-Lag Optimize?												
Signature   None   C-Max   None   N	(\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$) (\$)	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
(#In) (54) (54) (54) (54) (57) (57) (57) (58) (58) (59) (50) (50) (50) (50) (50) (50) (50) (50	(#Int) (s) (s) (s) (s) (s) (s) (s) (s) (s) (s	Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
(#In)	(\$\text{(}\text{(}\tex	Walk Time (s)												
(#hr) (s) 54.7 47.9 50.1 43.8 27.9 27.9 27.9 (s) 6.46 0.46 0.42 0.36 0.23 0.23 0.23 (d) 6.46 0.95 0.49 0.70 0.83 0.42 0.55 (e) 6.53 4 30.9 31.1 97.7 43.2 50.3 (e) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 (f) 0.0 0.0 0.0 0.0 0.0 0.0 (g) 0.0 0.0 0.0 0.0 0.0 (g)	(#hr) (s) 54.7 47.9 50.1 43.8 27.9 27.9 27.9 (s) 6.46 0.46 0.42 0.42 0.36 0.23 0.23 0.23 (o) 46 0.46 0.95 0.49 0.70 0.83 0.44 0.55 (o) 46 0.95 0.49 0.70 0.83 0.44 0.55 (o) 6.00 0.00 0.0 0.0 0.0 0.0 0.0 (c) 7 43.2 50.3 (c) 8.3 4 30.9 31.1 97.7 43.2 50.3 (c) 10 0.0 0.0 0.0 0.0 0.0 0.0 (c) 26.6 53.4 30.9 31.1 97.7 43.2 50.3 (c) 10 0.0 0.0 0.0 0.0 0.0 0.0 (c) 26.6 53.4 30.9 31.1 97.7 43.2 50.3 (c) 10 0.0 0.0 0.0 0.0 0.0 0.0 (c) 10 0.0 0.0 0.0 (c) 10 0.0 0.0 0.0 (c) 10 0.0 0.0 (	Flash Dont Walk (s)												
(\$) 54.7 47.9 50.1 43.8 27.9 27.9 27.9 (1) 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	(\$) 54.7 47.9 50.1 43.8 27.9 27.9 27.9 27.9 [ 10 0.46 0.40 0.42 0.36 0.23 0.23 0.23   26.6 5.34 30.9 31.1 97.7 43.2 50.3   26.6 53.4 30.9 31.1 97.7 43.2 50.3   26.6 53.4 30.9 31.1 97.7 43.2 50.3   26.6 53.4 30.9 31.1 97.7 43.2 50.3   26.6 53.4 30.9 31.1 97.7 43.2 50.3   26.6 53.4 30.9 31.1 97.7 43.2 50.3   26.6 53.4 30.9 31.1 97.7 43.2 50.3   26.7 6 7 7 8.2 50.3   26.8 53.4 30.9 31.1 97.7 43.2 50.3   26.9 20 31.1 97.7 43.2 50.3   26.9 21.1 20	Pedestrian Calls (#/hr)												
Itio 0.46 0.40 0.42 0.36 0.23 0.23 0.23 0.23 0.23 0.44 0.95 0.95 0.07 0.083 0.44 0.055 0.49 0.70 0.083 0.44 0.055 0.49 0.70 0.083 0.44 0.055 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Itio 0.46 0.40 0.42 0.36 0.23 0.23 0.23  0.46 0.95 0.49 0.70 0.83 0.44 0.85  2.66 0.34 0.95 0.70 0.83 0.44 0.85  0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  2.66 0.34 30.9 31.1 97.7 43.2 50.3  0.0 0.0 0.0 0.0 0.0 0.0 0.0  2.66 0.34 30.9 31.1 97.7 43.2 50.3  0.0 0.0 0.0 0.0 0.0 0.0  2.6 0.3 0.44 0.85  0.0 0.0 0.0 0.0 0.0  2.6 0.0 0.0 0.0 0.0  0.0 0.0 0.0 0.0 0.0  0.0 0.0	Act Effct Green (s)	54.7	47.9		20.1	43.8		27.9	27.9		27.9	27.9	
0.46 0.95 0.49 0.70 0.83 0.44 0.55 26.6 53.4 30.9 31.1 97.7 43.2 50.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.46 0.95 0.49 0.70 0.83 0.44 0.55 2.65 5.34 3.09 31.1 97.7 43.2 59.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Actuated g/C Ratio	0.46	0.40		0.45	0.36		0.23	0.23		0.23	0.23	
26.6 53.4 30.9 31.1 97.7 43.2 50.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	266 534 309 31.1 97.7 43.2 50.3  266 534 0.0 0.0 0.0 0.0 0.0 0.0  26 534 30.9 31.1 97.7 43.2 50.3  26 534 30.9 31.1 97.7 43.2 50.3  26 534 30.9 31.1 97.7 43.2 50.3  26 51.0 C C P D D  51.0 31.1 62.0 D  C Other  O	v/c Ratio	0.46	0.95		0.49	0.70		0.83	0.44		0.55	0.92	
00 00 00 00 00 00 00 00 00 00 00 00 00	266 53.4 30.9 31.1 97.7 43.2 50.3 266 53.4 30.9 31.1 97.7 43.2 50.3 2 C C F D D C 51.0 C E E  20  20  20  20  31.1 62.0  E E  20  20  20  20  20  20  20  20	Control Delay	26.6	53.4		30.9	31.1		7.79	43.2		50.3	76.4	
266 53.4 30.9 31.1 97.7 43.2 50.3 C D C C C F D D 51.0 31.1 62.0 C D C C C F D D 62.0 0.0 C C C C C F D D 62.0 0.0 C C C C C C C C C C C C C C C C C C C	266 534 309 31.1 97.7 43.2 50.3 C D C C F D D C C C C F D D C C C C F D D C C C C F D D C C C C C C C C C C C C C C C C C C	Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
C D C C F D D  Imary  Cother  20  Cother  Cother  20	C D C C F D D  S1.0 31.1 62.0  D C E  many  Other  Other  Other  and belay 49.0  Intersection LOS: D  CUL evel of Service D  CUL evel of Service D  CUL evel of Service D	Total Delay	26.6	53.4		30.9	31.1		7.79	43.2		50.3	76.4	
51.0 31.1 62.0  Immary  Other  Other  College: Condition of WBTL, Start of Yellow, Master Intersection  State - Coordinated into co.95 Intersection LOS: D  active Utilization 81.5% ICU Level of Service D	51.0 31.1 62.0  Imany  Other	TOS	S	Ω		O	ပ		ш	٥		۵	ш	
Approach LOS D C E E E F Intersection Summary Area Type: Cycle Length: 120 Actuated Cycle Length: 120 Actuated Cycle Length: 120 Conflicts U G/9% Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cycle: 125 Control Type: Actuated-Coordinated Maximum wic Ratio: 0.95 Intersection Signal Delay: 49.0 Intersection Capacity Ultization 81:5% Intersection Capacity Ultization 81:5	Approach LOS	Approach Delay		51.0			31.1			62.0			69.3	
Intersection Summary Area Type: Cycle Length: 120 Actuated Cycle Length: 120 Actuated Cycle Length: 120 Confrost O (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cycle: 125 Control Type: Actuated-Coordinated Maximum vic Ratio: 0.35 Intersection Signal Delay: 49.0 Intersection Capacity Ultization 81:5% Intersection Capacity Ultization 81:5% ICU Level of Service D	Intersection Summary Area Type: Other Other Otycle Length: 120 Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Offset 0 (0%), Referenced condinated Control Type: Actuated-Condinated Maximum vic Ratio: 0,35 Intersection Signal Delay: 49.0 Intersection Signal Delay: 49.0 Intersection Capacity Utilization 81:5% Include Type: Control Type:	Approach LOS		O			ပ			ш			ш	
Area Type: Cycle Length: 120 Actuated Cyae Length: 120 Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Alaminum Wit Ratio: 0.35 Intersection Signal Delay, 49.0 Intersection Signal Delay, 49.0 Intersection (Starton B15%) Intersection	Area Type:  Other  Cycle Length: 120  Actuated Cycle Length: 120  Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  Natural Cycle: 125  Control Type: Actuated-Coordinated  Maximum v/C Ratio: 0,95  Intersection Signal Delay: 49.0  Intersection LOS: D  Analysis Period (min): 15  Include Coordinated  Maximum v/C Ratio: 0,95  Analysis Period (min): 15	Intersection Summary												
Cycle Length: 120 Actuated Cycle Length: 120 Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Oycle: 125 Control Type: Actuated-Coordinated Maximum Wic Ratio: 0,95 Intersection Signal Delay, 49.0 Intersection Capacity Ulitzation 81.5% ICU Level of Service D	Cycle Length: 120 Actualed Cycle Length: 120 Offset o (Oyk, Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Offset o (Oyk, Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cycle: 125 Control Type: Actualed-Coordinated Maximum v/c Ratio: 0.95 Intersection Signal Delay, 49.0 Intersection Signal Delay, 49.0 Intersection Signal Delay, 49.0 Intersection Signal Delay, 15% Intersection Signal Delay, 14.0 Intersection Signal	Area Type:	Other											
Actuated Cycle Length: 120 Offset O (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Offset O (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Control Type: Actuated-Coordinated Maximum Vic Ratio: 0.95 Intersection Signal Deay; 49.0 Intersection Capacity Ultization 81:5% ICU Level of Service D	Actuated Cycle Length: 120 Offset o (Dyc), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cycle: 125 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.95 Intersection Signal Delay, 49.0 Intersection LOS: D Intersection Signal Delay, 49.0 Intersection 1.5 service D	Cycle Length: 120												
Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Cycle: 125 Control Type: Actualed-Coordinated Maximum Vic Ratio: 0.95 Intersection Signal Delay; 90 Intersection Capacity Utilization 81:5% Intersection Capacity Utilization 81:5% ICU Level of Service D	Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection Natural Oyere: 125 Control Type: Actualed-Coordinated Navinum VR Ratio: 0.35 Intersection Signal Delay: 49.0 Intersection LOS: D Intersection Signal Delay: 15% CU Level of Service D Analysis Period (min) 15	Actuated Cycle Length: 12	02											
	<u> </u>	Offset: 0 (0%), Reference	d to phase 2:	EBTL and	1 6:WBTL	, Start of	Yellow, M	laster Inte	ersection					
	%/	Natural Cycle: 125												
181.5%	181.5%	Control Type: Actuated-Co	oordinated											
181.5%	181.5%	Maximum v/c Ratio: 0.95												
	ization 81.5%	Intersection Signal Delay:	49.0			드 !	tersection	LOS: D						
	Analysis Period (min) 15	Intersection Capacity Utili,	zation 81.5%			೦	:U Level o	of Service	D					

Splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave



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Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/10/2015

3/10/2015

	604	
Total Split (s)	26.0	
Total Split (%)	22%	
Maximum Green (s)	24.0	
Yellow Time (s)	2.0	
All-Red Time (s)	0.0	
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)	6.0	
Flash Dont Walk (s)	15.0	
Pedestrian Calls (#/hr)	45	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
SOT		
Approach Delay		
Approach LOS		
0		

Queues

Lane Group  Eare Earl  Eare Group  Eare Earl  Eare Group  Earl  E	27: S Ithan Ave/N Ithan Ave & Lancaster Ave	than Av	e & La	ncaste	r Ave					3/10/2015
EBL         EBT         WBL         WBT         NBL         NBT         SBL         SBL         SBL         384         164         124 <th></th> <th>•</th> <th>†</th> <th><b>&gt;</b></th> <th>ţ</th> <th>•</th> <th><b>←</b></th> <th>٠</th> <th><b>→</b></th> <th></th>		•	†	<b>&gt;</b>	ţ	•	<b>←</b>	٠	<b>→</b>	
111 1168 66 776 86 164 124 6 124 6 124 6 0.46 0.95 0.49 0.70 0.83 0.44 0.55 0.49 0.70 0.83 0.44 0.55 0.49 0.70 0.83 0.44 0.55 0.49 0.70 0.83 0.44 0.55 0.3 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
0.46 0.95 0.49 0.70 0.83 0.44 0.55 0.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Lane Group Flow (vph)	111	1168	99	776	98	164	124	333	
266 534 30.9 31.1 97.7 432 50.3 26.6 53.4 30.9 31.1 97.7 43.2 50.3 26.6 53.4 30.9 31.1 97.7 43.2 50.3 31.1 97.7 43.2 50.3 31.1 97.8 43.2 50.3 31.1 97.8 43.2 50.3 31.1 97.8 43.2 50.3 31.1 97.8 43.2 50.3 31.1 97.8 43.2 50.3 31.1 97.8 43.2 50.3 32.1 #159 175 150 # #159 175 150 # #159 175 120 # #159 175 120 # #159 175 120 # #150 170 170 170 170 170 170 170 170 170 17	v/c Ratio	0.46	0.95	0.49	0.70	0.83	0.44	0.55	0.92	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	26.6	53.4	30.9	31.1	7.79	43.2	50.3	76.4	
26.6 53.4 30.9 31.1 97.7 43.2 50.3 47.2 50.3 4	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
47         -588         30         242         63         107         83           78         #729         m50         321         #159         175         150         #           1353         260         185         264         65         65           245         1234         137         1116         109         390         238           0         0         0         0         0         0         0         0         0           0         0         0         0         0         0         0         0         0         0           0         0         0         0         0         0         0         0         0         0           0         0         0         0         0         0         0         0         0         0         0           0         0         0         0         0         0         0         0         0         0         0         0	Total Delay	26.6	53.4	30.9	31.1	7.79	43.2	50.3	76.4	
78         #729         m50         321         #159         175         150           200         250         185         264         156           245         1234         137         1116         109         390         238           0         0         0         0         0         0         0         0           0         0         0         0         0         0         0         0         0           0         0         0         0         0         0         0         0         0         0         0           0.45         0.95         0.48         0.70         0.79         0.42         0.52         2	Queue Length 50th (ft)	47	~588	30	242	63	107	83	249	
1353   185   264     200	Queue Length 95th (ft)	78	#729	m20	321	#159	175	150	#412	
200         250         190         65           245         1234         137         1116         109         390         238           0         0         0         0         0         0         0         0           0         0         0         0         0         0         0         0           0         0         0         0         0         0         0         0           0.45         0.95         0.48         0.70         0.79         0.42         0.52         0	Internal Link Dist (ft)		1353		185		264		893	
245 1234 137 1116 109 390 238 0.45 0.95 0.48 0.70 0.79 0.42 0.52	Turn Bay Length (ft)	200		250		190		9		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)	245	1234	137	1116	109	330	238	382	
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn	0	0	0	0	0	0	0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn	0	0	0	0	0	0	0	0	
0.45 0.95 0.48 0.70 0.79 0.42 0.52	Storage Cap Reductn	0	0	0	0	0	0	0	0	
	Reduced v/c Ratio	0.45	0.95	0.48	0.70	0.79	0.42	0.52	0.87	

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

3/10/2015 
 1739
 1657
 386
 357

 0
 0
 0
 0

 0
 0
 0
 0

 0
 0
 0
 0

 0
 0
 0
 0

 0.77
 0.62
 0.20
 0.74
 # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles. 263 0.80 42.3 0.0 42.3 88 #190 520 77 0.22 20.1 0.0 20.1 22 22 52 52 52 1027 0.62 10.7 10.7 10.7 120 176 302 Queues 51: Lowrys Ln & Lancaster Ave EBT 1332 0.77 12.0 0.0 12.0 150 577 1739 Control Delay
Oueue Delay
Total Delay
Oueue Length 50th (ft)
Oueue Length 95th (ft)
Internal Link Dist (ft)
Tun Bay Length (tp)
Base Capacity (vph)
Slarvation Cap Reduch
Spillback Cap Reduch
Sorage Cap Reduch
Reduced v/c Ration Lane Group Lane Group Flow (vph) v/c Ratio

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HCM 2010 Signalized Intersection Summary 51: Lowrys Ln & Lancaster Ave

Movement Lane Configurations	Ē											
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
,		4			4			4			4	
Volume (veh/h)	2	1201	23	15	976	4	20	36	15	66	11	72
Number	2	2	12	-	9	16	3	80	18	7	4	14
	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	00.1	8	00.1	90:1	100	00.1	00.1	100	1.00	00.1	100	1.00
	1800	1782	1800	1773	1755	1773	1900	1881	1900	1881	1863	1881
	2	1305	25	16	1007	4	22	39	16	108	77	78
Adj No. of Lanes	0	7	0	0	2	0	0	-	0	0	<del>-</del>	0
	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, %	-	-	-	-	-	<del>-</del>	-	-	<del>-</del>	-	<del>-</del>	<b>-</b>
	19	2034	36	72	1999	∞	134	204	89	193	106	90
	0.61	0.61	0.61	0.61	0.61	0.61	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	-	3327	64	16	3269	13	304	1079	363	574	264	480
	669	0	633	531	0	496	11	0	0	263	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1611	1702	0	1595	1746	0	0	1618	0	0
	0.0	0.0	15.1	0.0	0.0	10.5	0.0	0.0	0.0	7.2	0.0	0.0
Cycle Q Clear(g_c), s	15.1	0.0	15.1	10.1	0.0	10.5	2.2	0.0	0.0	9.4	0.0	0.0
	0.00		0.04	0.03		0.01	0.29		0.21	0.41		0.30
b(c), veh/h	1149	0	985	1103	0	975	406	0	0	390	0	0
	0.61	0.00	0.64	0.48	0.00	0.51	0.19	0.00	0.00	0.67	0.00	0.00
E	1149	0	985	1103	0	975	492	0	0	473	0	0
0	1.00	1.00	1.00	1:00	1:00	1.00	1.00	1.00	1.00	1.00	1:00	1:00
	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.5	0.0	7.5	6.5	0.0	9.9	50.6	0.0	0.0	23.5	0.0	0.0
Incr Delay (d2), s/veh	2.4	0.0	3.2	1.5	0.0	1.9	0.2	0.0	0.0	2.9	0.0	0.0
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(-26165%),veh/ln	8.0	0.0	7.4	5.3	0.0	2.1	1.	0.0	0.0	4.5	0.0	0.0
LnGrp Delay(d),s/veh	6.6	0.0	10.7	8.0	0.0	8.5	20.9	0.0	0.0	26.3	0.0	0.0
LnGrp LOS	A		В	A		A	ပ			ပ		
Approach Vol, veh/h		1332			1027			77			263	
Approach Delay, s/veh		10.2			8.2			20.9			26.3	
Approach LOS		В			V			S			O	
Timer	<del></del>	2	က	4	2	9	7	8				
Assigned Phs		2		4		9		8				
Phs Duration (G+Y+Rc), s		43.2		16.8		43.2		16.8				
Change Period (Y+Rc), s		0.9		2.0		0.9		2.0				
Max Green Setting (Gmax), s		34.0		15.0		34.0		15.0				
Max Q Clear Time (g_c+I1), s		17.1		11.4		12.5		4.2				
Green Ext Time (p_c), s		9.6		0.5		10.9		1.0				
Intersection Summary												
HCM 2010 Ctrl Delay			11 3									
HCM 2010 LOS												
No.												
NOICO	4 04 10	la a library	1									

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3/10/2015 395 0 0 0 1.15 SWT 455 1.15 123.9 0.0 123.9 ~272 #447 NET 227 0.34 17.3 0.0 17.3 70 122 710 0 0 0 0.32 112 0.44 20.6 0.0 20.6 34 34 90 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. 606 0.96 58.3 0.0 58.3 ~364 #563 632 29 0.32 34.8 0.0 34.8 #43 65 91 0 0 0 0 0.32 825 1.08 81.1 0.0 81.1 ~487 #707 763 Queues 16: Sproul Rd & Conestoga Rd 50 211 0 0 0 0 0 0 0 EBL 112 0.54 23.5 0.0 23.5 33 #65 Total Delay

Queue Length 50th (ft)

Queue Length 55th (tt)

Lunal Link Dist (tt)

Turn Bay Length (tt)

Base Capacity (vph)

Sarvation Cap Reduch

Soriage Cap Reduch

Soriage Cap Reduch

Soriage Cap Reduch

Reduced v/c Ratio Lane Group Lane Group Flow (vph) v/c Ratio Control Delay Queue Delay

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HCM 2010 Signalized Intersection Summary 16: Sproul Rd & Conestoga Rd

Queues 25: S Ithan Ave & Conestoga Rd

3/10/2015

	ሻ	<b>†</b>	<b>الم</b>	Ų,	ţ	<b>₩</b> J	F	*	*	•	×	7
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	r	2		r	2		F	2			4	
Volume (veh/h)	106	299	221	78	527	48	106	188	28	52	296	84
Number	7	4	14	m	∞	18	<del>-</del>	9	16	2	2	12
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
Adj Sat Flow, veh/h/In	1782	1782	1800	1827	1827	1845	1773	1773	1791	1809	1791	1809
Adj Flow Rate, veh/h	112	265	0	59	222	0	112	198	29	22	312	88
Adj No. of Lanes	<del>-</del>	<del>-</del>	0	<del>-</del>	_	0	_	_	0	0	_	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	-	-	<del>-</del>	-	<del>-</del>	<del>-</del>	<del>-</del>	<del>-</del>	-	-	-	,
Cap, veh/h	222	818	0	252	613	0	300	601	88	87	315	84
Arrive On Green	90.0	0.46	0.00	0.34	0.34	0.00	90.0	0.40	0.40	0.26	0.26	0.26
Sat Flow, veh/h	1697	1782	0	820	1827	0	1689	1513	222	140	1199	321
Grp Volume(v), veh/h	112	265	0	56	222	0	112	0	227	455	0	0
Grp Sat Flow(s),veh/h/ln	1697	1782	0	820	1827	0	1689	0	1734	1660	0	0
Q Serve(g_s), s	3.3	21.5	0.0	2.3	23.2	0.0	3.7	0.0	7.3	14.9	0.0	0.0
Cycle Q Clear(g_c), s	3.3	21.5	0.0	13.9	23.2	0.0	3.7	0.0	7.3	21.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.13	0.12		0.19
Lane Grp Cap(c), veh/h	222	818	0	252	613	0	300	0	689	486	0	0
V/C Ratio(X)	0.50	0.72	0.00	0.12	0.91	0.00	0.37	0.00	0.33	0.94	0.00	0.00
Avail Cap(c_a), veh/h	267	818	0	252	613	0	337	0	726	486	0	0
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	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.2	17.5	0.0	27.2	25.4	0.0	18.3	0.0	16.7	29.8	0.0	0.0
Incr Delay (d2), s/veh	1.8	5.5	0.0	6.0	19.4	0.0	0.8	0.0	0.3	25.7	0.0	0.0
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(-26165%),veh/ln		11.8	0.0	9.0	14.9	0.0	1.7	0.0	3.5	13.5	0.0	0.0
LnGrp Delay(d),s/veh	21.0	23.0	0.0	28.1	44.8	0.0	19.0	0.0	17.0	92.9	0.0	0.0
LnGrp LOS	C	C		C	D		В		В	Е		
Approach Vol, veh/h		704			584			339			455	
Approach Delay, s/veh		22.7			43.9			17.7			9299	
Approach LOS		S			O			В			ш	
Timer	_	2	က	4	2	9	7	00				
Assigned Phs	-	2		4		9	7	∞				
Phs Duration (G+Y+Rc), s	10.8	27.0		42.2		37.8	6.6	32.3				
Change Period (Y+Rc), s	5.5	5.5		2.0		5.5	2.0	2.0				
Max Green Setting (Gmax), s	7.0	21.5		35.5		34.0	7.0	23.5				
Max Q Clear Time (g_c+I1), s	5.7	23.0		23.5		9.3	5.3	25.2				
Green Ext Time (p_c), s	0.0	0.0		2.7		2.5	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			35.0									
HCM 2010 LOS			٥									
)))			ì									

Control Delay
Queue Delay
Queue Delay
Total Delay
Total Delay
Queue Length 50th (ft)
Queue Length 95th (ft)
Internal Link Dis (ft)
Turn Bay Length (ft)
Base Capacity (pph)
Stanvation Cap Reducin
Spillback Cap Reducin
Storage Cap Reducin
Reduced v/c Ratio

AS 333 0.11 0.77 16.3 30.5 0.0 0.0 16.3 30.5 9 84 31 #204 717 3163

686 609 0.86 0.72 24.3 15.9 0.0 0.0 24.3 15.9 18.4 14.4 #325 236 11193 2911

Lane Group Lane Group Flow (vph) v/c Ratio Intersection Summary

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

Queue shown is maximum after two cycles.

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HCM 2010 Signalized Intersection Summary 25: S Ithan Ave & Conestoga Rd

Queues 33: Williams Rd/Garrett Ave & Conestoga Rd

3/10/2015

SWT 101 0.50 35.8 0.0 35.8 40 84

31 31 0.15 26.6 0.0 26.6 12 33 33

EBT WBT 598 599 0.44 0.43 7.1 7.0 0.0 0.0 7.1 7.0 1109 108 1194 193 1390 1278

Lane Group
Lane Group Flow (vph)
vc Ratio
Control Delay
Control Delay
Queue Delay
Queue Length (tit)
Cueue Length (50th (fit)
Cueue Length (50th (fit)
Cueue Length (fit)
Cueue Length (fit)
Sueae Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Storage Cap Reductn
Reduced vic Ratio

Intersection Summary

	•	<b>†</b>	~	<b>\</b>	ţ	√	•	-	•	•	-	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Volume (veh/h)	89	529	7	7	477	48	7	24	9	64	95	134
Number	<del>-</del>	9	16	2	2	12	7	4	14	3	∞	18
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
Adj Sat Flow, veh/h/ln	1854	1836	1854	1764	1747	1764	1763	1745	1763	1844	1826	1844
Adj Flow Rate, veh/h	11	601	00	12	542	22	00	27	7	73	108	152
Adj No. of Lanes	0	-	0	0	-	0	0	-	0	0	-	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	<del>-</del>	_	_	_	<del>-</del>	<del>-</del>	<del>-</del>	_	<del>-</del>	<del>-</del>	_	<del>-</del>
Cap, veh/h	145	756	10	84	739	74	128	300	19	155	151	178
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.48	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	122	1579	20	10	1543	154	148	1247	279	253	679	740
Grp Volume(v), veh/h	989	0	0	609	0	0	42	0	0	333	0	0
Grp Sat Flow(s),veh/h/ln	1721	0	0	1707	0	0	1674	0	0	1622	0	0
O Serve(g_s), s	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
Cycle Q Clear(g_c), s	15.3	0.0	0.0	13.2	0.0	0.0	6.0	0.0	0.0	9.1	0.0	0.0
Prop In Lane	0.11		0.01	0.02		0.09	0.19		0.17	0.22		0.46
Lane Grp Cap(c), veh/h	911	0	0	897	0	0	495	0	0	485	0	0
V/C Ratio(X)	0.75	0.00	0.00	0.68	0.00	0.00	0.08	0.00	0.00	69.0	0.00	0.00
Avail Cap(c_a), veh/h	1306	0	0	1307	0	0	639	0	0	635	0	0
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	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.1	0.0	0.0	6.7	0.0	0.0	13.7	0.0	0.0	16.8	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	6:0	0.0	0.0	0.1	0.0	0.0	2.0	0.0	0.0
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
%ile BackOfQ(-26165%),veh/ln	9.7	0.0	0.0	6.3	0.0	0.0	0.4	0.0	0.0	4.3	0.0	0.0
LnGrp Delay(d),s/veh	11.7	0.0	0.0	10.6	0.0	0.0	13.8	0.0	0.0	18.8	0.0	0.0
LnGrp LOS	В			В			В			В		
Approach Vol, veh/h		989			609			42			333	
Approach Delay, s/veh		11.7			10.6			13.8			18.8	
Approach LOS		В			Ω			Ω			Ω	
Timer	<del>-</del>	2	က	4	2	9	7	∞				
Assigned Phs		2		4		9		∞				
Phs Duration (G+Y+Rc), s		28.7		17.6		28.7		17.6				
Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
Max Green Setting (Gmax), s		34.0		16.0		34.0		16.0				
Max Q Clear Time (g_c+l1), s		15.2		2.9		17.3		11.1				
Green Ext Time (p_c), s		9.9		1.2		5.4		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			12.8									
HCM 2010 LOS			2 0									
			ì									

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Synchro 8 Report Page 2

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HCM 2010 Signalized Intersection Summary 33: Williams Rd/Garrett Ave & Conestoga Rd

Montane   EBI   EBI   WEI   WEI   WEI   NEI													
4		EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
27 514 9 12 510 29 17 1 11 28 12  100 100 100 100 100 100 100 100 100 10	ane coniigurations		÷			4			4			4	
100   100	Volume (veh/h)	27	514	6	12	510	29	17	_	=	28	12	53
1.00	lumber	2	7	15	-	9	16	m	∞	18	7	4	14
1.00		0	0	0	0	0	0	0	0	0	0	0	0
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	obT)	1.00		0.1	0.1		0.1	1.00		1.00	1.00		1.00
1872   1872   1872   1872   1872   1800   1800   1800   1728   1728   1872   1873		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
29 559 10 13 554 32 18 1 12 30 13  0 1 0 0 1 0 0 1 0 0 0 1  0 0 1 0 0 0 1 0 0 0 1  0 0 0 0		1872	1872	1872	1872	1872	1872	1800	1800	1800	1728	1728	1728
0.05	dj Flow Rate, veh/h	29	226	10	13	554	32	18	<del>-</del>	12	30	13	58
6 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92		0	<del>-</del>	0	0	<del></del>	0	0	<del></del>	0	0	<del></del>	0
6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
88 1245 22 67 1231 70 151 25 55 101 26  40 1750 31 0.71 0.71 0.71 0.71 0.71 0.71 0.70 0.09 0.09 0.09 0.09  40 1750 3 13 1729 98 730 289 403 329 306  80 0 0 599 0 0 31 0 0 101 0  80 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	%	0	0	0	0	0	0	0	0	0	0	0	0
0.71 0.71 0.71 0.71 0.71 0.71 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.0		88	1245	22	19	1231	70	151	25	22	101	26	73
Hand 1750 30 13 1729 98 730 289 643 329 306 17 1 1 1821 0 0 101 0 0 0 0 0 0 0 184 0 0 1642 0 0 1940 0 0 1841 0 0 1 1821 0 0 0 1 1841 0 0 0 1 1842 0 0 0 1 1841 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.71	0.71	0.71	0.71	0.71	0.71	0.09	0.09	0.09	0.09	0.09	60.0
1821		40	1750	30	13	1729	86	730	289	643	329	306	856
NHI 1821 0 0 1841 0 0 1662 0 0 1490 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		298	0	0	266	0	0	31	0	0	101	0	0
8.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		1821	0	0	1841	0	0	1662	0	0	1490	0	0
\$ 87 00 00 88 00 0 11 00 00 42 00 0 1 1 1 000 000 42 00 0 0 1 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1	Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0
11355 0 0.05 0.05 0.05 0.05 0.05 0.09 0.30 0.00 0.00 0.00 0.04 0.00 0.00 0.04 0.00 0.00 0.04 0.00 0.00 0.05 0.00 0.05 0.00 0.04 0.00 0.00		8.7	0.0	0.0	8.8	0.0	0.0	1.	0.0	0.0	4.2	0.0	0.0
Nth 1355 0 0 0 1347 0 0 0 230 0 0 0 200 0 0 0 0 0 0 0 0 0 0		0.05		0.02	0.02		0.02	0.58		0.39	0.30		0.57
1355 0.0 0.04 0.00 0.04 0.00 0.01 0.00 0.05 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.00 0.01 0.00 0.	b(c), veh/h	1355	0	0	1367	0	0	230	0	0	200	0	0
1355 0 0 1367 0 0 410 0 0 0 384 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00		0.44	0.00	0.00	0.44	0.00	0.00	0.13	0.00	0.00	0.51	0.00	0.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	•	1355	0	0	1367	0	0	410	0	0	384	0	0
1,00 0,00 0,00 1,00 0,00 1,00 0,00 1,00 0		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
self-self-self-self-self-self-self-self-		1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
h 10 00 00 10 00 04 00 02 8 0.0  location 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  location 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  location 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  location 2.0 0.0 0.0 0.0 0.0 0.0 0.0  location 2.0 0.0 0.0 0.0 0.0 0.0  location 2.0 0.0 0.0 0.0 0.0 0.0  location 2.0 0.0 0.0 0.0 0.0 0.0  location 3.1 0.0 0.0 0.0 0.0 0.0 0.0  location 3.1 0.1 0.0 0.0 0.0 0.0 0.0  location 3.1 0.1 0.0 0.0 0.0 0.0 0.0  location 3.1 0.1 0.0 0.0 0.0 0.0  location 3.1 0.0  location 3.1 0.0 0.0  location 3.1 0.	niform Delay (d), s/veh	3.9	0.0	0.0	3.9	0.0	0.0	27.3	0.0	0.0	28.7	0.0	0.0
Seg), vehin 4,7 on 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,	cr Delay (d2), s/veh	1.0	0.0	0.0	1.0	0.0	0.0	0.4	0.0	0.0	2.8	0.0	0.0
Sk), verifyin 4.7 0.0 0.0 5.0 0.0 0.5 0.0 0.0 1.9 0.0 0.0 1.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	itial 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
A 50 00 0.0 5.0 0.0 0.0 276 0.0 0.0 31.5 0.0  A 598 599 31 101  A A A C C C C C C C C C C C C C C C C	ile BackOfQ(-26165%),veh/ln	4.7	0.0	0.0	4.7	0.0	0.0	0.5	0.0	0.0	1.9	0.0	0.0
A A C C C  The state of the sta	Grp Delay(d),s/veh	2.0	0.0	0:0	5.0	0.0	0.0	27.6	0.0	0.0	31.5	0.0	0.0
th 598 599 31 A A A C C A A C C A B C C (c), S 520 11.9 520 11.9 C,1), S 60 60 6.0 6.0 C,1), S 60 140 46.0 14.0 D, S 59 0.3 5.9 0.4 A A B C C B 8 C C C C C C C C C C C C C C C C C C C	iGrp LOS	A			A			ပ			ပ		
y, sweh 5.0 5.0 27.6  y, sweh 5.0 5.0 27.6  1 2 3 4 5 6 7 8  5+7+RC), S 52.0 11.9 52.0 11.9  (HC, RCO, S 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	oproach Vol, veh/h		298			299			33			101	
1 2 3 4 5 6 7 8 2 4 5 6 7 8 2 4 5 6 7 8 3 4 5 6 7 8 4 6 6 7 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	oproach Delay, s/veh		2.0			2.0			27.6			31.5	
1 2 3 4 5 6 7 2 4 6 6 7 2 4 6 6 7 3 (5+V-RC), S 52.0 11.9 52.0 1.0 3 (7+RC), S 6.0 6.0 6.0 46.0 14.0 46.0 10.7 6.2 10.8 10.0, S 5.9 0.3 5.9 3 Inmany 7.5 4 5 6 7 4 6 7 4 6 7 4 7 5 7 5 8 7 7 8 7	pproach LOS		A			⋖			ပ			ပ	
GS+V+Rc), s 520 11,9 520 17,4 6,5 17,4 Rc), s 520 11,9 520 6,0 17,4 Rc), s 6,0 6,0 6,0 6,0 17,1 Rc), s 6,0 14,0 46,0 17,1 Rc), s 6,9 10,8 17,5 Rc), s 6,9 17,5 Ac    GS+V+Rc), s 6,0 11,9 E20 10,8 17,5 Ac    A A A A A A A A A A A A A A A A A	mer	<del>-</del>	2	က	4	2	9	7	∞				
G-Y+Rc), s 52.0 11.9 52.0 17.4 Rc), s 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	ssigned Phs		2		4		9		∞				
6.0 6.0 6.0 46.0 14.0 46.0 1 10.7 6.2 10.8 5.9 0.3 5.9 7.5	ns Duration (G+Y+Rc), s		52.0		11.9		52.0		11.9				
460 140 46.0 10.7 62 10.8 5.9 0.3 5.9 7.5	nange Period (Y+Rc), s		0.9		0.9		0.9		0.9				
107 6.2 10.8 5.9 0.3 5.9 7.5 A	ax Green Setting (Gmax), s		46.0		14.0		46.0		14.0				
5.9 0.3 5.9 7.5 A	ax Q Clear Time (g_c+11), s		10.7		6.2		10.8		3.1				
	reen Ext Time (p_c), s		5.9		0.3		5.9		0.4				
7	itersection Summary												
	HCM 2010 Ctrl Delay			7.5									
alu	CM 2010 LOS			⋖									
	Safo												

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 Queues

 Gueues

 3: County Line Rd & Spring Mill Rd

 Image: County Line Rd & Spring Mill Rd

 Image: County Line Rd & Spring Mill Rd

 Lane Group
 EBT
 WBT
 NBT
 SBT

 Lane Group Flow (vph)
 561
 458
 413
 587

 Lane Group Flow (vph)
 561
 458
 28.8
 56.7

 Queue Length Soth (ft)
 -190
 59.8
 28.8
 56.7

 Queue Length Soth (ft)
 +190
 153
 119
 199

 Queue Length Soth (ft)
 #386
 #313
 #178
 #393

 Internal Link (bit) (ft)
 #388
 #313
 #178
 #393

 Internal Link (bit) (ft)
 #388
 #48
 #32
 1084

 Turn Bay Length (ft)
 #388
 #48
 #32
 #91

 Slavasion Cap Reductin
 0
 0
 0
 0

 CM 2010 Signalized Intersection Summary 3: County Line Rd & Spring Mill Rd

	4	†	<u>/</u>	<b>/</b>	Ļ	4	•	<b>—</b>	•	٠	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			÷			4			4	
Volume (veh/h)	99	310	109	99	248	53	70	203	44	99	387	45
Number	2	2	12	-	9	16	n	∞	18	7	4	14
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
Adj Sat Flow, veh/h/In	1800	1789	1800	1800	1767	1800	1800	1800	1800	1800	1773	1800
Adj Flow Rate, veh/h	8	344	127	8	285	83	98	260	19	87	435	65
Adj No. of Lanes	0	_	0	0	<del></del>	0	0	<del>-</del>	0	0	<del>-</del>	0
Peak Hour Factor	0.72	0.00	98.0	0.72	0.87	0.64	0.81	0.78	99.0	0.76	0.89	69.0
Percent Heavy Veh, %	-	-	-	3	3	က	0	0	0	-	<del>-</del>	_
Cap, veh/h	139	397	136	145	371	86	147	374	87	135	487	69
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	175	1005	345	185	626	249	192	963	224	171	1254	177
Grp Volume(v), veh/h	561	0	0	458	0	0	413	0	0	287	0	0
Grp Sat Flow(s),veh/h/ln	1526	0	0	1372	0	0	1379	0	0	1602	0	0
Q Serve(g_s), s	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.0	0.0
Cycle Q Clear(g_c), s	21.2	0.0	0.0	17.9	0.0	0.0	14.8	0.0	0.0	21.2	0.0	0.0
Prop In Lane	0.16		0.23	0.20		0.18	0.21		0.16	0.15		0.11
Lane Grp Cap(c), veh/h	672	0	0	614	0	0	809	0	0	691	0	0
V/C Ratio(X)	0.83	0.00	0.00	0.75	0.00	0.00	0.68	0.00	0.00	0.85	0.00	0.00
Avail Cap(c_a), veh/h	672	0	0	614	0	0	637	0	0	723	0	0
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)	0.44	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.1	0.0	0.0	15.8	0.0	0.0	15.2	0.0	0.0	17.5	0.0	0.0
Incr Delay (d2), s/veh	9.9	0.0	0.0	8.1	0.0	0.0	2.2	0.0	0.0	8.5	0.0	0.0
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
%ile BackOfQ(-26165%),veh/ln	6.6	0.0	0.0	8.1	0.0	0.0	6.1	0.0	0.0	10.9	0.0	0.0
LnGrp Delay(d),s/veh	22.7	0:0	0.0	23.8	0.0	0.0	17.4	0.0	0.0	26.0	0.0	0.0
LnGrp LOS	ပ			ပ			В			ပ		
Approach Vol, veh/h		261			458			413			287	
Approach Delay, s/veh		22.7			23.8			17.4			26.0	
Approach LOS		S			O			В			S	
Timer	<del></del>	2	က	4	2	9	7	00				
Assigned Phs		2		4		9		8				
Phs Duration (G+Y+Rc), s		30.2		29.8		30.2		29.8				
Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
Max Green Setting (Gmax), s		23.0		25.0		23.0		25.0				
Max Q Clear Time (g_c+l1), s		23.2		23.2		19.9		16.8				
Green Ext Time (p_c), s		0.0		9.0		1.5		1.8				
Intersection Summary												
HCM 2010 Ctrl Delay			22.8									
HCM 2010 LOS			U									

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HCM 2010 TWSC 79: Garrett Rd & Lancaster Ave

3/10/2015

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Non-clay Syleth   1.7   Non-clay Syleth   1.7	mersection								
## 1266 48 WBL WBT NBL		Т.							
## FER WBL WBT NBL									
1266	Movement	EBT		W		BT	NBL	NBR	
## 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	/ol, veh/h	1268		7		940	0	38	
# Free Free Free Stop S	Conflicting Peds, #/hr	0				0	0	0	
# 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Sign Control	Free		Fe		ree	Stop	Stop	
# 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT Channelized		None			one		None	
# 0 - 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	storage Length		٠					0	
State	Veh in Median Storage, #	0			,	0	0	•	
NBLn1   EBT   EBR   WBL   WBT	Grade, %	ς-			,	23	0	•	
1546   59   60   1146   0   0     Majort	Peak Hour Factor	82		~	32	82	82	82	
1546   59   60   1146   0	Heavy Vehicles, %	0			0	0	0	0	
Majort   Majorz   Minort	vivmt Flow	1546				146	0	46	
Major   Major   Major   Major		2			ç		7		
NBL/1   EBT   WBL   WBT	viajor/iviinor	Majori		IMajo	2		IVIIDOLI		
1576   1576	Conflicting Flow All	0		16(	25	0	2269	805	
12   12   13   14   15   15   15   15   15   15   15	Stage 1	•	٠				1576	•	
NBLn1   EBT   WBL   WBT	Stage 2						693		
NBLn1   EBT   C   C   C   C	Critical Hdwy			4	-		8.9	6.9	
NBLn1   EN   EN   WE   WE     NBLn1   EN   EN   C     NBLn2   C     C   C   C     C   C   C     C   C	Critical Hdwy Stg 1	•	•				5.8	•	
10   10   10   10   10   10   10   10	Critical Hdwy Stg 2	•					5.8	•	
NBLn1   ER   WR   WR   NB     NBLn1   E   C   A   A     NBLn1   E   C   A     NBLn1   E   C   A     NBLn2   C   C   A     NBLn3   C   C   A     NBLn3   C   C     NBLn3   C	Follow-up Hdwy		•	2	7	,	3.5	3.3	
159   169	Pot Cap-1 Maneuver			4	13		35	331	
10   10   10   10   10   10   10   10	Stage 1						159		
NBLn1   EB   WB   WB   NB     NBLn1   E   C   C   C     O   S   C   C     O   S     O   S   C     O   S   C     O   S   C     O   S   C     O   S   C     O   S   C     O   S   C     O   S   C     O   S   C     O   S   C     O   S   C     O   S   C     O   S   C     O   S     O   S   C     O   S     O	Stage 2						463		
NBLn1   EB   WB   WB   NB     NBLn1   ET   C   C   C     O	Platoon blocked, %	•	•						
FB   WB   NB   NB     NBLn1   EBT   EBR   WB   WB     NBLn2   EBR   WB   WB     NBLn3   EBR   WBL   WBT     NBLn3   EBR   WBL   WBT     NBLn4   EBR   WBL   WBT     NBLn5   EBR   WBL   WBT     NBLn6   EBR   WBL   WBT     NBLn7   EBT   EBR   WBL   WBT     NBLn7   EBT   EBR   WBL   WBT     NBLn7   EBT   EBR   WBL   WBT     NBLn8   EBR   WBL   WBT     NBLn9   EBR   EBR   WBL   EBR     NBLn9   EBR   EBR   EBR   EBR     NBLn9   EBR   EBR   EBR   EBR   EBR     NBLn9   EBR   EBR   EBR   EBR     NBLn9   EBR   EBR   EBR   EBR   EBR   EBR     NBLn9   EBR   EBR   EBR   EBR   EBR   EBR     NBLn9   EBR   EBR   EBR   EBR   EBR   EBR   EBR     NBLn9   EBR   EBR   EBR   EBR   EBR   EBR   EBR   EBR     NBLn9   EBR   EBR	Mov Cap-1 Maneuver	·	٠	4	13		21	331	
EB   WB   NB   NB   NB   NB   NB   NB   N	Mov Cap-2 Maneuver	•	•		ì	,	21	•	
EB WB  0 3.4  NBLn1 EBT EBR WBL WBT  331 - 0.145 - 0.152 2.8  C - C C C A  0.5 - 0.5 - 0.5	Stage 1	•					159	•	
NBLn1 EBT EBR WBL WBT   331	Stage 2	•	٠		ï		278	•	
NBLn1 EBT EBR WBL WBT									
0 3.4  INBLITERT EBR WBL WBT 331 - 413 - 0.145 - 17.6 - 15.2 2.8  C - C A 0.5 - 0.5 - 0.5	Approach	EB		V	/B		NB		
NBLAT EBT EBR WBL WBT 331 - 413 - 0.14 - 0.145 - 17.6 - 15.2 28 C - C A 0.5 - 0.5 -	HCM Control Delay, s	0		3	4.		17.6		
331 - 413 0.14 - 0.145 17.6 - 15.2 C - C 0.5 - 0.5	HCM LOS						O		
331 - 413 0.14 - 0.145 17.6 - 15.2 C - C 0.5 - 0.5	Minor Lane/Major Mvmt				37				
0.14 - 0.145 17.6 - 15.2 C - C 0.5 - 0.5	Capacity (veh/h)	331 -		413	١.				
17.6 - 15.2 C - C 0.5 - 0.5	HCM Lane V/C Ratio		•	.145	,				
C C 0.5 - 0.5	HCM Control Delay (s)		٠		∞.				
0.5	HCM Lane LOS		•	ပ	A				
	HCM 95th %tile Q(veh)	0.5	•	0.5					

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HCM 2010 TWSC 15: Conestoga Rd & Spring Mill Rd

HCM 2010 TWSC 29: Strathmore Dr/Lowrys Ln & Conestoga Rd

ntersection									
nt Dolon chock									
	0								
Movement	EBL	EBT		M	WBT WBR	BR	SWL	SWR	
/ol, veh/h	10	0/9		9	623	m	18	6	
Conflicting Peds, #/hr	0	0			0	0	0	0	
Sign Control	Free	Free		Œ	Free Fi	Free	Stop	Stop	
RT Channelized	•	None			- None	ne		None	
Storage Length	•						0		
Veh in Median Storage, #	•	0			0	,	0		
Grade, %	•	0			0		0		
Peak Hour Factor	96	96			96	96	96	96	
Heavy Vehicles, %	- 5	- 0			- 9	<b>—</b> 0	- 4	← (	
Wvmt Flow	2	869		<b>o</b>	649	~	61	6	
Major/Minor	Major1			Major2	Jr.2		Minor2		
Conflicting Flow All	652	0			ï	0	1370	651	
Stage 1	•						651		
Stage 2	•						719		
Critical Hdwy	4.11						6.41	6.21	
Critical Hdwy Stg 1	•						5.41		
tical Hdwy Stg 2	•						5.41		
Follow-up Hdwy	2.209				ï	ì	3.509	3.309	
Pot Cap-1 Maneuver	939						162	470	
Stage 1	•						521		
Stage 2	•						484		
Platoon blocked, %									
Mov Cap-1 Maneuver	626						159	470	
Mov Cap-2 Maneuver	•					,	159		
Stage 1	•						521		
Stage 2	•				,	,	476		
Approach	EB			Λ	WB		SW		
HCM Control Delay, s	0.1				0		25.4		
HCM LOS							Q		
Winor Lane/Major Mymt	EB	FBT	WBT WB	WBRSWI n1					
Capacity (vob/b)	020			VOC					
pacity (verint)	737			- 204					
HCIM Lane V/C Rallo	0.01	, ,		- 0.138					
HCIMI Control Delay (s)	8.9	0		- 72.4					

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III Delay, 3/vell 2.	7.7												
Movement	EBL	EBT	EBR	WBL	WBT	WBR		NBL	NBT	NBR	SBL	SBT	SBF
Vol, veh/h	37	520	18	18	479	17		15	∞	18	6	18	
Conflicting Peds, #/hr	0	0	0	0	0	0		0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Free	Free		Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	•		None			None		٠		None			None
Storage Length	•		٠		•			1					
Veh in Median Storage, #		0	٠		0			•	0		•	0	
Grade, %	•	0	٠		0			•	0			0	
Peak Hour Factor	96	%	96	96	96	%		%	96	%	%	96	
Heavy Vehicles, %	1	1	- 0	1 01	1	- 6		1 7	<b>←</b> 0	L 6	- 0	_ 0	
	,	745	2	-		2		2	0	2		-	
Major/Minor	Major1			Major2			2	Minor1			Minor2		
Conflicting Flow All	517	0	0	290	0	0		1211	1182	551	1187	1183	208
Stage 1	٠		٠					628	628		545	545	
Stage 2			٠					583	554		642	638	
Critical Hdwy	4.11		٠	4.11	'			7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	•		٠					6.11	5.51		6.11	5.51	
Critical Hdwy Stg 2	•		٠						5.51		6.11	5.51	
Follow-up Hdwy	2.209	•	٠	2.209				3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1054		٠	1016				160	191	536	166		292
Stage 1			٠					472	477		524		
Stage 2	•		٠		'			200	515	٠	464	472	
Platoon blocked, %		1	٠		Ť								
Mov Cap-1 Maneuver	1054		٠	1016				124	176	236	145		267
Mov Cap-2 Maneuver	•		•		•	•		124	176		145		
Stage 1	•		٠		•			447	451		496		
Stage 2								422	205		416	447	
Approach	T.			WR				aN			S		
HCM Control Delay s	0.5			0 3				77.1			20.8		
HCM LOS	3			8				0			0		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR WBL	WBT	WBR SBLn1	SBLn1						
Capacity (veh/h)	202	1054	٠	- 1016			311						l
HCM Lane V/C Ratio	0.208 0.037	0.037	٠	- 0.018	Ť		0.271						
HCM Control Delay (s)	27.1	8.5		9.8		Ť	20						
HCM Lane LOS		⋖	A	Δ -	<		ر						
							)						

Lanes, Volumes, Timings 38: County Line Rd & N Ithan Ave

	•	*_	>	<b>→</b>	<b>\</b>	4	
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	
Lane Configurations	*			₩	>		
Volume (vph)	273	123	185	204	135	63	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ft	0.958				0.957		
Flt Protected				0.987	196.0		
Satd. Flow (prot)	1802	0	0	1857	1741	0	
-It Permitted				0.987	196.0		
Satd. Flow (perm)	1802	0	0	1857	1741	0	
Link Speed (mph)	30			30	30		
-ink Distance (ft)	295			1901	824		
Fravel Time (s)	6.7			43.2	18.7		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Adj. Flow (vph)	290	131	197	236	144	19	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	421	0	0	733	211	0	
Enter Blocked Intersection	8	S	9N	8	2	No	
-ane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			0	12		
-ink Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Furning Speed (mph)		6	12		15	6	
Sign Control	Free			Stop	Stop		
Intersection Summary							
Area Type:	Other						
Control Type: Unsignalized							
Intersection Capacity Utilization 79.9%	on 79.9%			<u>ਹ</u>	J Level o	ICU Level of Service D	
21 clock with 1 clock							

ICU Level of Service D No Right 1900 0 1.00 NWL 24 24 1900 0.883 0.994 1651 30 2014 45.8 0.94 17% 200 No 12 0 1.00 15 Stop No Right 336 1900 1.00 357 1.00 306 1000 1000 1000 1000 100977 1707 30 295 6.7 0.94 0 No 12 10 10 1.00 15 Free Lanes, Volumes, Timings 2: County Line Rd & N Ithan Ave 284 0 No No Left Right 22 0 0.94 37 1900 1.00 1.00 ۲ Area Type:
Control Type: Unsignalized
Intersection Capacity Utilization 74.0%
Analysis Period (min) 15 EBL 230 230 1900 1.00 0.981 1.00 0.959 1.763 30 973 22.1 0.94 1.76 1 245 1.01 15 Stop FIT How (prot)

Said. Flow (prot)

FIT Permitted
Said. Flow (prot)

FIT Permitted
Said. Flow (perm)
Link Speed (mph)
Link Speed (mph)
Link Distance (f)
Travel Time (s)
Peak Hour Factor
Heavy Vehicles (%)
Bus Blockages (#In/)
Adj. Flow (vph)
Shared Lane Traffic (%)
Lane Group Flow (vph)
Finter Blocked Intersection
Median World (f)
Link Offsel(f)
Crosswalk Width(f)
Link Offsel(f)
Crosswalk Width(f)
Link Offsel(f)
Finter Speed (mph)
Sign Control Lane Configurations Volume (vph) Ideal Flow (vphpl) Lane Util. Factor

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HCM 2010 TWSC 53: County Line Rd & Lowrys Ln

HCM 2010 TWSC 52: Airdale Rd & County Line Rd

3/10/2015

	ш						
Int Delay, sheh	O.						
Movement	EBL	EBR		NBL	NBT	SBT	SBR
Vol, veh/h	17	19		23	185	158	126
Conflicting Peds, #/hr	0	0		0	0	0	0
Sign Control	Stop	Stop	_	Free	Free	Free	Free
RT Channelized		None			None		
Storage Length	0					٠	
/eh in Median Storage, #	0			٠	0	0	
Grade, %	0	•			0	0	
Peak Hour Factor	%	%		%	96	%	96
Heavy Vehicles, %	0	0		0	0	0	0
Mvmt Flow	18	20		22	193	165	131
Major/Minor	Minor2		Ma	Major1		Major2	
Conflicting Flow All	533	230		296	0		0
Stage 1	230			٠			
Stage 2	303			÷		٠	
Critical Holwy	6.4	6.2		4.1			
Critical Hdwy Stg 1	5.4	•				•	
Critical Hdwy Stg 2	5.4	•					
Follow-up Hdwy	3.5	3.3		2.2		•	
Pot Cap-1 Maneuver	511	814		1277		•	
Stage 1	813			÷		•	
Stage 2	754				•	•	,
Platoon blocked, %						•	
Mov Cap-1 Maneuver	486	814	_	1277			
Mov Cap-2 Maneuver	486	•		٠		•	
Stage 1	813					•	
Stage 2	718	•					
	£			2		S	
Approach	EB			ND		SD	
HCM Control Delay, s	11.2			<del>0</del> .		0	
HCM LOS	20						
Minor Lane/Major Mvmt		NBT EBLn1	SBT	SBR			
Capacity (veh/h)	1277	- 617					
HCM Lane V/C Ratio	0.043	- 0.061	•	٠			
HCM Control Delay (s)	7.9	`					
HCM Lane LOS	⋖	A B	•	÷			
HCM 95th %tile Q(veh)	0.1	- 0.2	٠				

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int Delay, S/ven	3.0						
-	ā	FDT	ı	TOW	MDD	ā	GO
VIOVEITIEITI	EBL	EDI			WDK	SBL 46	SDK
VOI, VERVI	= 0	817		349	= 9	7 0	021
Connicing Peas, #/m Sign Control	Free	Fra O		Free	Prop	Ston	Ston
RT Channelized		None				-	None
Storage Length	•	٠		•		0	
Veh in Median Storage, #		0		0		0	
Grade, %	٠	0		0		0	
Peak Hour Factor	86	86		86	86	86	86
Heavy Vehicles, %	_	<del></del>		<del></del>	<b>—</b>	_	_
Wvmt Flow	174	222		326	11	12	122
		ı		-			
Major/Minor	MajorT			Major 2		Minor2	
Conflicting Flow All	373	0		•	0	936	365
Stage 1	•	•		•		365	
Stage 2		٠		٠		571	
Critical Hdwy	4.11					6.41	6.21
Critical Hdwy Stg 1	٠	٠		•		5.41	
Critical Hdwy Stg 2				•		5.41	
Follow-up Hdwy	2.209	ì		•		3.509	3.309
Pot Cap-1 Maneuver	1191			•		295	682
Stage 1	•			•		704	
Stage 2				•		292	
Platoon blocked, %		٠		•	·		
Mov Cap-1 Maneuver	1191			•		246	682
Mov Cap-2 Maneuver	•	٠		•		246	
Stage 1	•	٠		•		704	
Stage 2	•			•		472	
Approach	EB			WB		SB	
HCM Control Delay, s	3.8			0		13	
HCM LOS						В	
Winor Lane/Major Mvmt	EBL	EBT \	WBT WBR SBLn1				
Canacity (veh/h)	1101	ŀ	- 587				
HCM Lane V/C Ratio	0.147	٠	0.229				
HCM Control Delay (s)	8.5	0	13				
HCM Lane LOS	A	A	B				
JCM 05th 0/tilo O(usb)	0		00				

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HCM 2010 TWSC 43: County Line Rd & Roberts Rd

HCM 2010 TWSC 61: Dwy/Aldwyn Ln & S Ithan Ave

3/10/2015

	,											
note (fine and												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	37	26	<b>-</b>	6	26	11	4	518	29	11	662	61
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized			None		•				None			None
Storage Length	•	•				٠				•	•	ľ
Veh in Median Storage, #		0			0			0			0	ľ
Grade, %	•	0		•	0	٠	•	0		•	0	ľ
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	<del></del>	<u></u>	<del>-</del>		<del>-</del>	<b>—</b>		<del></del>	<del>-</del>	<del></del>	<del>-</del>	_
Mvmt Flow	39	27	<b>-</b>	6	27	12	4	545	31	12	269	64
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1047	1336	381	954	1353	288	761	0	0	576	0	l°
Stage 1	752	752		269	269	٠		•			٠	ľ
Stage 2	295	584		382	784	٠		•			•	Ċ
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	•		4.12	٠	Ċ
Critical Hdwy Stg 1	6.52	5.52		6.52	5.52	٠				•	•	Ċ
Critical Hdwy Stg 2	6.52	5.52		6.52	5.52	•		•		•	•	
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	•		2.21	•	Ċ
Pot Cap-1 Maneuver	184	154	620	215	150	712	823	•		1000	•	
Stage 1	371	418		477	207	٠				•		
Stage 2	692	499		613	405	٠		•		•	1	
Platoon blocked, %								1			1	ľ
Mov Cap-1 Maneuver	152	150	620	181	146	712	853	•		1000	•	
Mov Cap-2 Maneuver	152	150	,	181	146		•	•		•	•	,
Stage 1	368	409		474	203	٠		•			•	
Stage 2	636	496		226	396	•		•		•	1	
Approach	EB			WB			NB			SB		
HCM Control Delay, s	45.8			30.5			0.1			0.2		
HCM LOS	Ш			D								
Minor Lane/Major Mvmt	NBL	NBT	NBR EBI	NBR EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	853	•		153 189	1000	٠						
HCM Lane V/C Ratio	0.005	•	0 -	0.44 0.256 0.012	0.012	٠						
HCM Control Delay (s)	9.2	0	- 4	45.8 30.5	9.8	0.1						
HCM Lane LOS	⋖	∢		E D	V	A	,					
HCM 95th %tile O(veh)	0	, 		2 1	0	٠						

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	pm 9/16/2014 Baseline Synchro 8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol. veh/h	35	150	2	51			000			4	0	
Conflicting Peds, #/hr	0	0	0	0			0	0		0	0	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop Stop	0)
RT Channelized			None	ľ					None		ľ	None
Storage Length	•	•	ì		•					•		
Veh in Median Storage, #	•	0			0			0			0	
Grade, %	•	0		·	0		·	0			0	
Peak Hour Factor	91	16	91	91	91	91	91	6		91	91	
Heavy Vehicles, %	2	2	2	2	2	2	2	2		2	2	
Mvmt Flow	38	165	2	29	316	24	6		41	4	0	
		П					2	П		C. I.	П	
Major/Minor	Major I			Majorz			MINOLI			MINOFZ		
Conflicting Flow All	341	0	0	170	0	0	693		168	707	889	329
Stage 1	•	•			•		245		٠	441	441	
Stage 2	•	•	ì		•		448	453		266	247	
Critical Hdwy	4.12			4.12			7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1		1	٠	·	•	٠	6.12		٠	6.12	5.52	
Critical Hdwy Stg 2		1		ľ	'		6.12			6.12		
Follow-up Hdwy	2.218	•	٠	2.218			3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1218			1407			358		876	320		712
Stage 1	•	•		·			759		٠	595		
Stage 2							290	570		739	702	
Platoon blocked, %					Ť							
Mov Cap-1 Maneuver	1218	•		1407			329		876	311	339	712
Mov Cap-2 Maneuver	•	1		İ	,		329		٠	311	339	
Stage 1	•	•					733		٠	575	549	
Stage 2	•	1	·		•	·	220	542		<i>LL</i> 9	678	
	ĺ			:						ć		
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.5			1.1			11.2			11.8		
HCM LOS							В			В		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR WBL	WBT	WBR SBLn1	Ln1					
Capacity (veh/h)		1218		- 1407		٠	546					
HCM Lane V/C Ratio		0.032		- 0.04		- 0.	0.034					
HCM Control Delay (s)	11.2	8.	0	- 7.7	0	,	11.8					
HCM Lane LOS	В	V	A	Α .			В					
HCM 05th %tilo O(yoh)	0	-		7			,					

HCM 2010 TWSC 10: WLA Drive & Lancaster Ave

HCM 2010 TWSC 6: PAC Drive & Lancaster Ave

3/10/2015

Movement		EBT	EBR	×	WBL V	WBT	NBL	NBR
/ol, veh/h	_	1206	64			870	0	15
Conflicting Peds, #/hr		0	0		0	0	0	0
Sign Control	_	Free	Free	ᇤ	Free	Free	Stop	Stop
RT Channelized		٠	None		2	None		None
Storage Length		٠	125		÷			0
Veh in Median Storage, #		0				0	0	
Grade, %		0			ï	-2	0	
Peak Hour Factor		92	92		92	92	92	92
Heavy Vehicles, %		2	2		2	2	2	2
Mvmt Flow	1	1311	70		0	946	0	16
Major/Minor	Ma	Major1		Major2	or2		Minor1	
Conflicting Flow All		0	0	13	1311	0	1784	655
Stage 1		٠					1311	
Stage 2		٠					473	
Critical Hdwy		٠		4	4.14		6.84	6.94
Critical Hdwy Stg 1		٠					5.84	
Critical Hdwy Stg 2		٠					5.84	
ollow-up Hdwy		٠		2.	2.22		3.52	3.32
Pot Cap-1 Maneuver		٠		2	524		73	409
Stage 1		1			ï		216	
Stage 2		٠			,	,	593	
Platoon blocked, %		٠						
Mov Cap-1 Maneuver		٠		2	524		73	409
Mov Cap-2 Maneuver		٠			ï		73	,
Stage 1		٠					216	
Stage 2							263	
							!	
Approach		EB		>	WB		NB	
HCM Control Delay, s		0			0		14.2	
HCM LOS							a	
		ŀ			ŀ			
Minor Lane/Major Mvmt		EBI	EBK V	WBL WBI	R			
Capacity (veh/h)	409	•		524	,			
HCM Lane V/C Ratio	0.04	٠	,	ï	ï			
HCM Control Delay (s)	14.2	٠		0				
HCM Lane LOS	В	٠		V				
/ / / mind mind mind mind mind mind mind mind	1			_				

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Int Delay, s/veh 0.9						
Movement	SET	SER	NM	TWN	NEL	NER
Vol, veh/h	1001	72	47	800	0	91
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized		None		None		None
Storage Length	•	100	75		٠	0
Veh in Median Storage, #	0		•	0	0	
Grade, %	0			က	0	
Peak Hour Factor	92		92	92	92	92
Heavy Vehicles, %	1186	78	2	2 870	2	2 00
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1186	0	1723	593
Stage 1					1186	
Stage 2					537	
Critical Hdwy			4.14		6.84	6.94
Critical Hdwy Stg 1					5.84	
Critical Hdwy Stg 2			ľ		5.84	
Follow-up Hdwy	•		2.22		3.52	3.32
Pot Cap-1 Maneuver			282		80	449
Stage 1					252	
Stage 2					220	
Platoon blocked, %	•					
Mov Cap-1 Maneuver			582		73	449
Mov Cap-2 Maneuver	•		•	,	73	,
Stage 1	•				252	
Stage 2			•		502	
Approach	SE		NN		NE	
HCM Control Delay, s	0		0.7		15.3	
HCM LOS					O	
Minor Lane/Major Mvmt N	NELn1 NWL	NWT S	SET SER			
Capacity (veh/h)	449 585					
HCM Lane V/C Ratio	0.22 0.087					
HCM Control Delay (s)	15.3 11.7					
HCM Lane LOS	٥					

HCM 2010 TWSC 76: Pike Garage & S Ithan Ave & LAH Drive

Fig.   Fig.   Wilt   Wilt   Wilt   Wilt   Sel   Sel   Sel   NWU   NWL    nt Delay, sweh												
16   132   43   71   279   1   55   14   59   55     16   160   0   0   0   0   0   0   0     16   170   1   1   1   1   1   1   1     1	ovement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NW N	NW	NWR
Free Free Free Free Stop Stop Stop Stop Stop Stop Stop Stop	ol, veh/h	16	132	43	71	279	-	22	14	26	55	120
Free   Free   Free   Free   Free   Stop	onflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0
9.#         -         -         None         -         -         0         0         -         -         0         -         -         0         -         -         0         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         - <td>gn Control</td> <td>Free</td> <td>Free</td> <td>Free</td> <td>Free</td> <td></td> <td>Free</td> <td>Stop</td> <td>Stop</td> <td>Stop</td> <td>Stop</td> <td>Stop</td>	gn Control	Free	Free	Free	Free		Free	Stop	Stop	Stop	Stop	Stop
Najor    N	Channelized	•		None		•	None		None			
9,#         0	orage Length	•	1		20			0		1	0	
Najort   Najor   Naj	th in Median Storage, #	•	0			0		0			0	
Majori	ade, %	•	<del>-</del>		٠	<u></u>		0	•		0	
17   143   47   77   303   1   60   15   64   60	ak Hour Factor	92	92	92	92	92	92	92	92	92	92	92
17   143   47   77   303   1   60   15   64   60   15   64   60   15   64   60   16   64   60   16   64   60   16   64   60   16   64   60   16   64   60   16   64   60   16   64   60   16   64   60   16   64   60   16   64   60   16   64   60   16   64   60   16   64   60   16   64   60   16   64   60   16   64   64   64   64   64   64   64	eavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2
Majori	mt Flow	17	143	47	11	303	-	09	15	94	09	130
Majori   Majori   Majori   Minor   M			П	ı			ı			ľ	ı	
304 0 0   190 0 0   725   304 0   688       458     0   202         -   -   207   -   0   202       -   -   -   -     -     -     202   -     1712       -   -     -     -       -	ajor/Minor	Major1			Major2			Minor2		/linor1		
4.12   -   -   -   -   4.58   -   0   202     4.12   -   -   -   -   -   -   4.58   -   0   496     4.12   -     -     -     -     -     -     -       2.218   -     -     -     -     -       1.257   -     -     -     -       1.257   -     -       -         1.257   -       -           1.257   -                   1.257   -                   1.257   -                   1.257   -                   1.257   -                   1.257   -                   1.257   -                     1.257   -                     1.257   -                     1.257   -                       1.257   -                       1.257   -                       1.257   -                       1.257   -                       1.257   -                       1.257   -                         1.257   -                         1.257   -                                 1.257   -                                   1.257   -	Inflicting Flow All	304	0	0	190	0	0	725	304	0	869	167
412   1.5	Stage 1	•	•					458	•	0	202	
4.12   -   4.12   -   7.12   6.22   7.12     -	Stage 2	•	1			1		267		0	496	
121   121   122   121   122	itical Hdwy	4.12	٠		4.12			7.12	6.22		7.12	6.22
1257   1   1384   1   1594   1   1694   1   1694   1   1694   1   1694   1   1694   1   1694   1   1694   1   1694   1   1694   1   1694   1   1694   1   1694   1   1694   1   1694   1   1   1694   1   1   1694   1   1   1   1   1   1   1   1   1	itical Hdwy Stg 1	•	•		•	•		6.12	•	•	6.12	
1257   1384   13518	itical Hdwy Stg 2	•	•					6.12			6.12	
1257     1384     340   736   0   355       1	llow-up Hdwy	2.218	1		2.218	•		3.518	3.318	•	3.518	3.318
1257     583   0   800     1257     1384     231   736   0   286         1384     231   736   0   286	rt Cap-1 Maneuver	1257	•		1384			340	736	0	322	877
1257   1384   231   736   0 556   1257   1384   1 231   736   0 286   1257   1384   1 231   736   0 286   1257   1 2 231   231   2 0 286   1257   1 2 0 209   1 2 0 209   1 2 0 209   1 2 0 209   1 2 0 209   1 2 0 209   1 2 0 209   1 2 0 209   1 2 0 209   1 2 0 209   1 2 0 209   1 2 0 209   1 2 0 209   1 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2	Stage 1	1	1		•	1	·	583	•	0	800	
1257   1384   231   736   28	Stage 2	•	٠					738		0	226	
1257	atoon blocked, %		1			1				1		
NWLn1   EBL   EBT   EBR   WBL   WBR   SBLn1	ov Cap-1 Maneuver	1257	•		1384	•		231	736	0	286	877
Color   Colo	ov Cap-2 Maneuver	•	1		•			231	•	0	286	'
FB   WB   SB   NW   NW   16.9   C   C   C   C   C   C   C   C   C	Stage 1	•	•					574		0	788	
EB   WB   SB   SB   C   C   C   C   C   C   C   C   C	Stage 2	•	1			1	·	296		0	457	
FB   WB   SB												
1.6 16.9  NMLn1 EBL EBT EBR WBL WBT WBR SBLn1  286 1257 - 1384 - 380  0.299 0.014 - 0.056 - 0.203  C A A A - A - C C	proach	EB			WB			SB		Š		
NWINT EBL EBT EBR WBL WBT WBR SBINT 286 1257 - 1384 - 380 0.209 0.014 - 0.056 - 0.203 20,9 7,9 0 - 78 - 16,9 C A A - A - C C	CM Control Delay, s	0.7			1.6			16.9		20.9		
NWLn1 EBL EBT EBR WBL WBT WBR SE 286 1257 · . 1384 ·	SMLOS							O		S		
286 1257 1384	nor Lane/Major Mvmt	NWLn1	EBE		BR WBL		WBR SBL	11				
0.209 0.014 0.056 0 0.05	pacity (veh/h)	286	1257		- 1384		- 38	30				
20.9 7.9 0 - 7.8 C A A - A	CM Lane V/C Ratio	0.209	0.014		- 0.056		- 0.20	)3				
C A A . A .	CM Control Delay (s)	20.9	7.9	0	- 7.8		- 16	6:				
	CM Lane LOS	C	⋖	⋖	Α -			ر				

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Lanes, Volumes, Timings
7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/9/2015

	1	ኘ	†	<u> </u>	۴	<b>/</b>	Ļ	ţ	1	<b>W</b> J	•	•
Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations		K	‡		*		k2	<b>₩</b>				
Volume (vph)	2	224	820	84	219	4	Ξ	974	<del></del>	13	co	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	=	=	14	10	12	12	12	12	10	9
Grade (%)			3%					-5%				
Storage Length (ft)		300		0			75		0			0
Storage Lanes		-		-			<del>-</del>		0			0
Taper Length (ft)		25					25					25
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	0.95	1.00	1.00
芷			0.986		0.850			0.998				
Flt Protected		0.950					0.950					
Satd. Flow (prot)	0	1497	3058	0	1531	0	1645	3283	0	0	0	0
Flt Permitted		0.074					0.284					
Satd. Flow (perm)	0	117	3058	0	1531	0	492	3283	0	0	0	0
Right Turn on Red					Yes					Yes		
Satd. Flow (RTOR)					202			<del></del>				
Link Speed (mph)			32					32				
Link Distance (ft)			277					903				
Travel Time (s)			11.2					17.6				
Peak Hour Factor	96.0	96.0	96.0	96:0	96.0	96:0	96:0	96.0	96:0	96:0	96:0	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	2	233	882	88	228	4	Ξ	1015	<del></del>	14	c	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	235	973	0	228	0	15	1030	0	0	0	O
Enter Blocked Intersection	9	No	S	8	%	No	N	%	8	S	S	2
Lane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Median Width(fl)			12					12				
Link Offset(ft)			0					0				
Crosswalk Width(ft)			10					10				
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.06	1.18	1.18
Turning Speed (mph)	15	15		6	6	15	15		6	6	15	==
Number of Detectors	<del></del>	-	-		0	-	<del>-</del>	-			-	
Detector Template	Leff	Left	Thru		Right	Left	Left	Thru			Left	Left
Leading Detector (ft)	70	37	37		0	20	37	37			70	8
Trailing Detector (ft)	0	٠,	ကု		0	0	٠,	٠,			0	_
Detector 1 Position(ft)	0	-3	٣-		0	0	5-	-3			0	_
Detector 1 Size(ft)	70	40	40		37	70	40	40			20	20
Detector 1 Type	Cl+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Turn Type	pm+pt	pm+pt	NA		Perm	Perm	Perm	¥			Perm	Perm
Protected Phases	2	2	2					9				
Permitted Phases	2	2			2	9	9				10	10
Detector Phase	2	2	2		2	9	9	9			10	2
Switch Phase	d	d	ŗ		r	i.	ŗ	i i			0	Č
Minimum Initial (s)	3.0	3.0	15.0		12.0	12.0	12.0	12.0			3.0	3.0

Minimum Initial (s) 3.0 3.0 15.0 15.0 15.0 15.0 15.0 Projected 18 am 9/15/2014 Baseline

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

	-	_	+	×	,	_	\	(				٠
-ane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Lane Configurations	4		4				je za	2				N.S.
Volume (vph)	0	∞	,	က	12	182	0	194	20	6	19	∞
deal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
ane Width (ft)	10	10	10	10	10	12	12	1	7	=	10	10
Grade (%)	1%		-3%					3%				
Storage Length (ft)		0		0			200		0			150
Storage Lanes		0		0			-		0			-
اaper Length (ft)							25					25
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
Ĭ.	0.983		0.873					0.965				
Flt Protected	0.958						0.950					0.950
Satd. Flow (prot)	1499	0	1418	0	0	0	1604	1575	0	0	0	1573
Flt Permitted	0.742						0.171					0.597
Satd. Flow (perm)	1161	0	1418	0	0	0	289	1575	0	0	0	686
Right Turn on Red					2					9		
Satd. Flow (RTOR)												
ink Speed (mph)	22		22					40				
Link Distance (ft)	492		265					1336				
ravel Time (s)	13.4		16.3					22.8				
Peak Hour Factor	96:0	96:0	96:0	96.0	96:0	96.0	96.0	96.0	96.0	96.0	96.0	96.0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	<b>∞</b>	-	3	12	190	0	202	52	6	70	00
Shared Lane Traffic (%)	64	<b>C</b>	14	c	_	C	100	242	<b>C</b>	_	C	20
Enter Blocked Intersection	Z ON	2	2 2	2	2	2	2 2	SOZ ON	2	2	2	No.
and Alignment	0 ±0	Dight	DN -	Dight did	Did table	P =	P =	9 40	Diah	Diah	0 40	1
Median Width (ft)		iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	5	III MA	III GIVI		3	12	III GIVI	illigin.	3	
ink Offset(ft)	0		0					0				
Crosswalk Width (ft)	10		10					10				
wo way Left Turn Lane	2		2					2				
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.09	109	1.14	1.14	1.14	1.12	1.12
Turning Speed (mph)	2	6	2	6	6	15,	15.		6	6	7 12	15
Number of Detectors	-		-			-	-	-			-	
Detector Template	Thru		Thru			Left	Left	Thru			Left	Left
eading Detector (ft)	37		37			20	37	37			20	37
Frailing Detector (ft)	ကု		ς			0	ကု	ကု			0	ς'n
Detector 1 Position(ft)	ကု		ကု			0	ကု	ς'n			0	ς'n
Detector 1 Size(ft)	40		40			20	40	40			20	40
Detector 1 Type	CI+Ex		CI+Ex			CI+Ex	CI+Ex	CI+EX			CI+Ex	CI+Ex
Detector 1 Channel	4		4			4		4				4
Detector 1 Extend (s)	0.0		0:0			0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0:0		0:0			0.0	0.0	0.0			0:0	0.0
l urn Type	NA		NA			pm+pt	bm+pt	NA NA			Perm	Perm
Protected Phases	9		6			က	m (	∞				
Permitted Phases						∞ (	∞ '				4	4
Detector Phase	9		6			m	co	∞			4	4
Switch Phase												

Projected 18 am 9/15/2014 Baseline Synchro 8 Report Page 2

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/9/2015

Jane Spring to the property of the property	Lane sontigurations Volume (vph) Ideal Flow (vphpl)	Ŧ.		
(f) 1800 11 10 10	Ideal Flow (vphpf)	12/	155	
(th) 10 17 17% (kph) 1524 17% (kph) 1524 17% (kph) 1524 17% (kph) 17 10 11 11 11 11 11 11 11 11 11 11 11 11		1000	1000	
(1) (7% (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(+ +)	1800	1800	
(f) 1.00 1 1.00	Lane Width (II)	2 2	0	
(f) 1.00 1 1.00	Grade (%)	%/-		
1.00 1 1.00 1 1.00 1 1.00 1 1.024  d (A) 1.03 25 1.096 0 1.096	Storage Length (ft)		0	
1.00 1 1.00 1 1.00 1 1.02 4 4 1.02 1 1.03 1.68 86.4 86.4 86.4 86.4 1.10 10 1.12 1 1.12 1 1.12 1 1.13 1 1.14 1 1.15 1 1.15 1 1.15 1 1.16 1 1.17 1 1.18 1 1.19 1 1.19 1 1.10 1 1.10 1 1.11 1 1.11 1 1.12 1 1.13 1 1.14 1 1.15	Storage Lanes		0	
1.00 1 1.	Taper Length (ft)			
0,920  (A) 1524  (A) 1524  (A) 25  (A) 3168  (A) 140  (A) 584  (A) 584  (A) 140  (A) 10  (B) 1	Lane Util. Factor	1.00	1.00	
(f) 1524  (d) 1524  (R) 25  (g) 3168  (h) 10  (h(h) 301  (h(h) 301  (h) 10  (h) 10  (h) 10  (h) 10  (h) 37  (h) 40  (h	Ē	0.920		
(f) 1524  d (A) 1524  d (A) 1524  (A) 25  (A) 26  (A) 3168  86.4  (A) 10  (B)	Flt Protected			
(f) 1524  (A) 3168  (A) 56.4  (A) 56.4  (A) 6.4  (A) 140  (A) 140  (A) 140  (A) 10  (B)	Satd. Flow (prot)	1524	0	
1524 3168 8648 8648 8648 140 170 171 1712 1712 1713 174 1740 1740 1740 1740 1740 1740 1740	Flt Permitted			
25 3168 86.4 0.06 5% 140 170 10 10 11.12 11.12 11.12 11.12 11.12 10 11.12 10 10 10 10 10 10 10 10 10 10	Satd. Flow (perm)	1524	0	
25 3168 86.4 0.96 0 56.4 140 12 1 12 1 10 1 10 1 10 1 11.12 1 11.12 1 11.12 1 10 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Right Turn on Red			
25 3168 86.4 86.4 0.96.0 0.06 0.00 0.00 0.00 0.00 0.00 0.	Satd. Flow (RTOR)			
3168 86.4 0.86.4 0.86.7 140 10 11.12	Link Speed (mph)	22		
86.4 0.96 0 5% 5% 50.1 140 1 12 1 11.12 1 11.14 1 11.15 1 11.1	Link Distance (ft)	3168		
0.96 0 0.96 0 0.96 0 0.96 0 0.96 0 0.00 0.0	Travel Time (s)	86.4		
5% No No No No No No No No No No No No No	Peak Hour Factor	96.0	96:0	
301 140 No Left RI Left RI 1112 1 1 1.12 1 1 1.12 1 1 1.12 1 1 1.12 1 1 1 1	Heavy Vehicles (%)	2%	2%	
301 No No No 12 12 10 10 10 1112 13 33 44 4 4 4 4 4 4	Adj. Flow (vph)	140	161	
301 No No 10 10 11 11 11 11 11 10 10 10	Shared Lane Traffic (%)			
No Left R 10 10 10 10 10 10 10 10 10 10 10 10 10	Lane Group Flow (vph)	301	0	
Left 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Enter Blocked Intersection	2	8	
12 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lane Alignment	Left	Right	
0 10 10 112 112 37 37 37 37 40 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Median Width(ft)	12	,	
10 1.12 1.12 1.12 3.7 3.3 4.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Link Offset(ft)	0		
1.12 1.12 1.17 1.17 1.3 1.3 1.3 1.4 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Crosswalk Width(ft)	10		
1.12 Thru 37 37 37 37 4 4 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Two way Left Turn Lane			
Thru 377 377 377 40 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Headway Factor	1.12	1.12	
, T	Turning Speed (mph)		6	
r ö	Number of Detectors	-		
Ö	Detector Template	Thru		
δ	Leading Detector (ft)	37		
δ	Trailing Detector (ft)	ကု		
δ	Detector 1 Position(ft)	5-		
Ö	Detector 1 Size(ft)	40		
	Detector 1 Type	CI+Ex		
	Detector 1 Channel			
	Detector 1 Extend (s)	0.0		
	Detector 1 Queue (s)	0.0		
	Detector 1 Delay (s)	0.0		
, m	Turn Type	NA		
က်	Protected Phases	4		
m	Permitted Phases			
	Detector Phase	4		
	Switch Phase			
	Minimum Initial (s)	3.0		

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

	ı			•		۰						
ane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Ainimum Split (s)	13.0	13.0	21.0		21.0	21.0	21.0	21.0			13.0	13.0
otal Split (s)	25.0	25.0	79.0		79.0	54.0	54.0	54.0			15.0	15.0
Fotal Split (%)	15.6%	15.6%	49.4%		49.4%	33.8%	33.8%	33.8%			9.4%	9.4%
Maximum Green (s)	19.0	19.0	73.0		73.0	48.0	48.0	48.0			0.6	9.0
rellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
ost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				
otal Lost Time (s)		6.5	6.5		6.5		6.5	6.5				
Lead/Lag	Lead	Lead				Lag	Lag	Lag			Lag	Lag
-ead-Lag Optimize?												
/ehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None			None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
-Tash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		72.6	72.6		72.6		47.6	47.6				
Actuated g/C Ratio		0.48	0.48		0.48		0.31	0.31				
//c Ratio		1.05	0.67		0.27		0.10	1.00				
Control Delay		117.1	34.0		5.4		41.9	80.3				
Queue Delay		0.0	0.0		0.0		0.0	0.0				
Total Delay		117.1	34.0		5.4		41.9	80.3				
SC		ш	ပ		⋖		О	ш				
Approach Delay			43.1					7.67				
Approach LOS			۵					ш				
Queue Length 50th (ft)		~193	357		13		10	512				
Dueue Length 95th (ft)		#422	203		19		33	#760				
nternal Link Dist (ft)			497					823				
Furn Bay Length (ft)		300					75					
Sase Capacity (vph)		223	1459		836		153	1027				
Starvation Cap Reductn		0	0		0		0	0				
Spillback Cap Reductn		0	0		0		0	0				
Storage Cap Reductn		0	0		0		0	0				
Reduced v/c Ratio		1.05	0.67		0.27		0.10	1.00				
ntersection Summary												

Intersection LOS: E ICU Level of Service G Intersection Signal Delay, 69.2
Intersection Capacity Utilization 107.5% ICU Lev
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. wear type.
Optie Length: 160
Actuated Cycle Length: 152.2
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum Vic Ratio: 1.06

Projected 18 am 9/15/2014 Baseline

Synchro 8 Report Page 4

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/9/2015

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

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Synchro 8 Report Page 5 Projected 18 am 9/15/2014 Baseline

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/9/2015

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

	-	*_	<b>→</b>	74	•	€	*	×	*	4	•	<b>\</b>
Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Minimum Split (s)	13.0		13.0			13.0	13.0	13.0			13.0	13.0
Total Split (s)	15.0		13.0			17.0	17.0	53.0			36.0	36.0
Total Split (%)	9.4%		8.1%			10.6%	10.6%	33.1%			22.5%	22.5%
Maximum Green (s)	0.6		7.0			11.0	11.0	47.0			30.0	30.0
Yellow Time (s)	3.0		3.0			4.0	4.0	4.0			4.0	4.0
All-Red Time (s)	3.0		3.0			2.0	2.0	2.0			2.0	2.0
Lost Time Adjust (s)	0.5		0.5				0.5	0.5				0.5
Total Lost Time (s)	6.5		6.5				6.5	6.5				6.5
Lead/Lag	Lag		Lead			Lead	Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0
Recall Mode	None		None			None	None	None			None	None
Walk Time (s)								7.0				
Flash Dont Walk (s)								25.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)	8.5		6.1				46.6	46.6				29.6
Actuated g/C Ratio	90.0		0.04				0.31	0.31				0.19
v/c Ratio	0.95		0.29				1.06	0.55				0.15
Control Delay	170.3		86.1				127.5	20.1				55.4
Queue Delay	0.0		0.0				0.0	0.0				0.0
Total Delay	170.3		86.1				127.5	50.1				55.4
FOS	ш		ш				ш	D				ш
Approach Delay	170.3		86.1					82.6				
Approach LOS	ш		ш					ш				
Queue Length 50th (ft)	09		15				~147	207				22
Queue Length 95th (ft)	#174		44				#323	337				22
Internal Link Dist (ft)	412		217					1256				
Turn Bay Length (ft)							200					150
Base Capacity (vph)	92		99				179	482				192
Starvation Cap Reductn	0		0				0	0				0
Spillback Cap Reductn	0		0				0	0				0
Storage Cap Reductn	0		0				0	0				0
Reduced v/c Ratio	0.95		0.27				1.06	0.55				0.15
Intersection Summary												

Projected 18 am 9/15/2014 Baseline Synchro 8 Report Page 6

Lane Group	SWT	SWR	
Minimum Split (s)	13.0		
Total Split (s)	36.0		
Total Split (%)	22.5%		
Maximum Green (s)	30.0		
Yellow Time (s)	4.0		
All-Red Time (s)	2.0		
Lost Time Adjust (s)	0.5		
Total Lost Time (s)	6.5		
Lead/Lag	Lag		
Lead-Lag Optimize?			
Vehicle Extension (s)	3.0		
Recall Mode	None		
Walk Time (s)			
Flash Dont Walk (s)			
Pedestrian Calls (#/hr)			
Act Effct Green (s)	29.6		
Actuated g/C Ratio	0.19		
v/c Ratio	1.02		
Control Delay	116.7		
Queue Delay	0.0		
Total Delay	116.7		
FOS	ட		
Approach Delay	111.5		
Approach LOS	ш.		
Queue Length 50th (ft)	290		
Queue Length 95th (ft)	#545		
Internal Link Dist (ft)	3088		
Turn Bay Length (ft)			
Base Capacity (vph)	295		
Starvation Cap Reductn	0		
Spillback Cap Reductn	0		
Storage Cap Reductn	0		
Reduced v/c Ratio	1.02		

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

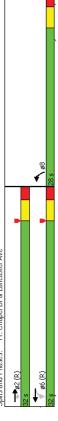
			VVDL		NDL	NDK	
-ane Configurations	*	*	F	*	1		
Volume (vph)	935	78	44	986	17	2	
deal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
-ane Width (ft)	=	Ξ	Ξ	=	12	12	
Storage Length (ft)		125	125		0	0	
Storage Lanes		_	_		2	0	
Taper Length (ft)			22		22		
-ane Util. Factor	0.95	1.00	1.00	0.95	0.97	0.95	
ı,ı		0.850			0.985		
Fit Protected			0.950		0.957		
Satd. Flow (prot)	3241	1450	1621	3241	3227	0	
-It Permitted			0.282		0.957		
Satd. Flow (perm)	3241	1450	481	3241	3227	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		30			2		
-ink Speed (mph)	32			32	22		
Link Distance (ft)	540			1447	319		
ravel Time (s)	10.5			28.2	8.7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
4dj. Flow (vph)	1016	30	48	1072	18	2	
Shared Lane Traffic (%)							
-ane Group Flow (vph)	1016	30	48	1072	70	0	
Enter Blocked Intersection	No	No	9	9	8	No	
ane Alignment	Left	Right	Left	Left	Left	Right	
Wedian Width(ft)	Ξ			=	24		
-ink Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane							
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07	
'urning Speed (mph)		6	15		15	6	
Number of Detectors	-	-	-	-	-		
Detector Template	Thru	Right	Left	Thru	Left		
Leading Detector (ft)	37	70	70	37	37		
Frailing Detector (ft)	ကု	0	0	ကု	ကု		
Detector 1 Position(ft)	ņ	0	0	ς'n	ကု		
Detector 1 Size(ft)	40	70	70	40	40		
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Furn Type	Ϋ́	Perm	Perm	Ν	Prot		
Protected Phases	2			9	∞		
Permitted Phases		2	9				
Detector Phase	2	2	9	9	80		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0		
Minimum Split (s)	21.0	21.0	21.0	21.0	28.0		
Total Calls (a)	000	32.0	32.0	32.0	28.0		

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

3/9/2015

	†	<u>/</u>	<b>&gt;</b>	Ļ	•	•
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	53.3%	53.3%	53.3%	53.3%	46.7%	
Maximum Green (s)	27.0	27.0	27.0	27.0	23.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.5	0.5	0.5	0.5	0.5	
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	С-Мах	None	
Walk Time (s)	10.0	10.0	10.0	10.0	7.0	
Flash Dont Walk (s)	0.0	0.0	0.0	0.0	16.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	
Act Effct Green (s)	9.99	9.99	9.99	9.99	5.5	
Actuated g/C Ratio	0.94	0.94	0.94	0.94	60.0	
v/c Ratio	0.33	0.02	0.11	0.35	0.07	
Control Delay	1.4	0.8	2.7	5.9	23.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	1.4	0.8	2.7	2.9	23.6	
TOS	A	V	A	A	ပ	
Approach Delay	1.4			2.9	23.6	
Approach LOS	A			A	ပ	
Queue Length 50th (ft)	0	0	0	0	m	
Oueue Length 95th (ft)	88	2	m17	346	1	
Internal Link Dist (ft)	460			1367	239	
Turn Bay Length (ft)		125	125			
Base Capacity (vph)	3022	1368	453	3022	1211	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0 7	0 10	0	
Reduced v/c Ratio	0.33	0.02	0.1.	0.35	0.02	
Intersection Summary						
Area Type: O	Other					
Cycle Length: 60						
Actuated Cycle Length: 60	4	FOLL	EGW. / F	1010		
Oliset: 53 (92%), Referenced to phase Z:EBT and 6:WBTL, Start of Yellow Natural Cycle: 55	a to phase	Z:EB1 8	10 0:WB	L, Start o	vellow	
Control Type: Actuated-Coordinated	dinated					
Maximum v/c Ratio: 0.35						
Intersection Signal Delay: 2.3	_			르	Intersection LOS: A	LOS: A
Intersection Capacity Utilization 51.1%	ion 51.1%			2	U Level o	ICU Level of Service A
Analysis Period (min) 15						
m Volume for 95th percentile queue is metered by upstream signal.	ile queue i	is metere	d by upsti	eam sign	al.	

Splits and Phases: 11: Chapel Dr & Lancaster Ave



Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/9/2015

Lane Configurations Volume (vph) Ideal Flow (vphpl) Lane Width (ft)		
Volume (vph) Ideal Flow (vphpf) I ane Width (ft)		
Ideal Flow (vphpl) I ane Width (ft)		
Crodo (97)		
Glade (%)		
Storage Length (ft)		
Tongs Laines		
Tape Hill Factor		
Earle Oill: 1 acto		
Fit Protected		
Satd Flow (prot)		
Fit Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Turn Type		
Protected Phases	6	
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	24.0	
Projected 18 am 9/15/2014 Baseline	Raceline	Synchro 8 Report

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lane Group         EBL         EBL         EBL         WBI         WBI         NBI         NBI         NBI         SBI         SBI	1												
31.0 13.0 13.0 13.0 13.0 13.0 13.0 13.0	ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
31.0 31.0 3 25.8% 25.8% 25 4.0 4.0 4.0 2.0 2.0 2.0 2.0 0.5 0.5 6.5 6.5 6.5 6.5 8.4 104.8 6 0.0 0.0 0.0 0.0 8.4 104.8 6 0.0	linimum Split (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	
25.8% 25.8% 25.2% 25.0 4.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	otal Split (s)	13.0	20.0		13.0	20.0		31.0	31.0		31.0	31.0	
25.0 25.0 25.0 20.0 20.0 20.0 20.0 20.0	otal Split (%)	10.8%	41.7%		10.8%	41.7%		25.8%	25.8%		25.8%	25.8%	
4.0 4.0 2.0 0.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6	laximum Green (s)	7.0	44.0		7.0	44.0		25.0	25.0		25.0	25.0	
2.0 2.0 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0	ellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	II-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
3.0 3.0 None None None None None None None None	ost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
3.0 3.0 None None None None None None None None	otal Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
3.0 None None None None None None None None	sad/Lag	Lead	Lag		Lead	Lag							
3.0 3.0 None None None None None None None None	ead-Lag Optimize?												
33.7 23.7 23.7 23.7 23.7 23.7 23.7 23.7	ehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
23.7 23.7 23.7 23.7 22.0 0.20 0.20 0.20 0.20 0.20 0.20 0.	ecall Mode	None	C-Max			C-Max		None	None		None	None	
23.7 23.7 0.20 0.20 0.93 0.85 0.44 10.48 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	'alk Time (s)												
23.7 23.7 0.20 0.20 0.93 0.85 84.4 104.8 4.4 104.8 4.4 104.8 4.4 104.8 4.4 104.8 4.7 1.2 6.2 1.2 6.2 4.3 1.1 101 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ash Dont Walk (s)												
23.7 23.7 20.0 0.20 0.20 0.20 0.20 0.20 0.20 0.	edestrian Calls (#/hr)												
0.20 0.20 0.93 0.93 0.93 0.95 0.95 0.00 0.00 0.00 0.00 0.00 0.00	ct Effct Green (s)	57.3	52.1		22.8	49.5		23.7	23.7		23.7	23.7	
0.93 0.85 84.4 104.8 0.0 0.0 84.4 104.8 F F F 83.5 62 212 62 212 65 311 101 0 0 0 0 0 0 0.90 0.82	ctuated g/C Ratio	0.48	0.43		0.46	0.41		0.20	0.20		0.20	0.20	
84.4 104.8 0.0 0.0 84.4 104.8 F E 83.5 212 62 #371 #158 4 264 65 311 101 0 0 0 0 0 0 0,90 0.82	c Ratio	09:0	19.0		0.27	0.80		0.77	0.93		0.85	0.78	
9.0 0.0 0.0 84.4 104.8 F F F 83.5 F F 7 12 6.2 7.4 6.5 3.1 10.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ontrol Delay	34.4	32.7		15.7	30.9		81.0	84.4		104.8	63.8	
84.4 104.8 F F F 83.5 F 62 712 62 #371 #158 # 264 65 311 101 0 0 0 0 0 0 0 0 0	ueue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
83.5 83.5 212 212 213 264 65 311 0 0 0 0 0 0 0 0 0 0 0 0 0	otal Delay	34.4	32.7		15.7	30.9		81.0	84.4		104.8	63.8	
83.5 F 62 212 62 #371 #158 6 264 65 311 101 0 0 0 0 0 0 0 0 0 0 0 0 0	SC	ပ	ပ		В	ပ		ഥ	ഥ		ш	ш	
F 62 212 62 #371 #158 # 264 65 311 101 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	oproach Delay		32.9			30.0			83.5			74.6	
212 62 #371 #158 # 264 65 311 101 0 0 0 0 0 0 0 0 0	oproach LOS		ပ			ပ			ш			ш	
#371 #158 # 264 65 311 101 0 0 0 0 0.90 0.82 C	nene Length 50th (ft)	46	322		22	332		72	212		62	169	
264 65 311 101 0 0 0 0 0 0 0 0 0 0 0 0	ueue Length 95th (ft)	#100	315		m35	#497		#165	#371		#158	#284	
311 101 0 0 0 0 0 0 0 0 0 0 0,90 0.82 C	ternal Link Dist (ft)		1367			231			264			893	
311 101 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	urn Bay Length (ft)	200			250			200			92		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ase Capacity (vph)	188	1315		220	1224		134	311		101	309	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	arvation Cap Reductn	0	0		0	0		0	0		0	0	
0.90 0.82	pillback Cap Reductn	0	0		0	0		0	0		0	0	
0.90 0.82	orage Cap Reductn	0	0		0	0		0	0		0	0	
ea Type:  Cycle Length: 120  Litated Cycle Length: 120  Fixed For Marker Intersection  Fixed For Intersection	educed v/c Ratio	09:0	19.0		0.27	0.80		0.74	06:0		0.82	0.75	
ea Type: Other Cycle Length: 1.20 Indeed Cycle Length: 1.20 Iffer In (10%) Referenced in these 2:FBT and 6:WBTL. Start of Yellow. Master Intersection	tersection Summary												
ycie Length: 120 18 - 18 - 18 - 18 - 18 - 18 - 18 - 18 -	rea Type:	Other											
cituated Cycle Length: 120 ffeet 0 (0%). Referenced to nbase 2:FBT1 and 6:WRT1. Start of Yellow, Master Intersection	vcle Lenath: 120												
fker) 0.0%). Referenced in phase 2-FBTL and 6:WBTL. Start of Yellow. Master Intersection	stuated Cycle Length: 120												
	ffset 0 (0%) Beferenced	O phace 7.	L LTGT	TOWN			the last						

Intersection LOS: D ICU Level of Service D waturan cyber Actualed-Coordinated
Maximum Vic Ratio c. 93
Intersection Signal Delay: 43.6
Intersection Capacity Utilization 76.0%
Analysis Period (min) 15.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

The coordinate of t

Projected 18 am 9/15/2014 Baseline

Synchro 8 Report Page 3

3/9/2015 €**64** Splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave **1 ↓** 96 (R)

Synchro 8 Report Page 4 Projected 18 am 9/15/2014 Baseline

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lane Group	999
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	0.9
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
SOT	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Projected 18 am 9/15/2014 Baseline Synchro 8 Report Page 5

Synchro 8 Report Page 1

Projected 18 am 9/15/2014 Baseline

HCM 2010 Signalized Intersection Summary 51: Lowrys Ln & Lancaster Ave

3/9/2015

3/9/2015

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		th th			<del>d</del> b			4			4	
Volume (veh/h)	16	1067	19	16	1098	22	47	104	39	22	11	19
Number	2	2	12	-	9	16	m	∞	18	7	4	14
Initial Q (Qb), veh	0 5	0	0 0	0 0	0	0 0	0 0	0	0 0	0 6	0	0 6
Peu-bike Auj(A_pui)	8.6	100	00.1	00.1	100	00.1	00.1	100	00.1	8.6	0	8.5
/h/ln	1800	1748	1800	1773	1721	1773	1900	1845	1900	1881	1827	1881
Adj Flow Rate, veh/h	17	1147	20	17	1181	24	51	112	42	24	9/	20
Adj No. of Lanes	0	2	0	0	2	0	0	-	0	0	-	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	က	3	33	က	co	က	က	co	co	co	3	33
Cap, veh/h	72	2098	36	71	2062	42	120	154	21	102	186	43
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	15	3214	26	15	3159	64	306	1046	349	200	1263	293
Grp Volume(v), veh/h	615	0	269	989	0	286	202	0	0	120	0	0
Grp Sat Flow(s),veh/h/ln	1704	0 0	1580	1682	0	1555	1704	0	0	1756	0	0
O Serve(g_s), s	0.0	0.0	11.7	0.0	0.0	12.6	3.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	11.3	0.0	11.7	12.2	0.0	12.6	6.9	0.0	0.0	3.7	0.0	0.0
	0.03	c	0.04	0.03	c	0.04	0.25	c	0.20	0.20	c	0.17
Lane Grp Cap(c), vervn	0.52		0.55	0.55	0	0.50	320	0	0	331	0	0
a) veh/h	1174	00.0	1032	1159	0.00	1015	426	0.00	0.00	431	0.00	0.00
	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	00:00	1.00	1.00	00:00	00:00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.6	0.0	2.7	2.7	0.0	2.8	24.7	0.0	0.0	23.4	0.0	0.0
Incr Delay (d2), s/veh	1.7	0.0	2.1	1.9	0.0	2.4	2.0	0.0	0.0	0.7	0.0	0.0
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(-26165%),veh/ln	2.8	0.0	5.7	6.3	0.0	5.9	3.4	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	7.3	0.0	7.8	7.6	0.0	8.2	26.7	0:0	0:0	24.1	0.0	0.0
LnGrp LOS	A		A	A		A	S			ပ		
Approach Vol, veh/h		1184			1222			202			120	
Approach Delay, s/veh		7.5			7.9			26.7			24.1	
Approach LOS		A			⋖			ပ			ပ	
Timer	<del>-</del>	2	3	4	2	9	7	8				
Assigned Phs		2		4		9		∞				
Phs Duration (G+Y+Rc), s		45.7		14.3		45.7		14.3				
Change Period (Y+Rc), s		0.9		2.0		0.9		2.0				
Max Green Setting (Gmax), s		36.0		13.0		36.0		13.0				
Max O Clear Time (g_c+IT), s		13.7		5.7		14.6		20. C				
Green Ext Time (p_c), s		11.6		0.7		11.3		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			8.6									
HCM 2010 LOS			A									
Notes												
User approved pedestrian interval to be less than phase max green	al to be	less thar	n phase n	nax greer								

HCM 2010 Signalized Intersection Summary 16: Sproul Rd & Conestoga Rd

HCM 2010 Signalized Intersection Summary 25: S Ithan Ave & Conestoga Rd

3/9/2015

Movement   EBL   EBI   EBR   WBL   WBT   WBR   NEL   NET   Table Configurations   Table   Table Configurations   Table   Table Configurations   Table   Tabl	•	ሻ	1	۴٩	Ļ	ţ	¥J	•	×	*	•	×	*
149   555   138   38   600   57   213   267     149   555   138   38   600   57   213   267     1 00	Movement	EBI	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
149   555   138   36   600   57   213   267     1	Lane Configurations	F	<b>2</b>		r	Ť,		F	Ŷ,			4	
1,00	Volume (veh/h)	149	555	138	36	009	22	213	267	28	99	200	74
1,00	Number	7	4	14	3	∞	9	_	9	16	2	2	12
1,00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
1,00   1,00	Ped-Bike Adj(A_pbT)	1.00		1.00	1:00		1.00	1.00		1.00	1.00		1.00
1748   1748   1800   1791   1845   1739   1739   1748   1748   1748   1749   1845   1739   1739   1749   1748   1748   1749   1749   1845   1739   1739   1749		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
164 610 0 40 659 0 234 293   194 814 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91		1748	1748	1800	1791	1791	1845	1739	1739	1791	1809	1756	1809
0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91	Adj Flow Rate, veh/h	164	610	0	40	629	0	234	293	31	62	220	81
194   0.91   0.92   0.05   0.05   0.00   0.38   0.38   0.00   0.07   0.37   0.00   0		-	-	0	-	-	0	-	-	0	0	-	0
194   874   0   270   677   0   309   576     1044   1748   0   270   677   0   309   576     1064   1748   0   820   1791   0   1656   1546     104   610   0   40   659   0   234   0     13   24.1   0.0   3.5   22.6   0.0   6.5   0.0     100   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00     100   1.00   1.00   1.00     100   1.00   1.00   1.00     100   1.00   1.00   1.00     100   1.00   1.00   1.00     100   1.00   1.00   1.00     100   1.00   1.00   1.00     100   1.00   1.00   1.00     100   1.00   1.00   1.00     100   1.00   1.00   1.00     100   1.00   1.00     100   1.00   1.00     100   1.00   1.00     100   1.00   1.00     100   1.00   1.00		0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
194   814   0   270   677   0   309   576     1664   7748   0   820   7791   0   1656   1546     1664   7748   0   820   7791   0   1656   0     5.3   24.1   0.0   3.5   3.26   0.0   6.5   0.0     1.00   1.00   1.00   1.00   1.00   1.00     1.44   874   0   270   677   0   309   0     1.45   874   0   270   677   0   309   0     1.46   874   0   270   677   0   309   0     1.47   874   0   270   677   0   309   0     1.48   874   0   270   677   0   309   0     1.49   874   0   270   677   0   309   0     1.40   1.00   1.00   1.00   1.00   1.00   1.00     1.40   1.00   1.00   1.00   1.00   1.00   0.00     1.50   1.50   1.50   1.00   1.00   1.00   0.00     1.50   1.50   1.50   1.00   1.00   1.00   1.00     1.50   1.50   1.50   1.50   1.00   1.00   1.00     1.50   1.50   1.50   1.50   1.00   1.00   1.00     1.50   1.50   1.50   1.50   1.00   1.00   1.00     1.50   1.50   1.50   1.50   1.00   1.00     1.50   1.50   1.50   1.50   1.00   1.00     1.50   1.50   1.50   1.50   1.00   1.00     1.50   1.50   1.50   1.50   1.00   1.00     1.50   1.50   1.50   1.50   1.00   1.00     1.50   1.50   1.50   1.50   1.00   1.00     1.50   1.50   1.50   1.50   1.00     1.50   1.50   1.50   1.50   1.00     1.50   1.50   1.50   1.50   1.00     1.50   1.50   1.50   1.50   1.00     1.50   1.50   1.50   1.50   1.50     1.50   1.50   1.50   1.5	%	3	3	က	3	3	3	က	3	3	က	3	3
1644   1748		194	874	0	270	119	0	309	9/9	61	93	236	81
1664   1748   0   820   1791   0   1656   1546   1664   1748   0   820   1791   0   1656   1546   1664   1748   0   820   1791   0   1656   0   0   1664   1748   0   820   1791   0   1656   0   0   1791   0   1656   0   0   1791   0   1656   0   0   0   1791   0   1656   0   0   0   0   0   0   0   0   0		90.0	0.50	0.00	0.38	0.38	0.00	0.07	0.37	0.37	0.23	0.23	0.23
164   610		1664	1748	0	820	1791	0	1656	1546	164	199	1013	348
1664   1748   0   820   1791   0   1656   0     5.3   24.1   0.0   157   22.6   0.0   65.5   0.0     1.00   1.00   1.00   1.00   1.00   1.00   1.00     1.00   1.00   1.00   1.00   1.00   1.00     1.04   874   0   270   677   0   309   0     1.08   0.70   0.70   0.71   0.71   0   309   0     1.00   1.00   1.00   1.00   1.00   1.00   1.00     1.00   1.00   1.00   1.00   1.00   1.00   1.00     1.00   1.00   1.00   1.00   1.00   1.00   1.00     1.00   1.00   0.00   1.00   0.00   0.00     1.00   0.00   0.00   0.00   0.00     1.00   0.00   0.00   0.00   0.00     1.00   0.00   0.00   0.00   0.00     1.00   0.00   0.00   0.00   0.00     1.00   0.00   0.00   0.00   0.00     1.00   0.00   0.00   0.00   0.00     1.00   0.00   0.00   0.00   0.00     1.00   0.00   0.00   0.00   0.00     1.00   0.00   0.00   0.00   0.00     1.00   0.00   0.00   0.00   0.00     1.00   0.00   0.00   0.00   0.00     1.00   0.00   0.00   0.00   0.00     1.00   0.00   0.00   0.00   0.00     1.00   0.00   0.00   0.0		164	610	0	40	629	0	234	0	324	363	0	0
5.3 24.1 0.0 3.5 3.26 0.0 6.5 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		1664	1748	0	820	1791	0	1656	0	1710	1560	0	0
1,00 167 326 0.0 65 0.0 0.0 17.0 17.0 17.0 17.0 17.0 17.0 1	O Serve(g_s), s	5.3	24.1	0.0	3.5	32.6	0.0	6.5	0.0	13.2	16.0	0.0	0.0
1,00	Cycle Q Clear(g_c), s	5.3	24.1	0.0	16.7	32.6	0.0	6.5	0.0	13.2	20.9	0.0	0.0
194 874 0 270 677 0 309 0 1 1 1 1 1 1 2 3 4 5 6 7 1 1 1 1 1 1 2 3 4 5 6 7 1 1 1 1 1 1 1 2 3 4 5 6 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1.00		0.00	1.00		0.00	1.00		0.10	0.17		0.22
0.88 0.70 0.00 0.15 0.97 0.00 0.76 0.00 1.10 1.00 1.00 1.00 1.00 1.00 1.0	o(c), veh/h	194	874	0	270	119	0	309	0	989	411	0	0
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		0.85	0.70	0.00	0.15	0.97	0.00	97.0	0.00	0.51	0.88	0.00	0.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	194	874	0	270	119	0	306	0	989	411	0	0
1.00 1.00 0.00 1.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0	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
h 216 173 0.0 279 276 0.0 262 0.0  278 46 0.0 12 288 0.0 103 0.0  6)veh'in 39 126 0.0 0.9 215 0.0 3.7 0.0  D C C E D S48  27.7 4 699  1 2 3 4 5 6 7 8  3.5 125 27.0 505 39.5 1.0 C  C R D C C  C R D S88  28.4  27.7 8 3.4  39.8  39.8	Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
178   46   0.0   12   288   0.0   10.3   0.0     (a) (a) (b) (b) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	Uniform Delay (d), s/veh	21.6	17.3	0.0	27.9	27.6	0.0	26.2	0.0	21.9	34.3	0.0	0.0
6),verbin 39 126 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Incr Delay (d2), s/veh	27.8	4.6	0.0	1.2	28.8	0.0	10.3	0.0	0.7	19.7	0.0	0.0
6, vervin 39 126 0.0 0.0 9 215 0.0 37 495 219 0.0 291 56.3 0.0 36.5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 3 3 3 3 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
49.5 21.9 0.0 29.1 56.3 0.0 36.5    D C C E D D C C E D C C C C C C C C C C	%ile BackOfQ(-26165%),veh/ln		12.6	0.0	6.0	21.5	0.0	3.7	0.0	6.3	11.2	0.0	0.0
D C C E D  774 699  774 699  27 69  78 727 848  79 72 73  70 125 270 505 55 50  85 55 55 50 50  87 70 215 455 340 6.0  88 70 00 00 84 24 0.0	LnGrp Delay(d),s/veh	49.5	21.9	0.0	29.1	56.3	0.0	36.5	0.0	22.6	54.0	0.0	0.0
774 699 27.7 548 C D D C D D D D D D D D D D D D D D D D	LnGrp LOS	۵	U		U	ш		О		O	۵		
27.7 548 C D D C D D 3,5 125 270 505 395 110 7,8 55 55 55 50 55 50 55 50 814,5,8 85 22.9 26.1 15.2 7.3 8 00 00 84 24 00	Approach Vol, veh/h		774			669			228			363	
C D D C D C D C C D C D C C D C D C C C D C D C C C D C C C C D C	Approach Delay, s/veh		27.7			54.8			28.4			54.0	
1 2 3 4 5 6 7  G-Y-ReD, S 125 27.0 50.5 50.5 39.5 11.0  Iff (Gaax), S 7.0 21.5 45.5 5.0 5.5 5.0 11.0  Ime (gel1), S 8.5 22.9 26.1 15.2 7.3  Immary  Immary  1 2 3 4 5 6 7  4 6 6 7  4 6.5 39.5 11.0  5 7 3 40.0 6.0  8 4 5 6 0  8 4 0.0  Immary  Immary  Immary  Immary  Immary	Approach LOS		S			D			S			۵	
1 2 4 6 6 7  G+Y+Rc), s 12.5 27.0 50.5 39.5 11.0  1/(Y+Rc), s 5.5 5.5 5.0 5.0 5.0  1/(M-Rc), s 5.5 5.5 5.0 5.0  1/(M-Rc), s 5.5 5.5 5.0  1/(M-Rc), s 5.5 5.0  1/(M-Rc), s 5.0 5.0  1/(M-Rc), s 5.0 5.0  1/(M-Rc), s 6.0  1/(M-Rc),	Timer	_	2	3	4	2	9	7	8				
12.5 27.0 50.5 39.5 11.0 5.5 5.0 5.5 5.0 5.0 5.5 5.0 5.0 5.0 5	Assigned Phs	-	2		4		9	7	8				
5.5 5.5 5.0 5.0 5.5 5.0 5.2 5.0 5.2 5.0 5.2 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Phs Duration (G+Y+Rc), s	12.5	27.0		50.5		39.5	11.0	39.5				
s 7.0 21.5 45.5 34.0 6.0 s 8.5 22.9 26.1 15.2 7.3 0.0 0.0 84 2.4 0.0	Change Period (Y+Rc), s	5.5	5.5		2.0		5.5	2.0	2.0				
s 8.5 22.9 26.1 15.2 7.3 0.0 0.0 8.4 2.4 0.0	Max Green Setting (Gmax), s	7.0	21.5		45.5		34.0	0.9	34.5				
, s 0.0 0.0 8.4 2.4 0.0 39.8	Max Q Clear Time (g_c+11), s	8.5	22.9		26.1		15.2	7.3	34.6				
	Green Ext Time (p_c), s	0.0	0.0		8.4		2.4	0.0	0.0				
	Intersection Summary												
	HCM 2010 Ctrl Delay			39.8									
	HCM 2010 LOS			0.75									

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Projected 18 am 9/15/2014 Baseline

	1	†	<u>/-</u>	<b>/</b>	ţ	1	•	<b>—</b>	•	٠	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			÷			÷			4	
Volume (veh/h)	167	390	2	2	452	133	14	159	12	63	22	138
Number	-	9	16	2	2	12	7	4	14	co	∞	92
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
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
_	1854	1783	1854	1764	1696	1764	1763	1695	1763	1844	1773	1844
Adj Flow Rate, veh/h	206	481	2	2	228	164	17	196	12	78	20	170
Adj No. of Lanes	0	-	0	0	-	0	0	<del></del>	0	0	-	0
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	226	442	2	09	705	207	77	342	25	141	66	191
Arrive On Green	0.56	0.56	0.56	0.56	0.56	0.56	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	267	794	3	_	1268	372	22	1503	110	294	436	839
	689	0	0	724	0	0	228	0	0	318	0	0
Grp Sat Flow(s),veh/h/ln	1064	0	0	1640	0	0	1668	0	0	1569	0	0
O Serve(g_s), s	12.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0
Cycle Q Clear(g_c), s	33.5	0.0	0.0	21.3	0.0	0.0	7.3	0.0	0.0	11.6	0.0	0.0
Prop In Lane	0.30		0.00	0.00		0.23	0.07		0.07	0.25		0.53
Lane Grp Cap(c), veh/h	029	0	0	972	0	0	444	0	0	432	0	0
V/C Ratio(X)	1.03	0.00	0.00	0.74	0.00	0.00	0.51	0.00	0.00	0.74	0.00	0.00
Avail Cap(c_a), veh/h	0/9	0	0	972	0	0	492	0	0	475	0	0
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	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.5	0.0	0.0	10.7	0.0	0.0	20.8	0.0	0.0	22.3	0.0	0.0
Incr Delay (d2), s/veh	42.3	0.0	0.0	3.1	0.0	0.0	6.0	0.0	0.0	5.4	0.0	0.0
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
%),veh/ln		0.0	0.0	10.3	0.0	0.0	3.5	0.0	0.0	2.7	0.0	0.0
LnGrp Delay(d),s/veh	57.9	0.0	0.0	13.8	0.0	0.0	21.7	0.0	0.0	27.7	0.0	0.0
LnGrp LOS	ш.			В			ပ			ပ		
Approach Vol, veh/h		689			724			228			318	
Approach Delay, s/veh		27.9			13.8			21.7			27.7	
Approach LOS		ш			В			O			ပ	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs		2		4		9		80				
Phs Duration (G+Y+Rc), s		40.0		20.2		40.0		20.2				
Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
Max Green Setting (Gmax), s		34.0		16.0		34.0		16.0				
Max Q Clear Time (g_c+I1), s		23.3		9.3		35.5		13.6				
Green Ext Time (p_c), s		5.3		1.3		0.0		9.0				
Intersection Summary												
HCM 2010 CHI Dolay			22 E									
HCM 2010 CILI Delay			0.20									
HCIM ZULU LUS			ر									

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HCM 2010 Signalized Intersection Summary 33: Williams Rd/Garrett Ave & Conestoga Rd

	-											
Opposition regions	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
alle collingui ations		4			4			4			÷	
/olume (veh/h)	26	441	-	4	423	4	9	9	6	15	က	38
Number	2	7	17		9	9 (	m (	∞ (	20 0	_ •	4	14
	0	0	0	0	0	0	0	0	0	0	0	0
obT)	00.1	5	00.1	00.1	6	1.00	1.00	6	1.00	1.00	6	1.00
	0.1	0.10	0.10	0.10	0.10	0.1	1.00	1.00	1.00	00.1	1700	1700
	7/81	18/7	7/81	18/7	18/7	18/7	1800	1800	1800	1/28	87/1	1/78
Adj Flow Kate, veh/h	S 6	20.1		ഹ	481	ഹ	_ 0	_ ,	01.	<u> </u>	· .	43
	0	- 6	0 0	0 0	_ 0	0 0	0 0	- 0	0 0	0	- 5	0
	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
	94	1330	3	28	1382	14	88	32	37	98	<b>∞</b>	54
	0.75	0.75	0.75	0.75	0.75	0.75	0.05	0.05	0.05	0.05	0.05	0.05
sat Flow, veh/h	46	1//3	33	4	1842	61.	333	629	90/	325	14/	1014
	532	0	0	491	0	0	24	0	0	63	0	0
veh/h/ln 1	1825	0	0	1865	0	0	1695	0	0	1485	0	0
2 Serve(g_s), s	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<del>.</del> .	0.0	0.0
r(g_c), s	0.5	0.0	0.0	5.9	0.0	0.0	6.0	0.0	0.0	7.7	0.0	0.0
	0.06		0.00	0.0		0.0	0.29		0.42	0.77		0.68
p(c), veh/h	1427	0	0 0	1454	0 0	0	160	0 0	0	148	0	0
	0.37	0.00	0.00	0.34	0.00	0.00	0.15	0.00	0.00	0.43	0.00	0.00
<u>_</u>	142/	0 6	0 6	1454	0 0	0 6	301	0 0	0 0	780	0 0	0 0
0	00.1	00.1	00.1	00.1	00.1	00:1	00.1	00.1	00.1	1.00	00.1	00.1
	8.6	0.00	0.00	00.1	0.00	0.00	00.1	0.00	0.00	00.1	0.00	0.00
Jillolili Delay (d), S/Veri ngr Dolay (d2), s/veh	7.7	0:0	0.0	2.0	0.0	0.0	30.0	0.0	0.0	90.9	0.0	0.0
nd Delay (uz), swell	3 0	9 0	0.0	9 0	0.0	9 0	0.0	0.0	9 0	0.0	9 0	9 0
illal Q Delay(us), sivell	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solle BackOrQ(-26165%), veryin	3.5	0.0	0.0	2,2	0.0	0.0	90.4	0.0	0.0	2, 2,	0.0	0.0
.nGrp Delay(d),s/ven	3.0	0:0	0.0	5.4	0.0	0:0	30.0	0.0	0.0	33.0	0.0	0.0
norp LUS	A	0		A	100		ر			ر		
Approach Vol, veh/h		532			491			24			63	
Approach Delay, s/veh		3.6			3.4			30.6			33.6	
Approach LOS		×			V			O			ပ	
imer	_	2	က	4	2	9	7	∞				
Assigned Phs		2		4		9		∞				
Phs Duration (G+Y+Rc), s		26.0		10.0		26.0		10.0				
Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
Max Green Setting (Gmax), s		20.0		10.0		20.0		10.0				
Max Q Clear Time (q. c+l1), s		8.5		4.7		7.9		5.9				
Sreen Ext Time (p_c), s		4.6		0.1		4.6		0.2				
ntersection Summary												
HCM 2010 Ctrl Delay			2.8									
HCM 2010 LOS			⋖									
Notos												
lost commenced moderatelos internel to be lost them where moderates	04 04 lo	ac dt oool	o o o o o o	2000								

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Projected 18 am 9/15/2014 Baseline

3/9/2015

HCM 2010 Signalized Intersection Summary 3: County Line Rd & Spring Mill Rd

3/9/2015

Movement												
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations		4			4			4			4	
Volume (veh/h)	32	280	70	89	265	78	43	250	45	33	322	53
Number	2	2	12	-	9	16	က	∞	18	7	4	14
nitial 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
_	1800	1617	1800	1800	1731	1800	1800	1731	1800	1800	1731	1800
Adj Flow Rate, veh/h	37	295	74	72	279	82	45	263	47	32	339	26
	0	-	0	0	-	0	0	-	0	0	-	0
	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	66	286	139	155	247	148	100	361	09	82	396	63
_	0.50	0.50	0.50	0.50	0.50	0.50	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	71	1168	276	175	1089	295	118	1252	500	75	1374	217
	406	0	0	433	0	0	355	0	0	430	0	0
Grp Sat Flow(s),veh/h/ln 1	516	0	0	1559	0	0	1580	0	0	1667	0	0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0
Cycle Q Clear(g_c), s	10.8	0.0	0.0	10.7	0.0	0.0	12.5	0.0	0.0	15.2	0.0	0.0
	60.0		0.18	0.17		0.19	0.13		0.13	0.08		0.13
ane Grp Cap(c), veh/h	824	0	0	820	0	0	521	0	0	543	0	0
	0.49	0.00	0.00	0.51	0.00	0.00	89.0	0.00	0.00	0.79	0.00	0.00
Ų.	824	0	0	820	0	0	199	0	0	689	0	0
0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Jpstream Filter(I) (	0.52	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Jniform Delay (d), s/veh	10.4	0.0	0.0	10.4	0.0	0.0	20.0	0.0	0.0	21.1	0.0	0.0
ncr Delay (d2), s/veh	<del></del>	0.0	0.0	2.2	0.0	0.0	1.	0.0	0.0	3.7	0.0	0.0
nitial 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
%),veh/ln	4.9	0.0	0.0	5.4	0.0	0:0	2.7	0.0	0.0	7.6	0.0	0.0
y(d),s/veh	11.5	0.0	0.0	12.5	0.0	0.0	21.1	0.0	0.0	24.8	0.0	0.0
	В			В			ပ			ပ		
Approach Vol, veh/h		406			433			355			430	
Approach Delay, síveh		11.5			12.5			21.1			24.8	
Approach LOS		В			В			O			O	
limer	_	2	3	4	2	9	7	00				
Assigned Phs		2		4		9		8				
Phs Duration (G+Y+Rc), s		37.6		24.4		37.6		24.4				
Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
Max Green Setting (Gmax), s		26.0		24.0		26.0		24.0				
Max Q Clear Time (g_c+I1), s		12.8		17.2		12.7		14.5				
Green Ext Time (p_c), s		3.1		1.2		3.1		1.4				
ntersection Summary												
HCM 2010 Ctrl Delay			17.4									
HCM 2010 LOS			œ									

HCM 2010 TWSC 79: Garrett Rd & Lancaster Ave

HCM 2010 TWSC 15: Conestoga Rd & Spring Mill Rd

3/9/2015

Int Delay, s/veh 3.9  Movement Vol. verh/h Conflicting Peds, #hr								
Movement Vol, veh/h Conflicting Peds, #.hr								
Movement Vol, veh/h Conflicting Peds, #/hr Sign Control								
Vol, veh/h Conflicting Peds, #/hr Sign Control		EBT	EBR	>	WBL V	WBT	NBL	NBR
Conflicting Peds, #/hr Sign Control	1	1103	24			1136	0	26
Sign Control		0	0		0	0	0	0
	_	Free	Free	Œ	Free Free	ree	Stop	Stop
K1 Channelized		•	None		2	None		None
Storage Length								0
Veh in Median Storage, #		0				0	0	
Grade, %		-3				3	0	
Peak Hour Factor		19	. 67		29	29	19	19
Heavy Vehicles, %		0	0		0	0	0	0
Mvmt Flow	<del>-</del>	1646	36			1696	0	39
Major/Minor	Ma	Major1		Major2	or2		Minor1	
Conflicting Flow All		0	0	16	1682	0	2568	841
Stage 1							1664	
Stage 2							904	
Critical Hdwy					4.1		6.8	6.9
Critical Hdwy Stg 1							5.8	
Critical Hdwy Stg 2		٠					5.8	
Follow-up Hdwy			,		2.2	,	3.5	3.3
Pot Cap-1 Maneuver				(*)	386		22	312
Stage 1							142	•
Stage 2							360	
Platoon blocked, %						,		
Mov Cap-1 Maneuver				(*)	386		22	312
Mov Cap-2 Maneuver			,			,	22	•
Stage 1							142	
Stage 2							360	
Approach		EB			WB		NB	
HCM Control Delay, s		0			7.4		18.2	
HCM LOS							O	
Minor Lane/Major Mvmt	NBLn1 E	EBT	EBR W	WBL W	WBT			
Capacity (veh/h)	312		,	386				
HCM Lane V/C Ratio	0.124		- 0.0	0.073				
HCM Control Delay (s)	18.2	٠	,		7.3			
HCM Lane LOS	ပ			ပ	V			
HCM 95th %tile Q(veh)	0.4			0.2				

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III I SECIIOII		ı			ı				
Int Delay, s/veh 0.2	2								
Movement	EBL	EBT			WBT	WBR	SWL	SWR	
Vol, veh/h	2	640			169	3	4	∞	
Conflicting Peds, #/hr	0	0			0	0	0	0	
Sign Control	Free	Free Free			Free	Free	Stop	Stop	
RT Channelized	٠	None			٠	None		None	
Storage Length	•	•			•	·	0	٠	
Veh in Median Storage, #	•	0			0		0		
Grade, %	•	0			0		0	•	
Peak Hour Factor	98	98			98	98	98	98	
Heavy Vehicles, %	4	4			4	4	4	4	
Mvmt Flow	2	744			803	က	2	6	
Major/Minor	Major1			2	Major2		Minor2		
Conflicting Flow All	807	0				0	1554	802	
Stage 1	•	٠			٠		802		
Stage 2	٠	٠			1		749	٠	
Critical Hdwy	4.14						6.44	6.24	
Critical Hdwy Stg 1	•	1			•	ì	5.44		
Critical Hdwy Stg 2		•			•		5.44		
Follow-up Hdwy	2.236	1			•	i	3.536	3.336	
Pot Cap-1 Maneuver	809	•			٠		123	379	
Stage 1		•			•		436		
Stage 2	•	٠			٠		464		
Platoon blocked, %		1			•	ì			
Mov Cap-1 Maneuver	800	•			•		123	379	
Mov Cap-2 Maneuver	•	1			•	í	123	•	
Stage 1	•	•			١		436		
Stage 2	•	1			1		462	٠	
Approach	EB				WB		SW		
HCM Control Delay, s	0				0		22.1		
HCM LOS							ပ		
Minor Lane/Major Mvmt	EBL	EBT	WBT WB	WBRSWLn1					
Capacity (veh/h)	809	•		- 224					
HCM Lane V/C Ratio	0.003	•		- 0.062					
HCM Control Delay (s)	9.2	0		- 22.1					
HCM Lane LOS	A	A		ပ					
HCM 95th %tile Q(veh)	0			- 0.2					

HCM 2010 TWSC 29: Strathmore Dr/Lowrys Ln & Conestoga Rd

## 4.13 Wajort	Intersection												
## EBI EBI WBI WBI WBI NBI NBI NBI NBI NBI NBI NBI NBI NBI N		8											
## EBI EBI EBR WBI WBI WBR NBI NBI NBI NBI NBI NBI NBI NBI NBI NBI													
Majort   Majort   Majort   Minort   Majort   M	Movement	EBL	EBT	EBR	WBL	WBT		NBL		NBR	SBL	SBT	SBR
Free   Free   Free   Free   Free   Stop   Stop	Vol, veh/h	47	424	14	6		2	13	14	12	2	15	83
Free   Free   Free   Free   Free   Stop   Stop	Conflicting Peds, #/hr	0	0	0	0		0	0		0	0	0	0
## 1 None	Sign Control	Free			Free			Stop		Stop	Stop	Stop	Stop
## 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT Channelized		•	None	·		None		•	None			None
1, #         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         -         0         0         -         0         0         -         0         0         -         0         0         -         0         0         0         -         0	Storage Length			٠	·				•			•	Ċ
Najort   Najor   Naj	Veh in Median Storage, #		0		ľ	0			0			0	ľ
Majort	Grade, %	•	0	٠	·	0		•	0			0	ľ
Majort   Majort   Majort   Minort	Peak Hour Factor	8	80	8	8			80	8	8	80	8	80
Majort	Heavy Vehicles, %	3	3	co	60		3	33	3	3	3	33	co
Majori	Mvmt Flow	29	230	92	11		9	16	9	12	2	19	104
Majort													
583 0 0 548 0 0 1319 1261	Major/Minor	Major1			Major2			Minor1			Minor2		
1	Conflicting Flow All	583	0	0	548		0	1319	1261	539	1275	1267	579
4,13	Stage 1				ľ			929	929		602	602	ľ
4.13	Stage 2	•		٠	·			663	909		673	999	
2227	Critical Hdwy	4.13			4.13			7.13	6.53	6.23	7.13	6.53	6.23
10   12   12   12   13   15   13   15   15   15   15   15	Critical Hdwy Stg 1							6.13			6.13	5.53	
2227 2227 3527 4027 3 986 1016 133 461 986 1016 449 486 986 1016 449 486 987	Critical Hdwy Stg 2				·			6.13			6.13	5.53	
986 1016 133 169 1016 133 169 1016 1453 461 1016 453 461 1016 4453 461 1016 4453 461 1016 444 486 1016 1339 478 1016 1016 1016 359 1016 359 1016 359 1016 359 1016 359	Follow-up Hdwy	2.227		٠	2.227			3.527	4.027	3.327	3.527	4.027	3.327
NBLri   EBL   EBR   WBL   WBT   WBT   WBT     10   986   -	Pot Cap-1 Maneuver	986	•	٠	1016			133	169	541	143	168	513
10   10   10   10   10   10   10   10	Stage 1							453	461		485	487	
986   -   1016   -   89   152     -	Stage 2	'		٠	·			449	486		443	456	'
986     1016     89   152       -   -     -     89   152	Platoon blocked, %		1			•							
NBLn1   SEL   EBT   EBR   WEL   WFT   NBRn1     10   NBLn1   EEL   EBT   EBR   WEL   WFT   WBR   SELn1     150   986   - 1016   - 359     0.325   0.06   - 0.011   - 0.348     40.1   8.9   0   8.6   0   20.3     1   R   R   R   R   R   R   R   R   R	Mov Cap-1 Maneuver	986			1016	'		89		541	117	121	513
FB	Mov Cap-2 Maneuver	•		٠				89			117	151	
EB   WB   NB   NB   NB	Stage 1		1	٠				414			443	479	
Columbia   Columbia	Stage 2	•						339	478		377	417	
NBLnT   EBL EBT EBR WBL WBT WERSBLnT													
0.9 0.2  11 NBLn1 EBL EBT EBR WBL WBT WBR SBLn1 150 986 - 1016 - 359 0.325 0.06 - 0.011 - 0.348 40.1 8.9 0 - 86 0 - 20.3 E A A A A C C	Approach	EB			WE			NB			SB		
1 NBLn1 EBL EBT EBR WBL WBT WBR SE 150 986 - 1016 - 0. 0.325 0.06 - 0.011 - 0. 40.1 8.9 0 - 86 0 E A A A A A	HCM Control Delay, s	0.9			0.2			40.1			20.3		
11 NBLr1 EBL EBT EBR WBL WBT WBR SB 150 986 - 1016 - 0 0.325 0.06 - 0.011 - 0 40.1 8.9 0 - 8.6 0 - 0 E A A A A A A A A A A A A A A A A A A A	HCM LOS							ш			S		
NBLn1													
150 986 · · 1016 · · · 0.325 0.06 · · 0.011 · · · 0.01 · · · 0.011 · · · 0.011 · · · 0.011 · · · 0.011 · · · 0.011 · · · 0.011 · · · 0.011 · · · 0.011 · · · · 0.011 · · · · 0.011 · · · · · 0.011 · · · · · · · · · · · · · · · · · ·	Minor Lane/Major Mvmt	NBLn1	EBL				WBR SBL	n1					
0.325 0.06 - 0.0011	Capacity (veh/h)	150	986		- 1016		- 3	29					
40.1 8.9 0 - 8.6 0 - E A A - A A - 1.3 0.2 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -	HCM Lane V/C Ratio	0.325	90.0	٠	- 0.011		- 0.3	48					
13 02 - A	HCM Control Delay (s)	40.1	8.9	0	- 8.6			.3					
1.3	HCM Lane LOS	ш	A	⋖	۷ .			ပ					
	HCM 95th %tile Q(veh)	1.3	0.2		0			.5					

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	+	*	٤	_	\	4	
	-	-	ŗ	•	•	)	
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	
Lane Configurations	*			4	×		
Volume (vph)	347	113	167	309	159	101	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.967				0.948		
Flt Protected				0.983	0.970		
Satd. Flow (prot)	1801	0	0	1831	1713	0	
Flt Permitted				0.983	0.970		
Satd. Flow (perm)	1801	0	0	1831	1713	0	
Link Speed (mph)	30			30	30		
Link Distance (ft)	295			1901	824		
Travel Time (s)	6.7			43.2	18.7		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	
Adj. Flow (vph)	381	124	184	340	175	111	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	202	0	0	524	286	0	
Enter Blocked Intersection	No	No	N <sub>o</sub>	No No	9	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			0	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		6	15		15	6	
Sign Control	Free			Stop	Stop		
Intersection Summary							
Area Type: Ot	Other						
Control Type: Unsignalized							
Intersection Capacity Utilization 75.6%	on 75.6%			2	U Level o	ICU Level of Service D	

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Lanes, Volumes, Timings 2: County Line Rd & N Ithan Ave

~	NWR		255	1900	1.00			0		0				0.94	271		0	No	Right					1.00	6					ICU Level of Service C	
€	NWL		88		1.00	0.882	0.994	1633	0.994	1633	30	2020	42.9	0.94	40		311		Left	12	0	10		_	15	Stop				CU Level o	
*	SBR		349					0		0				0.94	371		0		Right					1.00	6						
_≉	SBL		141			0.904	0.986	1660	0.986	7	30	295	6.7	0.94					Left		0	10		1.00	15	Free					
۴	EBR		15		1.00			0		0				0.94	16		0	No	Right					1.00	6						
1	EBL	>	208	1900	1.00	0.991	0.955	1763	0.955	1763	30	973	22.1	0.94	221		237	N	Left	22	0	10		1.00	15	Stop		Other		9.69 uoi	
	Lane Group	Lane Configurations	Volume (vph)	Ideal Flow (vphpl)	Lane Util. Factor	Frt	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Link Speed (mph)	Link Distance (ft)	Travel Time (s)	Peak Hour Factor	Adj. Flow (vph)	Shared Lane Traffic (%)	Lane Group Flow (vph)	Enter Blocked Intersection	Lane Alignment	Median Width(ft)	Link Offset(ft)	Crosswalk Width(ft)	Two way Left Turn Lane	Headway Factor	Turning Speed (mph)	Sign Control	Intersection Summary	Area Type:	e: Unsignalized	Intersection Capacity Utilization 69.6%	Analysis Period (min) 15

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HCM 2010 I WSC	53: County Line Rd & Lowrys Ln

3/9/2015

Movement         EBL         EBR         NBL         NBT         SBR         SBR           Oxulficing Peds, #Irr         61         81         58         238         150         31           Oxulficing Peds, #Irr         0         0         0         0         0         0         0           Sign Contiol         Stop         Free         Free <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>									
## CEBL EBR NBL NBT SBT SBT CBT CBT CBT CBT CBT CBT CBT CBT CBT C									
Minor2   81	Movement	EBL	EBR	Z		BT	SBT	SBR	
Slop   Slop   Free   Free	Vol, veh/h	19	81			238	150	31	
Slop   Slop   Free   Free   Free	Conflicting Peds, #/hr	0	0			0	0	0	
# 0	Sign Control	Stop	Stop			ree	Free	Free	
# 0	RT Channelized		None		ž	ne	•	None	
# 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Storage Length	0			ì		•		
NBL NBT EBLn1 SBT SBR   NB	Veh in Median Storage, #	0	•			0	0		
NINGLE   ST   ST   ST   ST   ST	Grade, %	0	•			0	0		
Minor 2	Peak Hour Factor	87	87		87	87	87	87	
Minor 2 Major 1 Major 2 Major 2 Major 2 Major 2 Major 1 Major 2 Major 1 Major 2 Major	Heavy Vehicles, %	0	0		0	0	0	0	
Minor2         Mejor1         Major2           597         190         -         -           190         -         -         -           407         -         -         -           6.4         6.2         4.1         -         -           5.4         -         -         -         -           5.4         -         -         -         -           5.4         -         -         -         -           6.4         6.2         4.1         -         -           647         -         -         -         -           647         -         -         -         -           647         -         -         -         -           647         -         -         -         -           847         -         -         -         -           847         -         -         -         -           847         -         -         -         -           837         -         -         -         -           84         -         -         -         -           1335 <td>Mvmt Flow</td> <td>70</td> <td>93</td> <td></td> <td></td> <td>274</td> <td>172</td> <td>36</td> <td></td>	Mvmt Flow	70	93			274	172	36	
## 17   190	Major/Minor	Minor		M	7		Major	ı	
957 170 208 0	Mejorining	20111012	007	INIG	5 8		NIGJOI 2		
6.4 6.2 4.1	Conflicting Flow All	267	061.		88	0		0	
407	Stage 1	061	•						
6.4 6.2 4.1	Stage 2	407	•		ì		•		
5.4	Critical Hdwy	6.4	6.2		4.1		•		
5.4	Critical Hdwy Stg 1	5.4	•		ì		•		
3.5   3.3   2.2	Critical Hdwy Stg 2	5.4			,		٠		
469   857   1375	Follow-up Hdwy	3.5	3.3		2.2		٠		
847	Pot Cap-1 Maneuver	469	857	=======================================	375				
676	Stage 1	847			ì		٠		
442 857 1375	Stage 2	919							
442   857   1375	Platoon blocked, %						•		
442	Mov Cap-1 Maneuver	442	857	13	375				
847	Mov Cap-2 Maneuver	442	•		ì		•		
EB NB S  13 15 8  NBL NBTEBL1 SBT SBR  137 - 611 0.048 - 0.267 7.8 0 13	Stage 1	847	•						
EB NB 15 13 15 8 NBL NBTEBL11 SBT SBR 1375 - 611	Stage 2	637	•		ï				
EB NB 13 1.5  B 1.5  B 1.5  NBL NBTEBLn1 SBT SBR 1375 . 611									
13 1.5 B NBL NBTEBLn1 SBT SBR 1375 . 611 0.048 . 0.267 7.8 0 13	Approach	EB			NB		SB		
NBL NBT EBLn1 SBT 1375 - 611 - 0.048 - 0.267 - 7.8 0 13 -	HCM Control Delay, s	13			1.5		0		
NBL NBT EBLn1 SBT 1375 - 611 - 0.048 - 0.267 - 7.8 0 13 - 0.048 - 0.04	HCM LOS	Ω							
1375 - 611 0.048 - 0.267 7.8 0 13 A A B	Minor Lane/Major Mvmt		BT EBLn1		BR				
0.048 - 0.267 7.8 0 13 A A B	Capacity (veh/h)	1375	- 611	١.	١.				
7.8 0 13 A A B	HCM Lane V/C Ratio	0.048	0						
A A S	HCM Control Delay (s)	7.8							
	HCM Lane LOS	?: ◘							
	TOWN Lance LOS	C							

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HCM 2010 TWSC 52: Airdale Rd & County Line Rd

HCM 2010 TWSC 43: County Line Rd & Roberts Rd

3/9/2015

Int Delay skyeh	4							
Cody, Stories								
Movement	EBL	EBT			WBT WBR	WBR	SBL	SBR
Vol. veh/h	203	220			288	70	15	86
Conflicting Peds, #/hr	0	0			0	0	0	0
Sign Control	Free	Free			Free	£	Stop	Stop
RT Channelized	ľ	None			ľ	None		None
Storage Length	•	٠			1		0	
Veh in Median Storage, #	ľ	0			0		0	
Grade, %	•	0			0		0	
Peak Hour Factor	88	88			88	88	88	88
Heavy Vehicles, %	_	<del>-</del>			<del></del>	_	-	<b>—</b>
Mvmt Flow	231	250			327	23	17	111
Major/Minor	Major1				Major2		Minor2	
Conflicting Flow All	350	0				0	1050	339
Stage 1							339	
Stage 2	•				•		711	
Critical Hdwy	4.11	•					6.41	6.21
Critical Hdwy Stg 1	•	•			•		5.41	
Critical Hdwy Stg 2	•	•			•		5.41	
Follow-up Hdwy	2.209	•			•		3.509	3.309
Pot Cap-1 Maneuver	1214	•			•		253	706
Stage 1	•	•			•		724	
Stage 2	•	•			•		489	
Platoon blocked, %		•			•			
Mov Cap-1 Maneuver	1214	1			•		197	706
Mov Cap-2 Maneuver	•	•			•		197	
Stage 1		•			•		724	
Stage 2	•	•			•		381	
Approach	EB				WB		SB	
HCM Control Delay, s	4.2				0		14	
HCM LOS							В	
Minor Lane/Major Mvmt	EBL	EBT	WBT V	WBR SBLn1				
Capacity (veh/h)	1214	٠		- 526				
HCM Lane V/C Ratio	0.19	1	٠	- 0.244				
HCM Control Delay (s)	8.7	0		- 14				
HCM Lane LOS	A	A						
				1				

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	19	100	8	2	23	9	14	619	79	8	473	~
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	ľ
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized			None		'	None	ľ	'	None			None
Storage Length	٠				•	٠		•			٠	
Veh in Median Storage, #		0			0	٠	ľ	0			0	
Grade, %	٠	0			0	•	İ	0		•	0	
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2		2	2	2	2	2	2	
Mvmt Flow	76	114	6	2	26	7	16	703	99	6	538	43
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	974	1342	290	1094	1349	366	581	0	0	733	0	
Stage 1	577	211		750	750	٠		•			٠	
Stage 2	397	765		344		•		•				
Critical Hdwy	7.54	6.54	6.94	7.54		6.94	4.14	•		4.14	•	
Critical Hdwy Stg 1	6.54	5.54		6.54				•				
Critical Hdwy Stg 2	6.54	5.54		6.54		٠		•				
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	•		2.22		
Pot Cap-1 Maneuver	206	151	707	168	149	631	686	•		898		
Stage 1	469	200		369	417	1		•		•	•	
Stage 2	009	410		645	489	٠		•			٠	
Platoon blocked, %								•			1	
Mov Cap-1 Maneuver	170	145	707	57		631	686	•		898	1	
Mov Cap-2 Maneuver	170	145		22		•		•		•		
Stage 1	456	493		329		٠		•				
Stage 2	540	399		483	482	•		•		•	1	
Approach	EB			WB			NB			SB		
HCM Control Delay, s	206.9			35.9			0.3			0.2		
HCM LOS	ш			Е								
Minor Lane/Major Mvmt	NBL	NBT	NBR EBLn1WBLn1	n1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	686		- 1	160 151	898	٠						
HCM Lane V/C Ratio	0.016	•	- 1.2	1.243 0.233	0.01	•						
HCM Control Delay (s)	8.7	0.1	- 206.9	.9 35.9	9.5	0.1						
HCM Lane LOS	A	V		F	V	⋖						

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

	`	ĭ	Ť	•	4	•	,		ļ	-	-	-
Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Lane Configurations		k2	‡		*		je s	<b>₩</b>				4
Volume (vph)	4	249	1007	31	282	2	72	893	33	7	25	0
ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	= è	=	14	10	12	15	12	10	10	10
Grade (%)		000	3%	c			7.5	%7-			c	8
Storage Length (II)		300		o -			73				0	
Storage Lanes		- Ł		-			- 5				O F	
l aper Length (π)	i c	2 2	L	L	6	i c	722	C	L		722	
Lane Util. Factor	0.95	90:1	0.95	0.95	00.1	0.95	00.L	0.95	0.95	00.1	00.1	1.00
TH. D		0	0.3%		0.850		0	0.995				0.975
Fit Protected	c	0.950	00.50	c	15.77	c	0.950	0200	c	•	c	0.90
Satd. Flow (prot)	0	1541	3180	0	15/6	0	1693	33/0	0	0	0	1536
Fit Permitted	c	167	2100	c	1574	c	161.0	OFCC	c	c	c	1202
Satu: Flow (pellin)	>	101	3100	0	0/01	0	240	22/0	0 00/	>	0	1203
Right full of Red					25.0			,0,	£			
Sata. Flow (RTUR)			Ļ		577			96				Ľ
Link speed (mpn)			8 [					35				27
Link Distance (ft)			211					864				492
I ravel Time (s)			11.2					16.8				13.4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	257	1038	32	291	2	23	921	34	7	24	0
Shared Lane Traffic (%)	c	177	0507	c	200	c	Ľ	2	c	c	c	12
Enter Blocked Intersection	2	N N	200	2	- N	2	C 2	200	2	2 2	2	S N
ane Alignment	₽ <del>J</del>	₽ T	g <del>t</del> a	Right	Right	₽ <del> </del>	₽ <del> </del>	₽ <del> </del>	Right	P He	P #4	₽ F
Median Wirdth (ft)	i	i	12	6	i n	Š	i	12	50	i		
Link Offset(ft)			<u> </u>					2 0				0 0
Crosswalk Width (ft)			10					10				10
Two way Left Turn Lane			:					!				
Headway Factor	1 19	1.19	114	1.14	101	1.16	106	106	106	118	118	118
Turning Speed (mph)	. 1	. 12		0	0	5 5	5 5	2	0	15	15	
Number of Detectors	2 -	<u> </u>	-	`	-	2 -	2 -	-	`	2 -	<u> </u>	
Detector Template	Left	Left	Thru		Right	Left	Left	Thru		Left	Left	Thru
Leading Detector (ft)	20	37	37		37	20	37	37		20	20	37
Trailing Detector (ft)	0	ကု	ကု		ကု	0	ကု	ကု		0	0	ကု
Detector 1 Position(ft)	0	ကု	ကု		ကု	0	ကု	ç٠		0	0	-3
Detector 1 Size(ft)	20	40	40		40	20	40	40		20	20	40
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	pm+pt	Ä		Perm	Perm	Perm	Ν		Perm	Perm	¥
Protected Phases	2	2	2					9				10
Permitted Phases	2	2			2	9	9			10	10	
Detector Phase	2	2	2		2	9	9	9		10	10	10
Switch Phase							į					
Minimum Initial (s)	3.0	3.0	15.0		15.0	15.0	15.0	15.0		3.0	3.0	3.0

Minimum Split (s) 13.0 13.0 21.0 21.0 21.0 21.0 21.0 13.0 13.0 13.0 B 18 pm 971 6/2014 Baseline Synchro 8 Report Page 1

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0 No Right 1.14 1800 21 Thru 37 -3 -3 40 CI+Ex 40 1336 22.8 0.97 115 3.0 1640 1640 0.0 0.0 NA 8 0.950 1651 0.108 188 1.09 15 16 17 16 17 37 -3 -3 -3 -40 CI+Ex 1.00 0.97 0.0 0.0 0.0 pm+pt 3.0 197 No Left Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave Left 8 o 0.0 0.0 0.0 pm+pt 191 1.00 761 3.0 0 1.00 1.15 1.00 Thru 37 -3 -3 40 CI+Ex 1800 10 -3% 25 597 16.3 0.97 3.0 1.00 0.879 0.995 1462 0.982 1443 0.0 0.0 NA 9 0 0 20 CI+Ex 3.0 0 Left 8 o 0.97 0.0 0.0 Perm 1.15 15 16 16 20 0 0 0 20 20 CI+Ex 3.0 1800 0 0 0.0 0.0 0.0 1.00 ٤ 0.97 1.00 100 0 1.18 00.1 Fit Protected Sauf. Frow (prot)
Fit Permitted Sauf. Frow (prot)
Fit Permitted Sauf. Frow (prot)
Right Turn on Red Sauf. Frow (RTOR)
Link Speed (mph)
Link Disance (f)
Travel Time (s)
Fave Hour Factor
Ad; Flow (ph)
Shared Lane Traffic (%)
Lane Group Frow (ph)
Enter Blocked Intersection
Lane Group Frow (ph)
Link Offset (fit)
Cosswalk width(f)
Cursswalk width(f)
Two way Left Turn Lane
Headway Factor Leading Detector (f)
Trailing Detector (f)
Detector 1 Position(f)
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Dete Turning Speed (mph)
Number of Detectors
Detector Template Lanes onfigurations Volume (vph) Grade (%)
Storage Length (ft)
Storage Lanes
Taper Length (ft)
Lane Util. Factor Switch Phase Minimum Initial (s) Turn Type Protected Phases Ideal Flow (vphpf) Lane Width (ft)

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

Stane Group  Lane Configurations  Lane Configurations  39  deal Flow (uphp)  1800  Grade (%)  Storage Lanes  Storage Lanes  Taber Length (f)  Tane Util Factor  Fit  The Protected  Salat Flow (pron)  Solat Flow (prem)  The Configuration of t	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1			235 1800 10	SWR2 1 1800	
			_	235 800 10	1	
				235 300 10	1800	
				300	1800	
<del>-</del>				10		
					10	
				0		
				0		
I-Protected std. Flow (prot) Permitted std. Flow (perm) std. Flow (perm)			12	1.00	1.00	
Protected  Itd. Flow (pro!) Permitted  Itd. Flow (perm)  ght Turn on Red  st Elow, (PSTO D)			E C			
itd. Flow (prot) Pemilited td. Flow (perm) td. Flow (perm)			20			
Permitted  Itd. Flow (perm)  ght Turn on Red			22	0	0	
itd. Flow (perm) ght Turn on Red						
ght Turn on Red			1555	0	0	
to Flow (DTOD)					No	
III. LIOW (NION)						
Link Speed (mph)			25			
Link Distance (ft)			3168			
Fravel Time (s)			86.4			
or	76.0			0.97	76.0	
		_		242		
affic (%)						
Lane Group Flow (vph)	0	49 4	414	0	0	
ion	_		9	9	No	
Γ	Γ		Left Ri		Right	
					,	
Link Offset(ft)			0			
Crosswalk Width(ft)			10			
Iwo way Left Turn Lane			2			
	1 12 1 12		1 12 1	112	112	
hac				2 0	2	
Lanting Speed (Inpli)		0 -	-	4	h	
	- Hoff		- LP41			
_			27			
			2			
Halling Detector (II)		٠ د	٠ د			
			? \$			
			9-1			
Defector Liype CI+EX	EX CI+EX	X CI+EX	EX			
			0.0			
			0.0			
Delay (s)			0.0			
Turn Type Perm	m Perm		NA			
Protected Phases			4			
Permitted Phases	4	4				
Detector Phase	4	4	4			
Switch Phase						
Minimum Initial (s)			3.0			
Winimum Split (s) 13	13.0 13.0		13.0			

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Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

3/10/2015

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Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Total Split (s)	24.0	24.0	65.0		65.0	41.0	41.0	41.0		14.0	14.0	14.0
Total Split (%)	16.0%	16.0%	43.3%		43.3%	27.3%	27.3%	27.3%		9.3%	9.3%	9.3%
Maximum Green (s)	18.0	18.0	29.0		26.0	35.0	35.0	35.0		8.0	8.0	8.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				0.5
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				6.5
Lead/Lag	Lead	Lead				Lag	Lag	Lag		Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None		None	None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		28.6	28.6		28.6		34.6	34.6				7.5
Actuated g/C Ratio		0.40	0.40		0.40		0.24	0.24				0.02
v/c Ratio		1.13	0.83		0.38		0.31	1.00				1.21
Control Delay		137.6	46.2		9.3		29.8	72.8				236.1
Queue Delay		0.0	0.0		0.0		0.0	0.0				0.0
Total Delay		137.6	46.2		9.3		29.8	72.8				236.1
ros		ш	٥		⋖		ш	ш				ш
Approach Delay			54.3					72.5				236.1
Approach LOS			٥					ш				ш
Queue Length 50th (ft)		~260	204		42		21	~443				~61
Queue Length 95th (ft)		#447	603		114		24	#582				#205
Internal Link Dist (ft)			497					784				412
Turn Bay Length (ft)		300					75					
Base Capacity (vph)		230	1287		177		8	954				62
Starvation Cap Reductn		0	0		0		0	0				0
Spillback Cap Reductn		0	0		0		0	0				0
Storage Cap Reductn		0	0		0		0	0				0
Reduced v/c Ratio		1.13	0.83		0.38		0.31	1.00				1.21
Intersection Summary												
	Other											
Cycle Length: 150												
Actuated Cycle Length: 144.8												
Natural Cycle: 150	La de la Constantina											
Control Type: Actuated-Uncoordinated	ordinated											
Maximum v/c Ratio: 1.21				•								
Intersection Signal Delay: 77.1	07 /1/ ===			= 5	Intersection LOS: E	LOS: E	=					
Intersection Capacity Utilization 116.7%	7/ 01 I II	0		2	IOU Level OI Service H	n service	E					
Analysis Period (min) 15	-											
<ul> <li>Volume exceeds capacity, queue is theoretically infinite.</li> </ul>	, queue is	theoretic	ally infinit	a;								
# OEth perceptile volume exceeds capacity of	alter two	cycles.	Year ollo	or long								
A 15th perceitile volume exceeds capacity, queue may be followed:  One to shown is maximing after two cycles	recus cal	ovelly, yu	cue may	ne iorige								
Check Showing Indonesia	alto me	cyarcs.										

3/10/2015

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave	n/Kenilworth Rd & Lancaster /	Ave		3/10/2015
Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave	n Ln/Kenilworth Rd & Lancaster Ave			
	<b>★ * * * * * * *</b>		60	≠ ø10
65 s	16 s 42 s		13.5	14 s
90 <u>4</u>	89			
24 s 41 s	288			

Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

Lane Group	NBR NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	NEL .	, E	NER
Total Split (s)		13.0	13.0	13.0			16.0	16.0	58.0	
Total Split (%)		8.7%	8.7%	8.7%			10.7%	10.7%	38.7%	
Maximum Green (s)		7.0	7.0	7.0			10.0	10.0	52.0	
Yellow Time (s)		3.0	3.0	3.0			4.0	4.0	4.0	
All-Red Time (s)		3.0	3.0	3.0			2.0	2.0	2.0	
Lost Time Adjust (s)				0.5				0.5	0.5	
Total Lost Time (s)				6.5				6.5	6.5	
Lead/Lag		Lead	Lead	Lead			Lead	Lead		
Lead-Lag Optimize?										
Vehicle Extension (s)		3.0	3.0	3.0			3.0	3.0	3.0	
Recall Mode		None	None	None			None	None	None	
Walk Time (s)									7.0	
Flash Dont Walk (s)									25.0	
Pedestrian Calls (#/hr)									0	
Act Effct Green (s)				6.1				51.6	51.6	
Actuated g/C Ratio				0.04				0.36	0.36	
v/c Ratio				0.32				1.21	0.23	
Control Delay				83.2				171.1	35.2	
Queue Delay				0.0				0.0	0.0	
Total Delay				83.2				171.1	35.2	
FOS				ш				ш	۵	
Approach Delay				83.2					115.3	
Approach LOS				ı.					ш	
Queue Length 50th (ft)				18				~186	%	
Queue Length 95th (ft)				48				#322	153	
Internal Link Dist (ft)				217					1256	
Turn Bay Length (ft)								200		
Base Capacity (vph)				64				163	584	
Starvation Cap Reductn				0				0	0	
Spillback Cap Reductn				0				0	0	
Storage Cap Reductn				0				0	0	
Reduced v/c Ratio				0.30				1.21	0.23	

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Lanes, Volumes, Timings 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

	•	<b>\</b>	×	<b>&gt;</b>	4	
Lane Group	SWL2	SWL	SWT	SWR	SWR2	
Total Split (s)	42.0	42.0	42.0			
Total Split (%)	28.0%	28.0%	28.0%			
Maximum Green (s)	36.0	36.0	36.0			
Yellow Time (s)	4.0	4.0	4.0			
All-Red Time (s)	2.0	2.0	2.0			
Lost Time Adjust (s)		0.5	0.5			
Total Lost Time (s)		6.5	6.5			
Lead/Lag	Lag	Lag	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	None	None	None			
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)		32.6	35.6			
Actuated g/C Ratio		0.25	0.25			
v/c Ratio		0.18	1.08			
Control Delay		47.0	121.1			
Queue Delay		0.0	0.0			
Total Delay		47.0	121.1			
SOT		Ω	ш			
Approach Delay			113.3			
Approach LOS			ш			
Queue Length 50th (ft)		36	~467			
Queue Length 95th (ft)		78	#682			
Internal Link Dist (ft)			3088			
Turn Bay Length (ft)		120				
Base Capacity (vph)		279	382			
Starvation Cap Reductn		0	0			
Spillback Cap Reductn		0	0			
Storage Cap Reductn		0	0			
Reduced v/c Ratio		0.18	1.08			
Intersection Summary						

+	7
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lane Groun	FRT	FRD	WRI	WRT	NRI	NRP	
Lane Configurations	4	ř.	¥	WW.	X	NO.	
Volume (ymh)	1176	- 5-	34	851	- 6	16	
Ideal Flow (vohol)	1800	1800	1800	1800	1800	1800	
Lane Width (ft)	1	1	1	1	12	12	
Storage Length (ft)		125	125		0	0	
Storage Lanes		<del>-</del>	_		2	0	
Taper Length (ft)			22		25		
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	0.95	
Frt		0.850	010		0.978		
Satd Flow (prof.)	3241	1450	1621	3241	3211	c	
Fit Permitted	170	201	0.195	170	0.959	>	
Satd. Flow (perm)	3241	1450	333	3241	3211	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		33			17		
Link Speed (mph)	32			35	25		
Link Distance (ft)	542			1488	319		
Travel Time (s)	10.6			29.0	8.7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1278	34	37	925	66	17	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1278	34	37	925	116	0	
Enter Blocked Intersection	2	N	N <sub>o</sub>	No	N <sub>o</sub>	8	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	Ξ			Ξ	24		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane							
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07	
Turning Speed (mph)		6	12		12	6	
Number of Detectors	-	-	-	-	-		
Detector Template	Thru	Right	Left	Thru	Left		
Leading Detector (II)	3/	07	07	3/	3/		
Ifalling Detector (II)		0	0 0				
Detector I Position(rt)	Δ (	0 8	0 8	ئ ڈ			
Detector   Size(rt)	40	07	07 50	40	40		
Detector 1 Type	CHEX	CIFEX	CIFEX	CI+EX	CI+EX		
Detector 1 Chammel	c	c	c	c	0		
Detector 1 Exterior (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Turn Type	NA	Perm	Perm	NA	Prot		
Protected Phases	2	5	5	9	00		
Permitted Phases		2	9				
Detector Phase	2	2	9	9	00		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0		
Minimum Split (s)	21.0	21.0	21.0	21.0	28.0		
Total Split (c)	32.0	32.0	32.0	32.0	28.0		

Lanes, Volumes, Timings 11: Chapel Dr & Lancaster Ave

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Turn Bayle (%)   Stage		3.3% 27.0 3.0	EBR	WBL	WRT		
Spit (%) 53.3% 53.3% 53.3% 53.3% 53.3% num Green (\$) 27.0 27.0 27.0 27.0 27.0 27.0 27.0 27.0		3.3% 27.0 3.0			-	NBL	NBR
num Green (s) 27.0 27.0 27.0 27.0 4 Time (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0		3.0	53.3%	53.3%	53.3%	46.7%	
av Time (s) 3.0 3.0 3.0 3.0 3.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4		3.0	27.0	27.0	27.0	23.0	
ad Time (s) 2.0 2.0 2.0  Irma Adjust (s) 0.5 0.5 0.5 0.5 0.5  Lost Time (s) 5.5 5.5 5.5 5.5 5.5 5.5  Lag Optimize? 3.0 3.0 3.0 3.0  Il Mode (s) 10.0 10.0 10.0 10.0  Il Mode (s) 10.0 10.0 10.0 10.0 10.0  Il Mode (s) 10.0 10.0 10.0 10.0 10.0 10.0  In Mode (s) 10.0 10.0 10.0 10.0 10.0 10.0  In Mode (s) 10.0 10.0 10.0 10.0 10.0 10.0  Interest (s) 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.		c	3.0	3.0	3.0	3.0	
Time Adjust (s)   0.5		7.0	2.0	2.0	2.0	2.0	
Lost Time (s) 5.5 5.5 5.5 5.5 14.9  Lagoun Surmany  Le Legon Surmany  Le Legon Surmany  Le Legon Surmany  Le Legon Surmany  Le Legon Surmany  Le Legon Surmany  Le Legon Surmany  Le Legon Surmany  Le Legon Surmany  Le Legon Surmany  Le Legon Surmany  Le Legon Surmany  Le Cale Cale Cale Cale Cale Cale Cale Cal		0.5	0.5	0.5	0.5	0.5	
Lag Characteristics		5.5	5.5	5.5	5.5	5.5	
Lag Optimize?  Lag Optimize?  Lag Optimize?  Linne (s)  Linne (s)  Lon 1,00  Lon 1,00  Lon 1,00  Lon 1,00  Lon 1,00  Lon 1,00  Lon 1,00  Lon 1,00  Lon 0  Lo							
In Marce							
Mode   C-Max C-M	Œ	3.0	3.0	3.0	3.0	3.0	
Time (s) 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.	(J			C-Max	C-Max	None	
Dont Walk (s)	lash Dont Walk (s) edestrian Calls (#/hr)	10.0	10.0	10.0	10.0	7.0	
strian Calls (#hr) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	edestrian Calls (#/hr)	0.0	0.0	0.0	0.0	16.0	
fict Green (s) 45.4 45.4 45.4 45.4 45.4 45.4 45.4 45.	()	0	0	0	0	0	
Ited g/c Ratio         0.76         0.76         0.76         0.76         0.76         0.76         0.76         0.78         0.78         0.35         0.30         0.15         0.38         0.30		45.4	45.4	45.4	45.4	6.9	
atio 0.52 0.03 0.15 0.38 ol Delay 0.10 0.00 0.00 0.00 0.00 0.00 0.00 0.0		97.0	0.76	0.76	0.76	0.12	
e Delay 5.1 1.5 1.4 0.8 e Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		0.52	0.03	0.15	0.38	0.30	
Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	ontrol Delay	2.1	1.5	1.4	8.0	22.7	
Delay 5.1 1.5 1.4 0.8  A A A A A A A A A A A A A A A A A A A	ueue Delay	0.0	0.0	0.0	0.0	0.0	
aed Delay 5.1 0.8  aech Delay 5.1 0.8  aech Delay 5.1 0.8  be Length 50th (ft) 91 0 1 8  e Length 50th (ft) 97 0 1 8  e Length 50th (ft) 462 1406  Capacity (with) 2450 1104 251 2450  Capacity (with) 2450 1104 251 2450  allon Cap Reductn 0 0 0 0 0  ed VC Ratio 0 0 0 0 0  ed VC Ratio 0 0 0 0 0  ed VC Ratio Other 15 0.03 0.15 0.38  Length: 60  Length: 60  Length: 60  Length: 60  Length: 60  Louis Assal, Referenced to phase 2:EBT and 6:WBTL, Start al Cycle: 60  edition Signal Delay: 4.2  edition Signal Delay: 4.2  edition Signal Delay: 4.2  edition Signal Delay: 4.2  edition Signal Delay: 4.2  edition Signal Delay: 4.2	otal Delay	5.1	1.5	1.4	8.0	22.7	
pproach Delay 5.1 0.8 22.7  A A C  A C  A A C  A C  A C  A C  B 1 8 17  B 12  B 17  B 18  B 17  B 18  B 17  B 18  B 17  B 18  B 17  B 18  B 17  B 18  B 17  B 18  B 17  B 18  B 17  B 18  B 17  B 18  B 17  B 18  B 17  B 18  B 17  B 18  B 17  B 18  B 17  B 18  B 17  B 18  B 18  B 19  B 18  B 19  B 18	SC	A	4	A	A	ပ	
A CANADA	oproach Delay	5.1			8.0	22.7	
ueue Length 50th (ft) 91 0 1 8 17  ueue Length 50th (ft) 152 6 m1 m10 36  ueue Length 78th (ft) 152 6 m1 m10 36  Inna Length 78th (ft) 462 125  Inna Length 78th (ft) 462 125  Inna Length 78th (ft) 462 125  Inna Length 78th (ft) 462 125  Inna Length 78th (ft) 462 125  Inna Length 78th (ft) 125  Inna Length 78th (ft) 125  Inna Length 78th (f	pproach LOS	A			⋖	ပ	
lemal Link Dist (ii) 152 6 m1 m10 36 lemal Link Dist (ii) 462 175 1408 239 lemal Link Dist (ii) 462 175 125 126 lemal Link Dist (iii) 2450 1104 251 2450 1214 lasse Capacity (vph) 2450 1104 251 2450 1214 lasse Capacity (vph) 2450 1104 251 2450 1214 lasse Capacity (vph) 2450 1104 251 2450 1214 lasset Capacity (vph) 2450 1104 251 2450 1214 lasset Capacity Ullization 46 8% Intersection LOS: A lessection Signal Delays 4.2 Intersection Capacity Ullization 46 8% ICU Level of Service A	nene Length 50th (ft)	16	0	<del>-</del>	∞	17	
The control of the	ueue Length 95th (ft)	152	9	E E	m10	36	
ase Capacity (ph) 125 125 1240 1214  sse Capacity (ph) 2450 1104 251 2450 1214  sse Capacity (ph) 2450 1104 251 2450 1214  and and and and and and and and and and	ternal Link Dist (ft)	462			1408	239	
ase Capacity (vph)         2456         1104         251         2450         1214           arvation Cap Reductin         0         0         0         0           librack Cap Reductin         0         0         0         0           orage Cap Reductin         0         0         0         0           orage Cap Reductin         0         0         0         0           orage Cap Reductin         0.52         0.03         0.15         0.38         0.10           tested of Vice Ratio         0.52         0.03         0.15         0.38         0.10           tested tength: 60         0         0         0         0         0         0           yole Length: 60         0         0         0         0         0         0         0           fiset 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow         1         0			125	125			
anvailor Cap Reductin 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		2450	1104	251	2450	1214	
Indipack Cap Reductin	larvation Cap Reductn	0	0	0	0	0	
orage Cap Reductin 0 0 0 0 0 0  educed vic Ratio 0.52 0.03 0.15 0.38 0.10  elesection Summary  ea Type:  ea Type:  yote Length: 60  fifest 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow atural Cybe: 60  ontrol Type: Actualed-Coordinated  availing vic Referenced to the start of Yellow filesection Signal Delay: 4.2 Intersection LOS: A  let section Capacity Utilization 46.8% ICU Level of Service A	pillback Cap Reductn	0	0	0	0	0	
tersection Summary  rea Type: Other  rea Type: Ofter Cycle Length: 60 Ifset 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow ontrol Type: Actualed-Coordinated antario Cycle: 60 Intersection Signal Delay: 4.2 Intersection LOS: A Intersection LOS: A Intersection LOS: A Intersection LOS: A Intersection LOS: A Intersection LOS: A Intersection LOS: A Intersection LOS: A		0	0	0	0	0	
tersection Summary  Other  yole Length: 60  If Set 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow  If Set 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow  ontrol Type: 60  ontrol Type: 60  Intersection Signal Delay: 4.2  Intersection LOS: A  Intersection LOS: A  Intersection LOS: A  ICU Level of Service A		0.52	0.03	0.15	0.38	0.10	
rea Type: Other Clasted Cycle Length: 60 clasted Cycle Length: 60 clasted Cycle Length: 60 altural Cycle. 60 ontrol Type: Actuated-Coordinated asturn Vic Ratio. 6.2 Intersection Signal Delay: 4.2 Intersection LOS: A Intersection Capacity Utilization 46.8% ICU Level of Service A	itersection Summary						
ycle Length: 60 rubardo Cybe Length: 60 atural Cycles (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow atural Cycle: 60 ontrol Type: Actuated-Coordinated aximum vic Ratio: 0.52 Intersection Signal Delay, 4.2 Intersection Capacity Utilization 46, 8% ICU Level of Service A	,	 					
Strated Cycle Length: 60  Thet 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow atural Cycle: 60 aximum Vic Ratio: 0.52 Intersection Signal Delay: 4.2 Intersection LOS: A Intersection Action of the Strate Action	ycle Length: 60						
Tifset 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow atural Cycle: 50 ontrol Type. Actualed-Coordinated area without W Ratio: 0.52 Intersection Signal Delay: 4.2 Intersection LOS: A Intersection Capacity Utilization 46.8% ICU Level of Service A	ctuated Cycle Length: 60						
%5	ffset: 26 (43%), Referenced to	phase	2:EBT an	d 6:WBT	L, Start o	l Yellow	
%	atural cycle; ou						
.4.2 ization 46.8%	ontrol Type: Actuated-Coordina	ated					
: 4.2 Ization 46.8%	aximum v/c Ratio: 0.52						
ization 46.8%	itersection Signal Delay: 4.2				1	ersection	LOS: A
and with Daries of (min) 15	tersection Capacity Utilization	46.8%			೨	U Level o	if Service A
	Analysis Period (min) 15						

Spilis and Phases: 11: Chapel Dr & Lancaster Ave	
<b>→</b> Ø2 (R)	
32.5	
▼ • 66(R)	88
32 s	285
-	Page 2

Thru 37 -3 -3 40 CI+Ex 3.0 0.0 0.0 NA 4 328 No 12 12 0 25 973 26.5 0.95 208 1.17 15 11 16 17 37 37 37 -3 40 CI+Ex 0.950 1565 0.480 791 3.0 1.00 0.95 123 No Left 0.0 0.0 Perm 0 2 No No Right 78 1800 0 0.95 Thru
37
-3
-3
40
CI+Ex 122 1800 10 1% 1542 25 344 9.4 0.95 128 210 No No 12 12 10 3.0 0.0 0.0 NA 8 0.0 0.0 Perm No Left 190 1 25 1.00 0.950 1557 0.241 395 0.95 3.0 0 0.95 1 Thru 37 -3 -3 40 CI+Ex 0.95 34.0 35 265 5.2 0.95 725 766 No No 11 11 10 0.0 0.0 NA 6 45 689 1800 10 3% 3058 0.0 0.0 0.0 pm+pt 0.950 1541 0.099 161 1.19 15 16ff 37 37 -3 -3 40 CHEX 3.0 250 1 25 1.00 62 1800 10 0.95 65 No Left No No Right 0 0 2 1 Thru 37 -3 -3 40 CHEX 1001 1800 1000 1000 3089 0.95 34.0 35 1488 29.0 0.95 1054 1150 No Left 11 0 0.0 0.0 NA 2 0.950 1565 0.244 402 1.17 15 16ft 37 37 -3 -3 -40 CHEX 0.0 0.0 0.0 pm+pt 3.0 104 250 1 25 25 1.00 0.95 Left Po Grade (%)
Storage Length (ft)
Storage Lenes
Taper Length (ft)
Lane Util. Factor
Fif
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Median Width(ft)
Link Offset(ft)
Two way Left Turn Lane
Fleadway Factor Leading Detector (f)
Trailing Detector (f)
Detector 1 Position(f)
Detector 1 Type
Detector 1 Type
Detector 1 Channel
Detector 1 Channel
Detector 1 Channel
Detector 1 Detector 5
Detector 1 Detector 1 Detector 1 Detector 1 Turning Speed (mph)
Number of Detectors
Detector Template Lane Configurations Volume (vph) Switch Phase Minimum Initial (s) Turn Type Protected Phases Ideal Flow (vphpf) Lane Width (ft)

B 18 pm 9/16/2014 Baseline Synchro 8 Report Page 1

3/10/2015 Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lane Configurations Volume (vph) Ideal Flow (vphpl) Lane Width (ft)	
Larie Coringulations Volume (vph) Ideal Flow (vphpl) Lane Width (ft)	
Volume (vph) Ideal Flow (vphpl) Lane Width (ft)	
Ideal Flow (vphpl) Lane Width (ft)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ē	
Fit Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(fl)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	6
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0
Minimum Split (s)	26.0
0 10 mm 0/14/7011 Bacoline	tonor 0 oxform.

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

3/10/2015

Continue Company   Etil   Etil   Etil   WBH		\	Ť	~	•	Ļ	/		-	•	۶	+	*
(\$\frac{\text{(}\text{(}	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
(%) 118% 40.8% 26.7% 26.7% 26.7% 26.7% 27.7% 26.	Total Split (s)	13.0	49.0		13.0	49.0		32.0	32.0		32.0	32.0	
Case   Case	Fotal Split (%)	10.8%	40.8%		10.8%	40.8%		26.7%	26.7%		26.7%	26.7%	
Mainter   Main	Maximum Green (s)	7.0	43.0		7.0	43.0		26.0	26.0		26.0	26.0	
Page   Page	Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Adjust (s) 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Time (s)   6.5   6.5   6.5   6.5   6.5   6.5   6.5     Time (s)   1.6ad   1.ag   1.6ad   1.ag   1.	Lost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lead   None   C.Max   None	Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
Activities   Act	Lead/Lag	Lead	Lag		Lead	Lag							
dersion (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lead-Lag Optimize?												
deh         None         C-Max         None         C-Max         None         <	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
With the color of the color o	Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Nakk (s)	Malk Time (s)												
Calls (#Ihh)         55.5         50.3         54.1         47.8         25.5	-lash Dont Walk (s)												
Separate   Separate	Pedestrian Calls (#/hr)												
9/C Ratio         0.46         0.42         0.45         0.46         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.23         0.24         0.24         0.64         0.73         0.79         0.70	Act Effct Green (s)	55.5	50.3		54.1	47.8		25.5	25.5		25.5	25.5	
aby         0.44         0.89         0.45         0.63         1.02         0.64         0.73         0.99           aby         2.37         44.2         26.2         26.5         153.6         53.3         70.1         95.7         0.9           y         2.37         44.2         26.2         26.5         153.6         53.3         70.1         95.7         0.0	Actuated g/C Ratio	0.46	0.42		0.45	0.40		0.21	0.21		0.21	0.21	
Balay         23.7         44.2         26.2         26.5         153.6         53.3         70.1         95.7           day         0.0 <t< td=""><td>//c Ratio</td><td>0.44</td><td>0.89</td><td></td><td>0.45</td><td>0.63</td><td></td><td>1.02</td><td>0.64</td><td></td><td>0.73</td><td>0.99</td><td></td></t<>	//c Ratio	0.44	0.89		0.45	0.63		1.02	0.64		0.73	0.99	
23.7 44.2 26.2 26.5 153.6 3.3 70.1 95.7 C 2 26.5 153.6 53.3 70.1 95.7 C 2 26.5 153.6 23.3 70.1 95.7 2 20.0 2.6 149 90 255.7 2 20.0 2.6 149 90 255.7 2 20.0 2.6 149 24.6 25.0 2.6 149 24.6 25.0 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6	Control Delay	23.7	44.2		26.2	26.5		153.6	53.3		70.1	95.7	
23.7 44.2 26.2 26.5 153.6 53.3 70.1 95.7 C D C C F D E F F C C D C C F D E F F C C C C F D C C C F D C C C F D C C C F D C C C F C C C F C C C F C C C F C C C C F C	Dueue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
C D C C F D E F F A A A A A A A A A A A A A A A A A	Fotal Delay	23.7	44.2		26.2	26.5		153.6	53.3		70.1	95.7	
42.4 26.5 82.2 88.7   42.4 26.5 82.2 88.7   42.4 26.6 49 90 25.5   42.8 27 200 -68 149 90 25.5   17. #669 m51 238 #176 236 #189 #446   250 250 185 190 -68 893   250 249 1295 147 1218 83 327 168 330   0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SO.	S	۵		ပ	ပ		ı	٥		ш	ш	
Color   Colo	Approach Delay		42.4			26.5			82.2			88.7	
46         -528         27         200         -68         149         90         255           77         #669         m51         238         #176         236         #189         #446           250         1408         185         190         65         893           250         250         190         65         330           249         1295         147         1218         83         327         168         330           0	Approach LOS		Ω			ပ			ш.			ш	
77 #669 m51 238 #176 236 #189 #446 250 1408 256 190 264 65 893 249 1295 147 1218 83 327 168 330 0 0 0 0 0 0 0 0 0 0 0 0 0.44 0.89 0.44 0.63 1.02 0.64 0.73 0.99 ther  phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  3 Intersection LOS: D on 80.6% ICU Level of Service D creeds capacity, queue may be longer.  in after two cycles.  sequeue is metered by upstream signal.	Queue Length 50th (ft)	46	~528		27	200		89~	149		06	255	
249 1295 1408 683 280 185 693 284 893 280 285 190 284 68 893 280 280 190 284 185 30 80 80 80 80 80 80 80 80 80 80 80 80 80	Queue Length 95th (ft)	11	699#		m51	238		#176	236		#189	#446	
250 250 190 65 250 250 190 65 249 1295 147 1218 83 327 168 330 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	nternal Link Dist (ft)		1408			185			264			893	
249 1295 147 1218 83 327 168 330 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	urn Bay Length (fl)	250			250			190			92		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	sase Capacity (vph)	249	1295		147	1218		83	327		168	330	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	starvation Cap Reductn	0	0		0	0		0	0		0	0	
0.44   0.89   0.44   0.63   1.02   0.64   0.73   0.99	pillback Cap Reductn	0	0		0	0		0	0		0	0	
ther  phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  ilinated  Intersection LOS: D  on 80.6%  Intersection LOS: D  on 80.6%  I CU Level of Service D  ceeds capacity, queue may be longer.  and the two cycles.  seeds capacity, queue may be longer.  le queue is metered by upstream signal.	storage Cap Reductn	0	0		0	0		0	0		0	0	
phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  ilinated  Intersection LOS: D  on 80.6%  I CU Level of Service D  i queue is theoretically infinite.  after two cycles.  ceeds capacity, queue may be longer.  ceeds capacity, queue may be longer.  ie queue is metered by upstream signal.	Reduced v/c Ratio	0.44	0.89		0.44	0.63		1.02	0.64		0.73		
ther phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection finated  Intersection LOS: D on 80.6% ICU Level of Service D ICU Level of Service D intersection the cycles after two cycles creeds capacity, queue may be longer. it equeue is metered by upstream signal.	ntersection Summary												
phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  3 Intersection LOS: D  3 ICU Level of Service D  4 queue is theoretically infinite.  1 after wo cycles.  1 after two cycles.  1 after two cycles.  1 after two cycles.		Other											
phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  intersection LOS; D  on 80.6% ICU Level of Service D  c queue is theoretically infinite.  after wor cycles.  intersect capacity, queue may be longer.  after two cycles.  ite queue is metered by upstream signal.													
phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection  3 Intersection LOS: D on 80.6% ICU Level of Service D : queue is theoretically infinite. after two cycles. ceeds apacity, queue may be longer. after wo cycles. ie queue is metered by upstream signal.	Actuated Cycle Length: 120												
inaled  Intersection LOS: D  on 80.6% ICU Level of Service D  i. queue is theoretically infinite. creates capacity, queue may be longer. creates capacity, queue may be longer. et queue is metered by upstream signal.	Offset: 0 (0%), Referenced to	to phase 2	EBTL and	16:WBTL	Start of	Yellow, M	aster Inte	ersection					
Janated  3 Intersection LOS: D  on 80.6% ICU Level of Service D  queue is theoretically infinite. rafter two cycles. rafter two cycles. requeue is metered by upstream signal.	Vatural Cycle: 125												
Intersection LOS; D on 80.6% ICU Level of Service D ; queue is theoretically infinite. after two cycles. ered's capacity, queue may be longer. after wo cycles. is queue is metered by upstream signal.	Control Type: Actuated-Coo	ordinated											
3 Intersection LOS: D on 80.6% ICU Level of Service D i. queue is theoretically infinite. after two cycles. ceeds capacity, queue may be longer. ceeds capacity, queue may be longer. ie queue is metered by upstream signal.	Maximum v/c Ratio: 1.02												
on 80.6% ICU Level of Service D queue is theoretically infinite. affer two cycles. ceeds capacity, queue may be longer. after two cycles. te queue is metered by upstream signal.	ntersection Signal Delay: 49	9.3			드	tersection	LOS: D						
, queue is theoretically infinite. rafter two cycles. rafter two cycles. rafter two cycles. re queue is metered by upstream signal.	ntersection Capacity Utiliza:	tion 80.6%			2	U Level o	f Service	O					
, queue is theoretically infinite. after two cycles. exect to apply, queue may be longer. after two cycles. te queue is metered by upstream signal.	Analysis Period (min) 15												
after two cycles. ceeds capacity, queue may be longer. ceeds capacity, queue may be longer. ie queue is metered by upstream signal. Synchro 8	<ul> <li>Volume exceeds capacit</li> </ul>	ty, queue i	s theoretic	ally infini	e.								
cceds capacity, queue may be longer. I after two cycles. I e queue is metered by upstream signal. Synchro 8	Queue shown is maximu	ım after two	cycles.										
l atid two cydes. le queue is metered by upstream signal. Synchro 8	# 95th percentile volume e	exceeds ca	pacity, qu	ene may	pe longe								
le queue is metered by upstream signal. Synchro 8	9	im arter two	o cycles.			-							
Synchro 8		ille queue	is meterec	ı by upstr	eam sign	al.							
Sylicillo	10 mm 0/14/0014 Baccilia										ľ	O cadour	1000
	5 18 piii 7/ 10/2014 baseiiir	D.									,	yilciii o o	Repon Page 3

3/10/2015

: S Ith	27: S Ithan Ave/N Ithan Ave & Lancaster Ave	e ve		3/10/2015
lits and Ph	splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave	Ave		
10	<b>→</b> <b>→ → → → → → → → → →</b>	•	* * * * * * * * * * * * * * * * * * *	<b>→</b>
S	49 s		26 s	32.5
<b>√</b>	<b>↑</b>	•		80
	40 c			32 €

Lanes, Volumes, Timings 27: S Ithan Ave/N Ithan Ave & Lancaster Ave

Lane Group	60	
Total Split (s)	26.0	
Total Split (%)	22%	
Maximum Green (s)	24.0	
Yellow Time (s)	2.0	
All-Red Time (s)	0.0	
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)	9.0	
Flash Dont Walk (s)	15.0	
Pedestrian Calls (#/hr)	45	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
SOT		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		
,		

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HCM 2010 Signalized Intersection Summary 51: Lowrys Ln & Lancaster Ave

	4	†	~	<b>&gt;</b>	ţ	4	•	•	•	٠	-	•	
Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		₩ ₩			<del>(</del>			4			4		
Volume (veh/h)	2	1186	22	15	915	4	19	36	15	86	70	71	
Number	2	2	12	-	9	16	3	80	18	7	4	14	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	0.1		0.1	00.1		00.1	1.00		1.00	1.00	,	1.00	
Parking Bus, Adj	1.00	00.1	1.00	00.1	0.1	00.1	1.00	1.00	1.00	1.00	1.00	1.00	
Adj sat Flow, veryfylin	908	1787	1800	1//3	7.25	1//3	1900	88	1,00	1881	1863	1881	
Adj No of loop	7 0	6071	47	0 0	0,44	4 0	17	34	0 0	6	0 7	2 0	
Adj No. of Lanes	0 0	7 000	0 0	0 00	7 000	0 0	0 00	- 6	0 0	0 00	- 0	0 00	
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	
avy ven,	- ;	- 00	- 5	- 5	- 1000	- c	- 6	- 1	- <	- 6	- 101	- 6	
Cap, veryn	0 0	2042	38	7/	2004	× 5	131	202	010	192	100	89	
Arrive On Green	0.0	0.01	0.0	0.0	0.01	0.0	0.19	0.19	0.19	0.19	0.19	41.0	
sat Flow, ven/n	-	3329	70	٥	3269	2	790	1098	3/0	2/2	204	4/4	
Grp Volume(v), veh/h	069	0	625	525	0	490	9/	0	0	260	0	0	
Grp Sat Flow(s),veh/h/ln	1781	0	1611	1703	0	1595	1758	0	0	1617	0	0	
Q Serve(g_s), s	0.0	0.0	14.7	0.0	0.0	10.3	0.0	0.0	0.0	7.2	0.0	0.0	
Cycle Q Clear(g_c), s	14.7	0.0	14.7	6.6	0.0	10.3	2.1	0.0	0.0	9.3	0.0	0.0	
Prop In Lane	0.00		0.04	0.03		0.01	0.28		0.21	0.41		0.30	
Lane Grp Cap(c), veh/h	1152	0	886	1106	0	876	405	0	0	387	0	0	
V/C Ratio(X)	09.0	0.00	0.63	0.47	0.00	0.50	0.19	0.00	0.00	0.67	0.00	0.00	
Avail Cap(c_a), veh/h	1152	0	886	1106	0	876	464	0	0	473	0	0	
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	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	
Uniform Delay (d), s/veh	7.3	0.0	7.3	6.4	0.0	6.5	20.7	0.0	0.0	23.5	0.0	0.0	
Incr Delay (d2), s/veh	2.3	0.0	3.1	1.5	0.0	1.8	0.2	0.0	0.0	2.7	0.0	0.0	
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	
%ile BackOfQ(-26165%),veh/ln		0.0	7.3	5.1	0.0	2.0	<del>-</del>	0.0	0.0	4.4	0.0	0.0	
LnGrp Delay(d),s/veh	9.6	0:0	10.4	7.9	0.0	8.3	20.9	0.0	0.0	26.3	0.0	0.0	
LnGrp LOS	A		В	A		A	ပ			ပ			
Approach Vol, veh/h		1315			1015			16			260		
Approach Delay, s/veh		10.0			8.1			20.9			26.3		
Approach LOS		В			A			ပ			O		
Timer	_	2	3	4	2	9	7	8					
Assigned Phs		2		4		9		8					
Phs Duration (G+Y+Rc), s		43.3		16.7		43.3		16.7					
Change Period (Y+Rc), s		0.9		2.0		0.9		2.0					
Max Green Setting (Gmax), s		34.0		15.0		34.0		15.0					
Max Q Clear Time (g_c+11), s		16.7		11.3		12.3		4.1					
Green Ext Time (p_c), s		9.5		0.5		10.8		1.0					
Intersection Summary													
HCM 2010 Ctrl Delay			11.2										
HCM 2010 LOS			В										
Notes													
User approved pedestrian interval to be less than phase may green	of of lev	loce than	nhacen	av areen									
abbase keeps and a second	3	2	:	300									
	l											١	

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HCM 2010 Signalized Intersection Summary 16: Sproul Rd & Conestoga Rd

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Monomental Land Configurations         Fig. EBT         EBR         WBI         WBI         WBI         WBI         NBI         NBI         NBI         NBI         Apple Name		ሻ	t	۴	Ļ	ţ	¥J	•	*	*	•	`*	7
1   1   2   4   4   4   8   8   4   8   1   1   4   4   8   8   8   8   8   8   8   8	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
116 555 218 28 520 47 105 186 28 51 293  7 4 14 3 8 18 18 1 6 16 16 5 2  1 0 0 0 0 0 0 0 0 0 0 0  1 100 1.00 1.	Lane Configurations	r	2		r	£3		F	2			÷	
7 4 14 3 8 18 1 6 16 5 2 100 100 100 100 100 100 100 100 100 100	Volume (veh/h)	105	222	218	28	520	47	105	186	28	21	293	83
100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	_	4	14	3	00	18	<del>-</del>	9	16	2	2	12
100	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
100	Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
1782   1782   1800   1827   1825   1773   1773   1791   1809   1791   1782   1782   1800   1827   1827   1815   1773   1771   1809   1791   1791   1809   1791   1791   1809   1791		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
111   584		1782	1782	1800	1827	1827	1845	1773	1773	1791	1809	1791	1809
1 1 1 20 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Adj Flow Rate, veh/h	1	284	0	29	247	0	111	196	29	24	308	87
0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	Adj No. of Lanes	_	<del>-</del>	0	_	_	0	_	<del>-</del>	0	0	<del></del>	0
11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
228 819 0 258 615 0 299 599 89 87 315 0.05 0.06 0.04 0.04 0.02 0.02 0.26 0.05 0.04 0.00 0.04 0.04 0.04 0.02 0.02 0.02	%	-	-	-	<del>-</del>	-	-	<del>-</del>	-	-	-	<del>-</del>	-
1647   1782   0.05   0.34   0.34   0.05   0.06   0.40   0.40   0.26   0.26   0.26   1.697   1.782   0.0   0.85   1.827   0.0   0.05   0.40   0.40   0.25   0.25   0.20   0.23		228	819	0	258	615	0	299	266	86	87	315	84
14697   1782   0   857   1827   0   1689   1510   223   138   1201   1469   1784   0   225   449   0   0   233   2217   0   0   225   449   0   0   233   2217   0   0   237   0   0   1734   1641   0   0   233   2217   0   0   377   0   0   1734   1641   0   0   233   2217   0   0   377   0   0   772   148   0   0   228   819   0   258   615   0   299   0   688   486   0   0   248   0   248   0   248   248   0   248   248   0   248   248   0   248   248   0   248		0.05	0.46	0.00	0.34	0.34	0.00	90:0	0.40	0.40	0.26	0.26	0.26
111   584   0   29   547   0   111   0   0   225   449   0   0   1491   111	Sat Flow, veh/h	1697	1782	0	857	1827	0	1689	1510	223	138	1201	322
1697   1782   0   857   1827   0   1689   0   1734   1661   0     3   3   21.1   0   0   2.3   2.2.7   0   0   3.7   0   0   7.2   210   0     1.00	Grp Volume(v), veh/h	111	584	0	29	547	0	111	0	225	449	0	0
3.3 21.1 0.0 2.3 22.7 0.0 3.7 0.0 72 148 0.0 1.0 1.0 0.0 1.0 1.3 0.0 1.0 0.0 0	Grp Sat Flow(s), veh/h/ln	1697	1782	0	857	1827	0	1689	0	1734	1661	0	0
3.3         21.1         0.0         13.5         22.7         0.0         3.7         0.0         7.2         21.0         0.0           228         819         0         25.8         615         0         299         0         688         486         0           249         0.71         0.00         0.11         0.89         0.00         0.33         0.92         0.00           1.00         1.00         1.01         1.00         1.00         1.00         1.00         1.00           1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00           1.00	O Serve(g_s), s	3.3	21.1	0.0	2.3	22.7	0.0	3.7	0.0	7.2	14.8	0.0	0.0
1,00	Cycle Q Clear(g_c), s	3.3	21.1	0.0	13.5	22.7	0.0	3.7	0.0	7.2	21.0	0.0	0.0
228         819         0         258         615         0         299         0         688         486         0           0.49         0.71         0.00         0.11         0.89         0.00         0.33         0.92         0.00           2.44         819         0         2.58         615         0         33         0         726         486         0           1.00         1	Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.13	0.12		0.19
0.49 0.71 0.00 0.11 0.89 0.00 0.37 0.00 0.33 0.92 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Grp Cap(c), veh/h	228	819	0	258	615	0	299	0	889	486	0	0
100   100	V/C Ratio(X)	0.49	0.71	0.00	0.11	0.89	0.00	0.37	0.00	0.33	0.92	0.00	0.00
1,00	Avail Cap(c_a), veh/h	274	819	0	258	615	0	337	0	726	486	0	0
1.00 1.00 0.00 1.00 1.00 0.00 1.00 0	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
19.0   17.4   0.0   26.7   25.1   0.0   18.3   0.0   16.7   29.7   0.0   16.5   2.9   0.0   0.	Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
1.6 5.2 0.0 0.9 17.5 0.0 0.8 0.0 0.3 23.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	19.0	17.4	0.0	26.7	25.1	0.0	18.3	0:0	16.7	29.7	0.0	0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	1.6	5.2	0.0	0.9	17.5	0.0	0.8	0.0	0.3	23.4	0.0	0.0
14   0.0   0.6   144   0.0   1.7   0.0   3.5   13.0   0.0     20.6   22.6   0.0   27.6   42.7   0.0   19.0   0.0   17.0   53.0   0.0     22.3   576   336   8   0.0     22.3   41.9   17.7   53.0   0.0     1   2   3   4   5   6   7   8   0.0     1   2   3   4   5   6   7   8   0.0     1   2   3   4   5   5   5   5     10.7   27.0   42.3   37.7   9.9   32.4     5.5   5.5   5.0   5.5   5.0   5.0     5.7   23.0   23.1   9.2   53.3   24.7     6.8   23.1   9.2   53.3   24.7     7   23.3   23.1   22.5   0.0   0.0     7   20.0   20.0   20.0     7   20.0   20.0   20.0     8   20.0   20.0   20.0     9   20.0   20.0	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
206 226 0.0 276 427 0.0 190 0.0 170 530 0.0 C C D B B D B D C C C D D B S S S S S S S S S S S S S S S S S	%ile BackOfQ(-26165%),veh/ln	1.6	11.4	0.0	9.0	14.4	0.0	1.7	0.0	3.5	13.0	0.0	0.0
C C C D B B D  695 576 336  2.3 41,9 17,7  C D D B  1 2 3 4 5 6 7 8  10.7 27.0 42.3 37,7 9,9 32,4  55 55 50 5.0 5.0  7.0 21.5 35.5 34.0 7.0 23.5  5.7 23.0 23.1 9,2 5.3 24,7  0.0 0.0 5.7 2.5 0.0 0.0	LnGrp Delay(d),s/veh	50.6	22.6	0.0	27.6	42.7	0.0	19.0	0:0	17.0	53.0	0.0	0.0
695     576     336       22.3     41.9     17.7       1     2     3     4     5     6     7     8       10.7     27.0     42.3     37.7     9,9     32.4       10.7     27.0     42.3     37.7     9,9     32.4       7.0     21.5     5.0     5.0     5.0     5.0       5.7     23.0     23.1     9,2     5.3     24.7       0.0     0.0     5.7     2.5     0.0     0.0       0     0     5.7     2.5     0.0     0.0	LnGrp LOS	ပ	ပ		ပ	Ω		В		В	Ω		
22.3 41.9 17.7 C D B B 17.7 B B 10.7 27.0 42.3 37.7 9.9 32.4 5.5 5.5 5.0 5.0 5.7 8 5.7 23.0 23.1 9.2 5.3 24.7 0.0 0.0 0.5 7 2.5 0.0 0.0 0.0 5.7 2.5 0.0 0.0 0.0 5.7 2.5 0.0 0.0	Approach Vol, veh/h		969			216			336			449	
C D D B B 10.7 27.0 42.3 37.7 5.9 5.5 5.5 5.5 5.7 23.0 23.1 9.2 5.3 2.4 7.0 0.0 0.0 5.7 2.5 0.0 0.0 0.0 5.7 2.5 0.0 0.0 0.0 5.7 2.5 0.0 0.0 0.0 5.7 2.5 0.0 0.0 0.0 5.7 2.5 0.0 0.0 0.0 5.7 2.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Approach Delay, s/veh		22.3			41.9			17.7			53.0	
1 2 3 4 5 6 7 10.7 27.0 42.3 37.7 9.9 5.5 5.5 5.0 5.0 5.5 5.0 5.7 23.0 23.1 9.2 5.3 0.0 0.0 5.7 23.7 2.5 0.0	Approach LOS		ပ			Ω			В				
10.7 27.0 42.3 37.7 9.9 5.5 5.5 5.0 7.0 21.5 35.5 5.0 5.0 5.3 4.0 7.0 5.7 23.0 23.1 9.2 5.3 0.0 0.0 5.7 2.5 0.0 C.	Timer	_	2	3	4	2	9	7	8				
10.7 27.0 42.3 37.7 9.9 5.5 5.5 5.5 5.0 5.0 5.0 7.0 21.5 35.5 34.0 7.0 5.7 23.0 23.1 9.2 5.3 0.0 0.0 5.7 2.5 0.0 C	Assigned Phs	-	2		4		9	7	∞				
5.5 5.5 5.0 5.0 5.5 5.0 7.0 2.1 5.0 2.3.1 9.2 5.3 5.0 0.0 0.0 5.7 2.5 0.0 0.0 5.7 2.5 0.0 0.0 C.	Phs Duration (G+Y+Rc), s	10.7	27.0		42.3		37.7	6.6	32.4				
7.0 27.5 35.5 34.0 7.0 5.7 23.0 23.1 9.2 5.3 0.0 0.0 5.7 2.5 0.0 2.5 0.0 C.	Change Period (Y+Rc), s	5.5	5.5		2.0		5.5	2.0	2.0				
5.7 23.0 23.1 9.2 5.3 2 0.0 0.0 5.7 2.5 0.0 33.7 C C	Max Green Setting (Gmax), s	7.0	21.5		35.5		34.0	7.0	23.5				
, s 0.0 0.0 5.7 2.5 0.0 (s 33.7 C C C	Max Q Clear Time (g_c+I1), s	2.7	23.0		23.1		9.5	5.3	24.7				
	O,	0.0	0.0		2.7		2.5	0.0	0.0				
	Intersection Summary												
	HCM 2010 Ctrl Delay			33.7									
	HCM 2010 LOS			ပ									

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HCM 2010 Signalized Intersection Summary 25: S Ithan Ave & Conestoga Rd

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HCM 2010 Signalized Intersection Summary 33: Williams Rd/Garrett Ave & Conestoga Rd

3/10/2015

Maintain Clay   Maintain Cla		ሻ	†	۱,4	Ļ	ţ	<b>≽</b> J	₹	×	•	٠	×	<b>\</b>
27 568 9 12 504 29 16 44 1 11 28 12 12 100 100 100 100 100 100 100 100 1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
27 508 9 12 504 29 16 1 11 28 12  5 2 12 10 0 0 0 0 0 0 0 0 0 0  1100 100 1100 1100 1100 1100 1100 1100 1100  1100 1100 1100 1100 1100 1100 1100 1100 1100  1100 1100 1100 1100 1100 1100 1100 1100 1100 1100  29 552 10 13 548 32 17 1 12 30 138  0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lane Configurations		4			4			4			4	
5 12 12 16 16 3 8 18 17 4 4 1 100 1.00	Volume (veh/h)	27	208	6	12	504	29	16	. —	1	78	12	52
100	Number	2	2	12	<del>-</del>	9	16	m	∞	18	7	4	14
1.00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
100 100 100 100 100 100 100 100 100 100	Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
1872   1872   1872   1872   1872   180   180   180   1728   1728   1872   187		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
29 552 10 13 548 32 17 1 12 30 13 10 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0		1872	1872	1872	1872	1872	1872	1800	1800	1800	1728	1728	1728
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Adj Flow Rate, veh/h	29	552	10	13	548	32	17	<del>-</del>	12	30	13	57
092 092 092 092 092 092 092 092 092 092	Adj No. of Lanes	0	<del>-</del>	0	0	<del>-</del>	0	0	<del>-</del>	0	0	_	0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
88 1246 22 67 1231 71 147 25 56 101 26 17 17 17 17 17 17 17 17 17 17 17 17 17	Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
0.71 0.71 0.71 0.71 0.71 0.71 0.71 0.71	Cap, veh/h	88	1246	22	19	1231	71	147	25	26	101	76	71
14	Arrive On Green	0.71	0.71	0.71	0.71	0.71	0.71	0.08	0.08	0.08	0.08	0.08	0.08
1821   0 0 593   0 0 1662   0 0 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Sat Flow, veh/h	41	1749	31	13	1728	66	669	298	999	334	307	849
1821 0 0 1840 0 0 1662 0 0 1490 0 0 1662 0 0 0 1490 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Grp Volume(v), veh/h	291	0	0	293	0	0	30	0	0	100	0	0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Grp Sat Flow(s),veh/h/ln	1821	0	0	1840	0	0	1662	0	0	1490	0	0
8.5 0.0 0.0 8.6 0.0 0.0 1.1 0.0 0.0 42 0.0 0.0 1365 0 0.0 0.0 1349 0 0.0 228 0 0.0 1999 0 0.0 1366 0 0.0 1369 0 0.0 228 0 0.0 1999 0 0.0 1366 0 0.0 1369 0 0.0 228 0 0.0 1999 0 0.0 1366 0 0.0 1369 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	O Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.9	0.0	0:0
0.05 0.02 0.02 0.05 0.05 0.05 0.07 0.06 0.30 0.00 0.03 0.00 0.04 0.00 0.00 0.03 0.00 0.03 0.00 0.04 0.00 0.00	Cycle Q Clear(g_c), s	8.5	0.0	0.0	9.8	0.0	0.0	1.	0.0	0.0	4.2	0.0	0.0
1356 0 0 1369 0 0 228 0 0 199 0 0 149 0 0 149 0 0 149 0 0 149 0 0 0 149 0 0 0 149 0 0 0 149 0 0 0 149 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.05		0.05	0.05		0.05	0.57		0.40	0.30		0.57
044 0.00 0.00 0.43 0.00 0.013 0.00 0.05 0.00 0.013 0.00 0.05 0.00 0.00 0.00 0.00 0.00 0.0	b(c), veh/h	1356	0	0	1369	0	0	228	0	0	199	0	0
1356 0 0 1369 0 0 410 0 0 0 385 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	V/C Ratio(X)	0.44	0.00	0.00	0.43	0.00	0.00	0.13	0.00	0.00	0.50	0.00	0.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	1356	0	0	1369	0	0	410	0	0	382	0	0
1.00 0.00 0.00 1.00 0.00 0.00 1.00 0	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
3.9 0.0 0.0 3.9 0.0 0.0 27.3 0.0 0.0 28.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
1.0 0.0 0.0 1.0 0.0 0.0 0.4 0.0 0.2 28 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Uniform Delay (d), s/veh	3.9	0.0	0.0	3.9	0.0	0.0	27.3	0.0	0.0	28.7	0.0	0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	1.0	0.0	0.0	1.0	0.0	0.0	0.4	0.0	0.0	2.8	0.0	0.0
February 1 0.0 0.0 4.7 0.0 0.0 0.5 0.0 0.0 1.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 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
49 0.0 0.0 4.9 0.0 0.0 276 0.0 0.0 315 0.0  4.9 4.9 4.9 593 30 100  4.9 4.9 4.9 7 27.6  1 2 3 4 5 6 7 8  5 52.0 11.9 52.0 11.9  6 0 6 0 6 0  7.4 46.0 14.0 46.0 14.0  7.4 7.4  A  A  A  C  C  C  C  C  C  C  C  C  C	%ile BackOfQ(-26165%),veh/ln	4.7	0.0	0.0	4.7	0.0	0.0	0.5	0.0	0.0	1.9	0.0	0.0
A A C C C C C C C C C C C C C C C C C C	LnGrp Delay(d),s/veh	4.9	0.0	0.0	4.9	0.0	0.0	27.6	0.0	0.0	31.5	0.0	0.0
591 593 30 4.9 4.9 27.6 A A A A C C A A A A C C 5 52.0 11.9 52.0 11.9 6,0 6.0 6.0 6.0 6,0 6.0 6.0 1,0,0 14.0 46.0 14.0 1),2 10.5 6.2 10.6 3.1 7.4 A B B B B B B B B B B B B B B B B B B	LnGrp LOS	A			A			ပ			ပ		
4.9 4.9 276  A A B C C  2 3 4 5 6 7 8  5 52.0 11.9 52.0 11.9  6.0 6.0 6.0  6.1 6.0 6.0  7.4 7.4  A 5 6 7 8  6.0 6.0  7.4  A 5 6 7 8  6.0 6.0  7.4  A 5 6 7 8  6.0 6.0  7.4  A 5 6 7 8  6.0 6.0  7.4  A 5 6 7 8  6.0 6.0  7.4  A 5 6 7 8  6.0  7.4  A 5 6 7 8  6.0  7.4	Approach Vol, veh/h		591			263			30			100	
1 2 3 4 5 6 7 8 2 2 4 5 6 7 8 5 520 11.9 520 11.9 6 0 6 0 6 0 6 0 7), S 460 14.0 46.0 14.0 1), S 10.5 6.2 10.6 3.1 7.4 7.4 A	Approach Delay, s/veh		4.9			4.9			27.6			31.5	
1 2 3 4 5 6 7 2 4 6 6 7 52.0 11.9 52.0 1 6.0 6.0 6.0 6.0 6.2 10.6 6.0 1). s 10.5 6.2 10.6 7.4 7.4 A	Approach LOS		⋖			⋖			ပ			O	
2 4 6 6 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Timer	<del></del>	2	က	4	2	9	7	00				
\$ \$2.0   11.9   \$2.0   1.0   \$2.0   1.0   \$2.0   1.0   \$2.0   1.0   \$2.0   1.0   \$2.0   1.0   \$2.0   1.0   \$2.0   1.0   \$2.0   1.0   \$2.0   1.0   \$2.0   1.0   \$2.0   1.0   \$2.0	Assigned Phs		2		4		9		8				
6.0 6.0 6.0 6.5 460 14.0 46.0 1), s 10.5 6.2 10.6 7.4 A	Phs Duration (G+Y+Rc), s		52.0		11.9		52.0		11.9				
460 140 460 10.5 6.2 10.6 5.8 0.3 5.8 7.4 A	Change Period (Y+Rc), s		0.9		0.9		0.9		0.9				
105 62 106 5.8 0.3 5.8 7.4 A	Max Green Setting (Gmax), s		46.0		14.0		46.0		14.0				
5.8 0.3 5.8 7.4 A	Max Q Clear Time (g_c+I1), s		10.5		6.2		10.6		3.1				
L	Green Ext Time (p_c), s		2.8		0.3		2.8		0.4				
7	Intersection Summary												
	HCM 2010 Ctrl Delay			7.4									
Natac	HCM 2010 LOS			⋖									
	Notos												

User approved pedestrian interval to be less than phase max green. B 18 pm 9/16/2014 Baseline

HCM 2010 Signalized Intersection Summary 3: County Line Rd & Spring Mill Rd

64	MBI WBI WILL WILL WILL WILL WILL WILL WIL	WBR         NBL           52         69           16         3           0         0           100         100           100         100           100         1800           81         85           9         0           100         143           0         408           0         180           0         193           0         0           0         0           0         0           0         145           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0           0         0	WBL         NBT           WBL         NBT           3         8           3         8           0         0		86 0 1.00 1.00 1.00 1.00 0.76 0.76 0.38 0.38 0.38 0.38 0.38 0.48 0.15 0.48 0.15 0.15 0.01 0.01 0.01 0.01 0.01 0.01	387 382 4 4 4 0 0 11.00 11773 429 127 1255 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8
64 306 108 5 2 12 12 100 1.00 1.00 1.00 1.00 1.00 1.	245 6 6 0 0 1.00 1.00 1.00 1.00 1.00 0.00 0					382 382 4 0 11.00 1773 429 0.89 1 1482 0.38 1255 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	45 100 100 100 100 069 069 069 078 089 099 000 000 000 000 000 00
64 306 108 5 2 12 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	245 6 6 6 7 1100 11767 282 3 3 8 384 384 0.40 0.00 0.00 0.00 0.00 0.00 0.00 0.					382 4 0 1.00 1773 429 429 1 1 482 0.38 0.38 0.00 0.00 0.00	144 146 100 1100 65 65 65 65 67 67 69 69 69 69 69 69 69 60 69 60 69 60 69 60 69 60 69 60 69 60 69 60 69 60 69 60 69 69 69 69 69 69 69 69 69 69 69 69 69
5 2 12 0 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.40 0.40 0.40 1.00 0.40 0.40 0.40 1.00 0.00 0.00 1.00	0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.					1.00 1.773 429 482 0.89 1.255 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1400 1.000 1.000 1.000 0.059 0.38 0.38 0.00 0.00 0.01 0.00 0.01 0.00 0.00 0.0
1.00	1,00 1,00 1,00 1,00 1,00 0,00 0,00 0,00					1.00 1.773 429 1.089 0.38 1.255 0.38 0.00 0.00	1.00 1.00 1.00 0.69 0.38 0.38 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.
1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.72 0.90 0.87 1.41 1.40 1.40 0.40 0.40 0.40 0.40 0.40	1.00 1767 282 282 282 1 0.87 0.87 0.83 384 0.40 0.00 0.00 0.00 0.00 0.00 0.00 0.					1.00 1773 429 1 0.89 0.38 0.38 0.00 0.00 0.00 0.00	1.00 1.00 1.00 0.06 0.03 0.00 0.00 0.00 0.00 0.00 0
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	17.00 1767 282 3 3 3 384 384 962 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					1.00 1.73 429 1.9 1.0.8 1.255 0.0 0.0 0.0 0.0 0.0 0.0	1.00 1.00 1.00 1.00 0.00 0.00 0.00 0.00
1800 1789 1800 1 89 340 126 0 0.72 0.90 0.86 121 11 1 407 140 0.40 0.40 0.40 0.40 178 1020 352 555 0 0 0 1.00 0.00 1.00 1.00 0.00 1.00	1767 1767 1 0.87 3 384 3 384 0.40 0.00 0.00 0.00 0.00 0.00 0.00 0.					1773 429 1 0.89 0.38 17255 0 0 0.0 0.0 0 0.0 0.0	1800 0.09 0.38 0.38 0.00 0.00 0.00 0.00 0.00 0.00 0.00
889 340 126 141 0.09 0.86 141 0.40 0.40 0.40 178 1020 352 555 0 0 0 1549 0 0 0 1549 0 0 0 201 0.0 0.0 201 0.0 0.0 0.0 201 0.0 0.0 0.0 201 0.0 0.0 0.0 201 0.0 0.0 0.0 201 0.0 0.0 0.0 0.0 201 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0						429 0.89 0.38 0.38 0.38 0.00 0	0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.72 0.90 0.86 1.1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
0.72 0.90 0.86 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.						0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
141 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						482 0.38 0.38 1255 0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
141 407 140 140 400 040 178 1020 040 178 1020 0 1549 0 0 1 1549 0 0 0 1549 0 0 0 0.16 0.23 0.81 0.00 0.00 0.46 0.00 0.00 0.46 0.00 0.00 0.47 0.00 0.00 0.48 0.00 0.00 0.49 0.00 0.00 0.40 0.00 0.00 0.41 0.00 0.00 0.42 0.00 0.00 0.43 0.00 0.00 0.44 0.00 0.00 0.45 0.00 0.00 0.47 0.00 0.00 0.48 0.00 0.00 0.49 0.00 0.00 0.40 0.00 0.00 0.40 0.00 0.00						0.38 0.38 0.00 0.00 0.00 0.00	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
178 1020 352 556 0 0 1 1549 0 0 1 33 0.0 0.0 1.00 0.0 1.00 1.00 0.0 1.00 1.00						0.38 0.0 0.0 0.0 0.0 0.0 0.00	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
178 1020 352 555 0 0 133 0.0 0.0 20.1 0.0 0.0 20.1 0.0 0.0 20.1 0.0 0.0 0.81 0.00 0.0 0.46 0.00 0.00 0.46 0.00 0.0 0.47 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.00 0.0 0.0						1255 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	000000000000000000000000000000000000000
555 0 0 1549 0 0 1 1549 0 0 0 1 1549 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						0.00 0.00	0.0000000000000000000000000000000000000
1549 0 0 1 3 3 0.0 0.0 20.1 0.0 0.0 0.16 0.02 0.81 0.0 0.0 0.88 0 0 0.00 0.00 0.46 0.00 0.00 0.46 0.00 0.0 0.47 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.0 0.00 0.00 0.00 0.0 0.00 0.00 0.00 0.0 0.00 0.00 0.00 0.0 0.00 0.00 0.00 0.00 0.0 0.00 0						0.0 0.00 0.00	0.0 0.0 0.11 0.00 0.00 0.00
3.3 0.0 0.0 20.1 0.0 0.0 0.46 0.0 0.0 0.81 0.0 0.0 0.81 0.0 0.0 0.88 0 0 0.88 0 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0						0.0 0.0	0.0 0.11 0.00 0.00 0.00
201 0.0 0.0 0.16 688 0 0.23 688 0 0.03 688 0 0.03 0.81 0.00 0.00 1.00 1.00 0.00 1.46 0.00 0.00 1.47 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 21.3 0.0 0.0 C 555 21.3 2.1 22.1 22.1						0.00	0.0000000000000000000000000000000000000
0.16 0.23 688 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						0.00	0.00
688 0 0 00 00 00 00 00 00 00 00 00 00 00						0.00	0.00
0.81 0.00 0.00 688 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.						0.00	0.00
688 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						100	1.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00						1 00	1.00
0.46 0.00 0.00 16.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 21.3 0.0 0.0 C 555 21.3 C 55 21.3 2 C 555 21.3 2 C 555 21.3 2 C 555 21.3 2 C 555 21.3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 3 2 2 3 3 2 3 3 3 3 4 3 4 3						2	0.00
166 00 0.0 4.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 21.3 0.0 0.0 555 21.3 21.3 2 3.0 2 3.0 2.2.1						0.00	, , ,
47 00 00 00 00 00 00 21.3 00 00 C 555 21.3 C 21.3 2 2.3 3 2.3 3 2.2 3 2.2 1						0.0	0.0
0.0 0.0 0.0 0.0 0.0 2.1.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		(-			8.1	0.0	0.0
21.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		,				0.0	0.0
21.3 0.0 0.0 C C 555 21.3 C C C C C C 2 30.4 6.0 23.0 22.1	22.1 0.0 C 452 22.1 C C C A 4 5	0.0		0.0		0.0	0.0
C 555 21.3 21.3 21.3 30.4 60 23.0 22.1	22.1 C C C		3 0.0	0.0	25.7	0.0	0.0
555 21.3 C C 1 2 3 30.4 60 23.0 22.1	452 22.1 C C		В		C		
21.3 C C C 30.4 60 23.0 22.1	22.1 C C		408	~		280	
C C 3 3 3 4 4 6 6 0 5 2 3 6 0 5 2 3 6 0 5 2 2 1 6 0 6 0 6 0 6 0 6 0 6 0 6 0 6 0 6 0 6	C 4 5		17.3	~		25.7	
1 2 3 2 2 30.4 6.0 23.0 22.1	4 5		В			ပ	
2 30.4 6.0 23.0 22.1	_	9	7 8	~			
30.4 6.0 23.0 22.1	+	9	000				
6.0 23.0 22.1	29.6	30.4	29.6				
23.0	0.9	0.9	0.9				
22.1	25.0	23.0	25.0				
	22.8	18.8	16.5				
0.5	0.7	1.9	1.8	~			
ntersection Summary							
0.22							

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HCM 2010 TWSC 79: Garrett Rd & Lancaster Ave

3/10/2015

3/10/2015

nt Delay, s/veh	0							
Movement	EBT	EBR		WBL	WBT	NBL	NBR	
Vol, veh/h	1252	47		48	928	0	38	
Conflicting Peds, #/hr	0	0		0	0	0	0	
Sign Control	Free	Free		Free	Free	Stop	Stop	
RT Channelized		None		-	None		None	
Storage Length	•	•		٠			0	
Veh in Median Storage, #	0	٠			0	0		
Grade, %	6-	•		٠	က	0		
Peak Hour Factor	82	82		85	82	82	82	
Heavy Vehicles, %	0				0	0	0	
Wvmt Flow	1527	22		26	1132	0	46	
Major/Minor	Major1		Ž	Major2		Minor1		
Conflicting Flow All	0	0		1584	0	2238	792	
Stage 1	ľ	٠		٠		1555		
Stage 2		•				683		
Critical Hdwy	•	•		4.1	,	8.9	6.9	
Critical Hdwy Stg 1	•	•		٠		5.8		
Critical Hdwy Stg 2	·	•				5.8		
Follow-up Hdwy	•	•		2.2	,	3.5	3.3	
Pot Cap-1 Maneuver	•	•		421		37	336	
Stage 1	•	•		٠		163	·	
Stage 2	•	•				468	,	
Platoon blocked, %	•	•						
Mov Cap-1 Maneuver		•		421		23	336	
Mov Cap-2 Maneuver	•	•		٠		23	,	
Stage 1	•	٠				163		
Stage 2						292		
Approach	EB			WB		NB		
HCM Control Delay, s	0			3.1		17.4		
HCM LOS						U		
Winor Lane/Major Mvmt	NBLn1 EBT	EBR	WBL	WBT				
Capacity (veh/h)	336 -		421					
HCM Lane V/C Ratio	0.138	•	0.139	٠				
HCM Control Delay (s)	- 17.4	٠	14.9	2.5				
HCM Lane LOS	O	•	В	A				
ON OF 14 OF 14 OV 15 CALLED	L							

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HCM 2010 TWSC 15: Conestoga Rd & Spring Mill Rd

ntersection									
Int Delay, sheh 0.5									
Movement	EBL	EBT		>	WBT \	WBR	SWL	SWR	
/ol, veh/h	10	662		9	615	3	17	6	
Conflicting Peds, #/hr	0	0			0	0	0	0	
Sign Control	Free	Free		Ē	Free	Free	Stop	Stop	
RT Channelized		None			-	None		None	
Storage Length		٠					0		
Veh in Median Storage, #		0			0		0		
Grade, %	•	0			0		0		
Peak Hour Factor	%	96			96	96	96	96	
Heavy Vehicles, %	_	_			<del>-</del>	<del>-</del>	-	-	
Mvmt Flow	10	069		9	641	3	18	6	
Major/Minor	Major1			Major2	or2		Minor2		
Conflicting Flow All	644	0				0	1352	642	
Stage 1		٠					642		
Stage 2	•	•			÷	ì	710		
Critical Hdwy	4.11	٠				,	6.41	6.21	
Critical Hdwy Stg 1	•	٠					5.41		
tical Hdwy Stg 2		٠					5.41		
-ollow-up Hdwy	2.209	•			ï	·	3.509	3.309	
Pot Cap-1 Maneuver	946	٠			÷		166	476	
Stage 1	•	•			÷	·	276		
Stage 2	'	٠					489		
Platoon blocked, %		•			ř				
Mov Cap-1 Maneuver	946	٠					163	476	
Mov Cap-2 Maneuver	•	•			ï	·	163		
Stage 1	•	٠					276		
Stage 2	•	٠			·		481		
Approach	EB			^	WB		SW		
HCM Control Delay, s	0.1				0		24.6		
HCM LOS							ပ		
Minor Lane/Major Mvmt	EBL	EBT	WBT W	WBRSWLn1					
Capacity (veh/h)	946			- 211					
HCM Lane V/C Ratio	0.011	٠		- 0.128					
HCM Control Delay (s)	89.	0		- 24.6					
HCM Lane LOS	٧	<		ر					
	-	c		ر '					

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HCM 2010 TWSC 29: Strathmore Dr/Lowrys Ln & Conestoga Rd

Intersection													
Int Delay, s/veh 2.	2.6												
Movement	EBL	EBT	EBR	_	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	37	514	17		17	473	16	15	8	17	6	17	
Conflicting Peds, #/hr	0	0	0		0	0	0	0			0	0	
Sign Control	Free	Free	Free	_	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	•	•	None		٠	٠	None				•		None
Storage Length	•		٠		٠	٠			·	٠			
Veh in Median Storage, #	•	0	٠		٠	0			0	٠	•	0	
Grade, %	•	0	•		٠	0		•	0	٠	•	0	
Peak Hour Factor	96	96	96		96	96	96	96	96	96	96	96	%
Heavy Vehicles, %	_	<del></del>	<del></del>		<del>-</del>	<del>-</del>	<b>—</b>		_	-		_	
Mvmt Flow	39	535	18		18	493	17	16	∞	92	6	18	23
Major/Minor	Major1			Ma	Major2			Minor1			Minor2		
Conflicting Flow All	209	0	0		553	0	0	1194	1166	544	1170	1166	501
Stage 1		•			٠	٠		621	621	٠	536	536	
Stage 2	•		٠		٠			573	545	٠	634	630	
Critical Hdwy	4.11		٠		4.11	•		7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	•		٠		٠	٠		6.11	5.51	٠	6.11	5.51	
Critical Hdwy Stg 2					٠			6.11	5.51	٠	6.11	5.51	
Follow-up Hdwy	2.209		٠	2	2.209	•		3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1061		٠	_	1022	٠		164	195	541	171	195	572
Stage 1	•		٠		٠	•		477	481	٠	530	525	
Stage 2	•	•	٠		٠	٠		206	520	٠	469	476	
Platoon blocked, %			٠			٠							
Mov Cap-1 Maneuver	1061	1	٠	_	1022	•		129		541	150	180	572
Mov Cap-2 Maneuver	•	1	•		٠	1		129	180	•	150	180	
Stage 1	•		٠		٠	٠		452	456	٠	205	512	
Stage 2		•	•			1		430	201	•	422	451	
Approach	ä				WB			an			ay a		
Apploacii	<u>.</u>										20		
HCM Control Delay, s	9.0				0.3			70.6			1.02		
HCM LOS											ی		
Minor Lono/Major Munt	Lu IdN	0	FDT	LDD	IQ/W	TQ/M	MDD CDI n	7					
Consoit, (cob/b)	NDCIII	1071	LDI		WDL 1000		WDN 3DL						
Capacity (veryri)	202	1001	٠		7701	٠	,	320					
HCM Lane V/C Ratio	0.7	0.2 0.036	' (	0 -	- 0.01 /		- 0.25/	27					
HCM Control Delay (s)	70.0		0 .		9.0	0 .	- 2	70.1					
HCM Lane LOS	a	∢	A		Ø	A		ی					
HCM 95th %tile Q(veh)	0.7	0.1	٠		0.1	•		<del>-</del>					

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Lanes, Volumes, Timings 38: County Line Rd & N Ithan Ave

162 1900 1.00

	<b>—</b>	*_	>	<b>→</b>	<b>,</b>	4	
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	
Lane Configurations	+			₩	×		
Volume (vph)	269	121	183	498	133	62	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.958				0.957		
Fit Protected				0.987	196.0		
Satd. Flow (prot)	1802	0	0	1857	1741	0	
Fit Permitted				186.0	196.0		
Satd. Flow (perm)	1802	0	0	1857	1741	0	
Link Speed (mph)	30			30	30		
Link Distance (ft)	295			1901	824		
Travel Time (s)	6.7			43.2	18.7		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Adj. Flow (vph)	286	129	195	530	141	99	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	415	0	0	725	207	0	
Enter Blocked Intersection	9	9	No No	8	8	8	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			0	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		6	12		12	6	
Sign Control	Free			Stop	Stop		
Intersection Summary							
Area Type:	Other						
Control Type: Unsignalized							
Intersection Capacity Utilization 79.0%	ion 79.0%			⊇	U Level o	ICU Level of Service D	۵
Analysis Period (min) 15							

ICU Level of Service D NWH 23 1900 0.082 0.994 1649 30 30 2014 45.8 0.94 196 No Left 12 0 1.00 15 Stop No No Right 332 1900 1.00 353 1.00 302 302 1000 1.00 0.977 1707 30 295 6.7 0.94 321 1.00 15 Free 00 No 112 0 10 10 Lanes, Volumes, Timings 2: County Line Rd & N Ithan Ave 279 0 No No Left Right 22 0 0.94 37 1900 1.00 1.00 ۲ Area Type:
Control Type: Unsignalized
Intersection Capacity Utilization 73.2%
Analysis Period (min) 15 EBL 226 1900 1.00 0.981 0.959 1763 30 973 22.1 0.94 17% 1 240 1.01 15 Stop Lane Configurations
Volume (yph)
deal Flow (php)
Lane Util Factor
Fit
RI Protected
Salt Flow (pem)
Link Speed (mph)
Link Speed (mph)
Link Speed (mph)
Link Speed (mph)
Link Speed (mph)
Link Speed (mph)
Link Speed (mph)
Link Speed (mph)
Link Speed (mph)
Link Shared Lane Tadior
Ravel Tawe (1)
Tavel Time (8)
Bus Block Ages (#hn)
Ad; Flow (vph)
Shared Lane Tadior
Median Wduh(ft)
Link Offsel(ft)
Crosswalk Wduh(ft)
Link Offsel(ft)
Crosswalk Wduh(ft)
Fine Time Alignment
Readway Factor
Turning Speed (mph)
Sign Control 3/10/2015

0 No Right

1.00

0

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HCM 2010 TWSC 53: County Line Rd & Lowrys Ln

Peds, #hr Sto on an analysis of the Storage, # Island Storage, # I					
₩ **					
*					
<b>W</b>	EBR	NBL	NBT	SBT	SBR
*	18	25	183	156	124
₩ **	0	0	0	0	0
₩ *	Stop	Free	Free	Free	Free
Minc 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	None	•	None		None
Min Min Min Min Min Min Min Min Min Min		1		•	
Mine 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		•	0	0	
Minc 2 2 2 2 2 2 2 2 2 2 3 4 4 4 4 4 4 4 4 4		•	0	0	
Minc 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	96	96	96	%	96
Minc 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0	0	0	0	0
Wii	19	24	191	162	129
W					
		Major1		Major2	
	227	292	0	•	0
	٠	•			
	6.2	4.1			
		•		•	
	•	•			
	3.3	2.2		•	
	817	1281		•	
		•			
	•	'		•	
				•	
	817	1281			
	•	•		•	
	•	•			
11.				•	
11		NB NB		SS	
		18		C	
HCM LOS B					
Minor Lane/Major Mvmt NBL N	NBT EBLn1	SBT SBR			
Capacity (veh/h) 1281	- 623				
0.0	- 0.057	•			
HCM Control Delay (s) 7.9	0 11.1				
HCM Lane LOS A	A B				
HCM 95th %tile Q(veh) 0.1	- 0.2				

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HCM 2010 TWSC 52: Airdale Rd & County Line Rd

Movement	EBL	EBT	<b>A</b>	WBT	WBR	SBL	SBR	
Vol, veh/h	169	215		345	16	12	118	
Conflicting Peds, #/hr	0	0		0	0	0	0	
Sign Control	Free	Free	_	Free	Free	Stop	Stop	
RT Channelized	•	None		•	None		None	
Storage Length	•			٠		0		
Veh in Median Storage, #	•	0		0		0		
Grade, %	•	0		0		0		
Peak Hour Factor	86	86		86	86	86	86	
Heavy Vehicles, %	<del>-</del>	<b>—</b>		<del>-</del>	<del>-</del>	<b>—</b>	<del>-</del>	
Mvmt Flow	172	219		352	91	12	120	
Major/Minor	Major1		Ma	Major2		Minor2		
Conflicting Flow All	368	0		٠	0	924	360	
Stage 1				٠		360		
Stage 2	٠			÷		564		
Critical Hdwy	4.11					6.41	6.21	
Critical Hdwy Stg 1				٠		5.41		
Critical Hdwy Stg 2	•			٠		5.41	٠	
Follow-up Hdwy	2.209			٠		3.509	3.309	
Pot Cap-1 Maneuver	1196			•		300	687	
Stage 1	•			1		708		
Stage 2	•	,		•		571		
Platoon blocked, %				٠				
Mov Cap-1 Maneuver	1196			•		251	687	
Mov Cap-2 Maneuver	•			٠		251		
Stage 1	•			٠		708		
Stage 2	•			٠	i	477		
Approach	EB			WB		SB		
HCM Control Delay, s	3.7			0		12.8		
HCM LOS						Ω		
Minor Lane/Major Mvmt	EBL	EBT WBT	WBT WBR SBLn1					
Capacity (veh/h)	1196		- 592					
HCM Lane V/C Ratio	0.144		- 0.224					
HCM Control Delay (s)	8.5	- 0	- 12.8					
HCM Lane LOS	V	- -	В.					
A								

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HCM 2010 TWSC 43: County Line Rd & Roberts Rd

ntersection														
nt Delay, s/veh 3.2	2													
Movement	EBL	EBT	EBR	\$	WBL V	WBT	WBR	NBL	. NBT	NBR		SBL	SBT	SBR
/ol, veh/h	37	26	<del>-</del>		6	56	1	4	511		28	7	654	9
Conflicting Peds, #/hr	0	0	0		0	0	0	0	0		0	0	0	0
Sign Control	Stop	Stop	Stop	S	Stop 5	Stop	Stop	Free	Free	Free		Free	Free	Free
RT Channelized			None			-	None		Ċ	None	e		٠	None
Storage Length		٠	٠			٠							٠	ľ
Veh in Median Storage, #		0				0			0				0	ľ
Grade, %	•	0				0			0 -				0	Ċ
Peak Hour Factor	95	96	95		95	92	95	95	95		95	95	95	95
Heavy Vehicles, %	_	<del></del>	<del>-</del>		<del>-</del>	<del></del>	-	_	_		_	<del></del>	<del></del>	_
Mvmt Flow	39	27	-		6	27	12	4	538		29	12	889	63
// Minor	Minor2			Minor1	01			Major1			Major2	or2		
Conflicting Flow All	1034	1319	376	0.	942 1	1336	284	752	0		0 5	267	0	0
Stage 1	743	743		.,	561	561			Ċ				٠	
Stage 2	291	576		(.,	381	775			Ċ			÷	1	ľ
Critical Hdwy	7.52	6.52	6.92	7		6.52	6.92	4.12			- 4	4.12	٠	ľ
Critical Hdwy Stg 1	6.52	5.52	٠	9	6.52	5.52	٠		i				٠	·
Critical Hdwy Stg 2	6.52	5.52		9		5.52							٠	
Follow-up Hdwy	3.51	4.01	3.31	3	-	4.01	3.31	2.21	·		- 2.	2.21	٠	ľ
Pot Cap-1 Maneuver	188	157	624		219	154	716	860			- 10	1008	٠	
Stage 1	375	422	ì	7	482	511			Ì			ï	1	
Stage 2	969	503	٠	~	919	408	•		•		,	,	•	
Platoon blocked, %													1	
Mov Cap-1 Maneuver	156	153	624		185	150	716	860			- 10	1008	٠	
Nov Cap-2 Maneuver	156	153	•		185	150	•						٠	'
Stage 1	372	413		7	479	207			Ċ				٠	
Stage 2	642	499	٠	Δ,	295	366	٠		į				٠	·
Approach	EB			/	WB			NB				SB		
HCM Control Delay, s	44.1			2	29.6			0.1				0.2		
HCM LOS	Е				Ω									
Winor Lane/Major Mvmt	NBL	NBT	NBR EBLn1WBLn1	3Ln1WBI		SBL	SBT	SBR						
Capacity (veh/h)	860			157	194 1	1008								
HCM Lane V/C Ratio	0.005	•	- 0	0.429 0	0.25 0.	0.011	٠							
HCM Control Delay (s)	9.2	0	ì	44.1 2	29.6	9.8	0.1							
HCM Lane LOS	A	A		ш	Ω	V	A							
HCM 95th %tile Q(veh)	0		٠	1.9	6.0	0	٠							
\\\														

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Intersection 2.2													
IIII Deidy, s/ven	2												
Movement	EBL	EBT	EBR	WBL	WBT	WBR		NBL	NBT	NBR	SBL	SBT	SBF
Vol, veh/h	35	149	2	51	284	21		∞	33	37	4	0	
Conflicting Peds, #/hr	0	0	0	0					0	0	0	0	
Sign Control	Free	Free	Free	Free	Free	Free		Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	•	•	None	İ	'	None			,	None			None
Storage Length	•	•						٠	•			Ť	
Veh in Median Storage, #	•	0		·				٠	0			0	
Grade, %	•	0		Ì				٠	0			0	
Peak Hour Factor	91	9	91	91	0.	16		16	91	16	91	91	9
Heavy Vehicles, %	2	7	2	2		2		7	7	2	2	2	
Mvmt Flow	œ 	164	D.	20	312	23		6	m	41	4	0	14
Major/Minor	Major1			Major2			≥	Minor1			Minor2		
Conflicting Flow All	335	0	0	169	0	0		989	069	166	701	682	32
Stage 1	٠	٠		Ċ				243	243		436	436	
Stage 2	•	•		Ċ				443	447		265	246	
Critical Hdwy	4.12	٠		4.12				7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	•	1						6.12	5.52		6.12	5.52	
Critical Hdwy Stg 2	•	٠			1	1			5.52		6.12		
Follow-up Hdwy	2.218	٠		2.218	•	•	,			3.318	3.518	4	$\sim$
Pot Cap-1 Maneuver	1774	٠		1409				307	308	8/8	353	3/2	=
Stage 1						1		207	573		740	703	
Platoon blocked, %									5		2	2	
Mov Cap-1 Maneuver	1224			1409	ľ			333	338	878	313	342	717
Mov Cap-2 Maneuver	•	•				•		333	338		313	342	
Stage 1	•	٠			•			735	681		579	225	
Stage 2	•	•						224	545		678	619	
	8			S.				2			S		
Approach	EB			WB				NB			SB		
HCM Control Delay, s HCM LOS	1.5			1.1				11.1 B			11.8 B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT EBR	3R WBL	WBT	WBR SBLn1	SBLn1						
Capacity (veh/h)		1224		- 1409			550						
HCM Lane V/C Ratio	0.082 0.031	0.031		- 0.04			0.034						
HCM Control Delay (s)	11.1	∞	0	- 7.7		Ť	=						
HCM Lane LOS	В	A	Α	. A		1	В						

HCM 2010 TWSC 10: WLA Drive & Lancaster Ave

Int Delay, skeh 0.1 Movement 0.1								
Movement Vol. veh/h								
Vol. veh/h		FRT	FRR		WRI	WRT	NRI	NRR
	ľ	1192	64			942	0	15
Conflicting Peds, #/hr		0	0		0	0	0	0
Sign Control		Free	Free		Free	Free	Stop	Stop
RT Channelized		٠	None			None		None
Storage Length		٠	125		٠			0
Veh in Median Storage, #		0	٠		٠	0	0	
Grade, %		0				-2	0	
Peak Hour Factor		92	92		35	92	92	92
Heavy Vehicles, %		7	2		2	2	2	2
Mvmt Flow		1296	70		0	1024	0	16
Major/Minor	Ž	Major1		M	Major2		Minor1	
Conflicting Flow All		0	0		1296	0	1808	648
Stage 1		٠			٠		1296	
Stage 2		٠					512	
Critical Hdwy		٠			4.14	,	6.84	6.94
Critical Hdwy Stg 1		1	·		٠	,	5.84	
Critical Hdwy Stg 2		٠					5.84	
Follow-up Hdwy		1	ì		2.22	,	3.52	3.32
Pot Cap-1 Maneuver		٠			531		70	413
Stage 1		•					220	
Stage 2		٠					292	
Platoon blocked, %		٠	٠			,		
Mov Cap-1 Maneuver		٠			531	,	70	413
Mov Cap-2 Maneuver		1			٠		70	
Stage 1		•					220	
Stage 2		1					292	
Approach		EB			WB		NB	
HCM Control Delay, s		0			0		14.1	
HCM LOS							В	
	3	Ė			H			
Minor Lane/Major Mvmt	NBLNI	EBI	EBK V		WBI			
Capacity (veh/h)	413	٠	٠	53.1	·			
HCM Lane V/C Ratio	0.039	•						
HCM Control Delay (s)	14.1	٠		0	٠			
HCM Lane LOS	മ	•	·	V	í			
HCM 95th %tile Q(veh)	0.1	•		0	,			

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HCM 2010 TWSC	6: PAC Drive & Lancaster Ave

III Delay, stycii									
Movement		SET	SER	Z	I JWN	NWT	NEL	NER	
Vol, veh/h		1077	72		47	789	0	91	
Conflicting Peds, #/hr		0	0		0	0	0	0	
Sign Control		Free	Free	_	Free	Free	Stop	Stop	
RT Channelized		•	None			None		None	
Storage Length		٠	100		75			0	
Veh in Median Storage, #		0	٠			0	0		
Grade, %		0	•			က	0	,	
Peak Hour Factor		92	92		92	92	92	92	
Heavy Vehicles, %		2	7		2	2	2	2	
Mvmt Flow		1171	78		22	858	0	66	
Major/Minor	×	Major1		Ma	Major2		Minor1		l
Conflicting Flow All		0	0	-	1171	0	1702	585	
Stage 1		٠	٠				1171		
Stage 2		•					531		
Critical Hdwy		٠	٠	7	4.14		6.84	6.94	
Critical Hdwy Stg 1		1	•		ì		5.84	٠	
Critical Hdwy Stg 2		٠	•				5.84		
Follow-up Hdwy		1	•		2.22	,	3.52	3.32	
Pot Cap-1 Maneuver		٠	٠		592		83	454	
Stage 1		•	•				257		
Stage 2		٠	٠				554		
Platoon blocked, %		•	•						
Mov Cap-1 Maneuver		1	1		265		9/2	424	
Mov Cap-2 Maneuver		•	•		ï		9/		
Stage 1		٠	٠				257		
Stage 2		•					206		
Approach		SE			N/		NE		
HCM Control Delay, s		0			0.7		15.1		
HCM LOS							O		
Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET S	SER				
Capacity (veh/h)	454	592							
HCM Lane V/C Ratio	0.218	980.0	•		٠				
HCM Control Delay (s)	12.1	11.7							
HCM Lane LOS	ပ	В	•						
1011 OF 14 OV 11 OV 11 OV	0								

HCM 2010 TWSC 76: Pike Garage & S Ithan Ave & LAH Drive

in Doldy, short											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR NWU	NWL	NWR
/ol, veh/h	16	129	43	71	255	1	22	14	26	22	120
Conflicting Peds, #/hr	0	0	0	0	0		0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop
RT Channelized	•	•	None	•	'	None		None	•		
Storage Length	•	•		20	•	•	0	•	1	0	
Veh in Median Storage, #		0			0		0			0	ľ
Grade, %	•	_	٠		<u>-</u>		0	•	•	0	·
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	140	47	77	277	-	09	15	99	09	130
Major/Minor	Major1			Major2			Minor2	~	Minor1		
Conflicting Flow All	278	0	0	187	0	0	969	278	0	899	164
Stage 1	٠	٠					432	•	0	198	
Stage 2		•					264	•	0	470	
Critical Hdwy	4.12			4.12			7.12	6.22		7.12	6.22
Critical Hdwy Stg 1	٠	•	٠				6.12	•	•	6.12	İ
itical Hdwy Stg 2	•				•		6.12		٠	6.12	
Follow-up Hdwy	2.218	1		2.218	1		3.518	3.318	•	3.518	3.318
Pot Cap-1 Maneuver	1285	٠		1387			326	761	0	372	881
Stage 1	•	1	٠	•	1		602	•	0	804	
Stage 2	•	•			•		741	•	0	574	
Platoon blocked, %					•						
Mov Cap-1 Maneuver	1285			1387	•		246	761	0	301	881
Mov Cap-2 Maneuver	•			•	•	,	246	•	0	301	
Stage 1	•	•					593	•	0	792	
Stage 2	•	1					266	•	0	474	
Approach	EB			WB			SB		Š		
HCM Control Delay, s	0.7			1.7			16.3		19.9		
HCM LOS							O		O		
Minor Lane/Major Mvmt	NWLn1	EBL	EBT	EBR WBL	WBT	WBT WBR SBLn1					
Capacity (veh/h)		1285		- 1387	ľ	- 395					
HCM Lane V/C Ratio		0.014	٠	- 0.056		- 0.195					
HCM Control Delay (s)	19.9	7.8	0	- 7.7		- 16.3					
HCM Lane LOS	ن	<	<	<		ر					
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# **APPENDIX J**

Auxiliary Turn Lane Warrant Analyses

### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc. Intersection & Approach Description: Lancaster Avenue (SR0030) & Proposed WLA RI/RO Driveway **Analysis Period:** 2025 Build Number of Approach Lanes Undivided **Design Hours** AM Peak Hour **Undivided or Divided Highway:** Intersection Control: Unsignalized Type of Analysis Posted Speed Limit (MPH): Type of Terrain: Level Left or Right-Turn Lane Analysis?: Right Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** PCEV Include? Volume Movement % Trucks Left 0.0% N/A N/A Yes 0 **Advancing Volume:** Advancing Through 0 0.0% N/A N/A **Opposing Volume:** 0.0% N/A Right Yes 0 **Left Turn Volume:** N/A 0 0.0% N/A Yes Opposing Through 0 0.0% N/A 0 0.0% N/A N/A Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 0 0.0% 0 972 7.0% 1007 **Advancing Volume:** 1071 Advancing Through Right 0.0% 64 **Right Turn Volume: TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** N/A **Applicable Warrant Figure:** Figure 11 **Warrant Met?:** N/A Yes Warrant Met?: **TURN LANE LENGTH CALCULATIONS** Unsignalized **Intersection Control: Design Hour Volume of Turning Lane:** 64 Cycles Per Hour (Assumed): Known 40 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized Α B or C В Right Turn Lane Storage Length, Condition A: 100 Feet **Condition B:** N/A Feet Condition C: N/A Feet 100 Required Right Turn Lane Storage Length: Feet **Additional Findings: Additional Comments / Justifications:** A storage length of 125 feet is provided on the plans



### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc. Intersection & Approach Description: Lancaster Avenue (SR0030) & Proposed WLA RI/RO Driveway **Analysis Period:** 2025 Build Number of Approach Lanes Undivided Design Hour: PM Peak Hour **Undivided or Divided Highway:** Intersection Control: Unsignalized Type of Analysis Posted Speed Limit (MPH): Type of Terrain: Level Left or Right-Turn Lane Analysis?: Right Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** Include? Volume PCEV Movement % Trucks Left 0.0% N/A Advancing Volume: N/A Yes 0 Advancing Through 0 0.0% N/A N/A **Opposing Volume:** N/A Right Yes 0 0.0% **Left Turn Volume:** N/A 0 0.0% N/A Yes Opposing Through 0 0.0% N/A 0 0.0% N/A N/A Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 0 0.0% 0 1206 1.0% 1213 **Advancing Volume:** 1277 Advancing Through Right 0.0% 64 **Right Turn Volume: TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** N/A **Applicable Warrant Figure:** Figure 11 **Warrant Met?:** N/A Yes Warrant Met?: **TURN LANE LENGTH CALCULATIONS** Unsignalized **Intersection Control: Design Hour Volume of Turning Lane:** 64 Cycles Per Hour (Assumed): Known 40 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High Low High Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized Α B or C В Right Turn Lane Storage Length, Condition A: 100 Feet **Condition B:** N/A Feet Condition C: N/A Feet 100 Required Right Turn Lane Storage Length: Feet **Additional Findings: Additional Comments / Justifications:** A storage length of 125 feet is provided on the plans



### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc. Intersection & Approach Description: Lancaster Avenue (SR0030) & Relocated Church Walk Driveway **Analysis Period:** 2025 Build Number of Approach Lanes: Undivided Design Hour: AM Peak Hour **Undivided or Divided Highway:** Intersection Control: Signalized Type of Analysis Posted Speed Limit (MPH): 25 Type of Terrain: Level Left or Right-Turn Lane Analysis?: Right Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** PCEV Include? Volume Movement % Trucks Left 0.0% N/A N/A Yes 0 **Advancing Volume:** Advancing Through 0 0.0% N/A N/A **Opposing Volume:** 0.0% N/A Right Yes 0 **Left Turn Volume:** N/A 0 0.0% N/A Yes Opposing Through 0 0.0% N/A 0 0.0% N/A N/A Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 0 0.0% 0 947 7.0% 981 **Advancing Volume:** 1009 Advancing Through Right 28 0.0% 28 **Right Turn Volume:** 28 **TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** N/A **Applicable Warrant Figure:** Figure 11 **Warrant Met?:** N/A Warrant Met?: No **TURN LANE LENGTH CALCULATIONS** Signalized **Intersection Control: Design Hour Volume of Turning Lane** 28 Cycles Per Hour (Assumed): Known N/A 60 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized Α B or C Α В Right Turn Lane Storage Length, Condition A: N/A Feet **Condition B:** N/A Feet Condition C: N/A Feet N/A Required Right Turn Lane Storage Length: Feet **Additional Findings: Additional Comments / Justifications:** A storage length of 125 feet is provided on the plans



### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc Intersection & Approach Description: Lancaster Avenue (SR0030) & Relocated Church Walk Driveway **Analysis Period:** 2025 Build Number of Approach Lanes: Undivided Design Hour: PM Peak Hour **Undivided or Divided Highway:** Intersection Control: Signalized Type of Analysis Posted Speed Limit (MPH): 25 Type of Terrain: Level Left or Right-Turn Lane Analysis?: Right Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** PCEV Include? Volume Movement % Trucks Left 0.0% N/A N/A Yes 0 **Advancing Volume:** Advancing Through 0 0.0% N/A N/A **Opposing Volume:** 0.0% N/A Right Yes 0 **Left Turn Volume:** N/A 0 0.0% N/A Yes Opposing Through 0 0.0% N/A 0 0.0% N/A N/A Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 0 0.0% 0 1190 1.0% 1196 **Advancing Volume:** 1227 Advancing Through Right 31 0.0% 31 **Right Turn Volume: TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** N/A **Applicable Warrant Figure:** Figure 11 **Warrant Met?:** N/A Warrant Met?: No **TURN LANE LENGTH CALCULATIONS** Signalized **Intersection Control: Design Hour Volume of Turning Lane:** 31 Cycles Per Hour (Assumed): Known N/A 60 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized Α B or C Α В Right Turn Lane Storage Length, Condition A: N/A Feet **Condition B:** N/A Feet Condition C: N/A Feet N/A Required Right Turn Lane Storage Length: Feet **Additional Findings:** Additional Comments / Justifications: A storage length of 125 feet is provided on the plans



### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc Intersection & Approach Description: Lancaster Avenue (SR0030) & Relocated Church Walk Driveway **Analysis Period:** 2025 Build Number of Approach Lanes Undivided Design Hour: AM Peak Hour **Undivided or Divided Highway:** Intersection Control: Signalized Posted Speed Limit (MPH): 25 Type of Analysis Type of Terrain: Level Left or Right-Turn Lane Analysis?: Left Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** PCEV Include? Volume Movement % Trucks 1063 Left 44 0.0% 44 Advancing Volume: Yes Advancing Through 999 4.0% 1019 1009 **Opposing Volume:** 0.0% Right Yes 0 0 **Left Turn Volume:** 44 0 0.0% 0 Yes 947 Opposing Through 7.0% 981 28 0.0% 28 4.14% Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 0 0.0% N/A 0 0.0% N/A **Advancing Volume:** N/A Advancing Through Right 0.0% N/A **Right Turn Volume:** N/A **TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** Figure 7 **Applicable Warrant Figure:** N/A Warrant Met?: N/A Yes Warrant Met?: **TURN LANE LENGTH CALCULATIONS** Signalized **Intersection Control: Design Hour Volume of Turning Lane:** 44 Cycles Per Hour (Assumed): Known 60 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α B or C B or C B or C B or C Α Unsignalized B or C Α Α В Left Turn Lane Storage Length, Condition A: **75** Feet **Condition B:** N/A Feet Condition C: N/A Feet **75** Required Left Turn Lane Storage Length: Feet **Additional Findings:** Additional Comments / Justifications: A storage length of 125 feet is provided on the plans



### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc. Intersection & Approach Description: Lancaster Avenue (SR0030) & Relocated Church Walk Driveway **Analysis Period:** 2025 Build Number of Approach Lanes Undivided Design Hour: PM Peak Hour **Undivided or Divided Highway:** Intersection Control: Signalized Posted Speed Limit (MPH): 25 Type of Analysis Type of Terrain: Level Left or Right-Turn Lane Analysis?: Left Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** PCEV Include? Volume Movement % Trucks 908 Left 34 0.0% 34 Advancing Volume: Yes Advancing Through 861 3.0% 874 1227 **Opposing Volume:** 0.0% Right Yes 0 0 **Left Turn Volume:** 34 0 0.0% 0 Yes Opposing Through 1190 1.0% 1196 31 0.0% 31 3.74% Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 0 0.0% N/A 0 0.0% N/A **Advancing Volume:** N/A Advancing Through Right 0.0% N/A **Right Turn Volume:** N/A **TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** Figure 7 **Applicable Warrant Figure:** N/A Warrant Met?: N/A Yes Warrant Met?: **TURN LANE LENGTH CALCULATIONS** Signalized **Intersection Control: Design Hour Volume of Turning Lane:** 34 Cycles Per Hour (Assumed): Known 60 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α B or C B or C B or C B or C Α Unsignalized B or C Α Α В Left Turn Lane Storage Length, Condition A: **75** Feet **Condition B:** N/A Feet Condition C: N/A Feet **75** Required Left Turn Lane Storage Length: Feet **Additional Findings: Additional Comments / Justifications:** A storage length of 125 feet is provided on the plans



### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc. Intersection & Approach Description: Lancaster Avenue (SR0030) & PAC Driveway **Analysis Period:** 2025 Build Number of Approach Lanes: Undivided Design Hour: AM Peak Hour **Undivided or Divided Highway:** Intersection Control: Unsignalized Type of Analysis Posted Speed Limit (MPH): Type of Terrain: Level Left or Right-Turn Lane Analysis?: Right Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** Include? Volume PCEV Movement % Trucks Left 0.0% N/A N/A Yes 0 **Advancing Volume:** Advancing Through 0 0.0% N/A N/A **Opposing Volume:** 0.0% N/A Right Yes 0 **Left Turn Volume:** N/A 0 0.0% N/A Yes Opposing Through 0 0.0% N/A 0 0.0% N/A N/A Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 0 0.0% 0 910 7.0% 942 **Advancing Volume:** 1005 Advancing Through Right 63 0.0% 63 **Right Turn Volume: TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** N/A **Applicable Warrant Figure:** Figure 11 **Warrant Met?:** N/A Warrant Met?: No **TURN LANE LENGTH CALCULATIONS** Unsignalized **Intersection Control: Design Hour Volume of Turning Lane:** 63 Cycles Per Hour (Assumed): Known N/A 60 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized Α B or C Α В Right Turn Lane Storage Length, Condition A: N/A Feet **Condition B:** N/A Feet Condition C: N/A Feet N/A Required Right Turn Lane Storage Length: Feet **Additional Findings: Additional Comments / Justifications:** A storage length of 100 feet is provided on the plans



### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc. Intersection & Approach Description: Lancaster Avenue (SR0030) & PAC Driveway **Analysis Period:** 2025 Build Number of Approach Lanes: Undivided Design Hour: PM Peak Hour **Undivided or Divided Highway:** Intersection Control: Unsignalized Type of Analysis Posted Speed Limit (MPH): Type of Terrain: Level Left or Right-Turn Lane Analysis?: Right Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** PCEV Include? Volume Movement % Trucks Left 0.0% N/A N/A Yes 0 **Advancing Volume:** Advancing Through 0 0.0% N/A N/A **Opposing Volume:** 0.0% N/A Right Yes 0 **Left Turn Volume:** N/A 0 0.0% N/A Yes Opposing Through 0 0.0% N/A 0 0.0% N/A N/A Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 0 0.0% 0 1091 1.0% 1097 **Advancing Volume:** 1169 Advancing Through Right 72 0.0% 72 **Right Turn Volume: TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** N/A **Applicable Warrant Figure:** Figure 11 **Warrant Met?:** N/A Yes Warrant Met?: **TURN LANE LENGTH CALCULATIONS** Unsignalized **Intersection Control: Design Hour Volume of Turning Lane:** Cycles Per Hour (Assumed): Known 60 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized Α B or C В Right Turn Lane Storage Length, Condition A: **75** Feet **Condition B:** N/A Feet Condition C: N/A Feet **75** Required Right Turn Lane Storage Length: Feet **Additional Findings: Additional Comments / Justifications:** A storage length of 100 feet is provided on the plans



### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc Intersection & Approach Description: Lancaster Avenue (SR0030) & PAC Driveway **Analysis Period:** 2025 Build Number of Approach Lanes: Undivided Design Hour: AM Peak Hour **Undivided or Divided Highway:** Intersection Control: Unsignalized Posted Speed Limit (MPH): Type of Analysis Type of Terrain: Level Left or Right-Turn Lane Analysis?: Left Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** Include? PCEV Movement Volume % Trucks 1084 Left 76 0.0% 76 Advancing Volume: Yes Advancing Through 988 4.0% 1008 **Opposing Volume:** 1005 0.0% Right Yes 0 0 **Left Turn Volume:** 76 0 0.0% 0 Yes Opposing Through 910 7.0% 942 63 0.0% 63 7.01% Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 0 0.0% N/A 0 0.0% N/A **Advancing Volume:** N/A Advancing Through Right 0.0% N/A **Right Turn Volume:** N/A **TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** Figure 7 **Applicable Warrant Figure:** N/A Warrant Met?: N/A Yes Warrant Met?: **TURN LANE LENGTH CALCULATIONS** Unsignalized **Intersection Control: Design Hour Volume of Turning Lane:** 76 Cycles Per Hour (Assumed): Known 60 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized B or C Α В Left Turn Lane Storage Length, Condition A: **75** Feet **Condition B:** N/A Feet Condition C: N/A Feet **75** Required Left Turn Lane Storage Length: Feet **Additional Findings: Additional Comments / Justifications:** A storage length of 75 feet is provided on the plans



### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc Intersection & Approach Description: Lancaster Avenue (SR0030) & PAC Driveway **Analysis Period:** 2025 Build Number of Approach Lanes: Undivided Design Hour: PM Peak Hour **Undivided or Divided Highway:** Intersection Control: Unsignalized Posted Speed Limit (MPH): Type of Analysis Type of Terrain: Level Left or Right-Turn Lane Analysis?: Left Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** PCEV Include? Volume Movement % Trucks 859 Left 47 0.0% 47 Advancing Volume: Yes Advancing Through 800 3.0% 812 1169 **Opposing Volume:** 0.0% Right Yes 0 0 **Left Turn Volume:** 47 0 0.0% 0 Yes 1097 Opposing Through 1091 1.0% 72 0.0% 72 5.47% Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 0 0.0% N/A 0 0.0% N/A **Advancing Volume:** N/A Advancing Through Right 0.0% N/A **Right Turn Volume:** N/A **TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** Figure 7 **Applicable Warrant Figure:** N/A Warrant Met?: N/A Yes Warrant Met?: **TURN LANE LENGTH CALCULATIONS** Unsignalized **Intersection Control: Design Hour Volume of Turning Lane:** 47 Cycles Per Hour (Assumed): Known 60 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized B or C Α В Left Turn Lane Storage Length, Condition A: **75** Feet **Condition B:** N/A Feet Condition C: N/A Feet **75** Required Left Turn Lane Storage Length: Feet **Additional Findings:** Additional Comments / Justifications: A storage length of 75 feet is provided on the plans



### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc. Intersection & Approach Description: Ithan Avenue & LAH/PAC Driveway; NB **Analysis Period:** 2025 Build Number of Approach Lanes: Undivided Design Hour: AM Peak Hour **Undivided or Divided Highway:** Intersection Control: Unsignalized Type of Analysis Posted Speed Limit (MPH): Type of Terrain: Level Left or Right-Turn Lane Analysis?: Left Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** Include? Volume PCEV Movement % Trucks Left 0.0% 16 Advancing Volume: 406 Yes 16 Advancing Through 350 2.0% 354 261 **Opposing Volume:** Right Yes 36 0.0% 36 **Left Turn Volume:** 16 60 0.0% 60 Yes Opposing Through 195 4.0% 199 2 0.0% 2 3.94% Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 0 0.0% N/A 0 0.0% N/A **Advancing Volume:** N/A Advancing Through Right 0.0% N/A **Right Turn Volume:** N/A **TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** Figure 1 **Applicable Warrant Figure:** N/A Warrant Met?: N/A No Warrant Met?: **TURN LANE LENGTH CALCULATIONS** Unsignalized **Intersection Control: Design Hour Volume of Turning Lane:** 16 Cycles Per Hour (Assumed): Known N/A 60 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized Α B or C Α В Left Turn Lane Storage Length, Condition A: N/A Feet **Condition B:** N/A Feet Condition C: N/A Feet N/A Required Left Turn Lane Storage Length: Feet **Additional Findings: Additional Comments / Justifications:**



### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc Intersection & Approach Description: Ithan Avenue & LAH/PAC Driveway; NB **Analysis Period:** 2025 Build Number of Approach Lanes: Undivided Design Hour: AM Peak Hour **Undivided or Divided Highway:** Intersection Control: Unsignalized Type of Analysis Posted Speed Limit (MPH): Type of Terrain: Level Left or Right-Turn Lane Analysis?: Right Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** Include? Volume PCEV Movement % Trucks Left 0.0% N/A N/A Yes 0 **Advancing Volume:** Advancing Through 0 0.0% N/A N/A **Opposing Volume:** 0.0% N/A Right Yes 0 **Left Turn Volume:** N/A 0 0.0% N/A Yes Opposing Through 0 0.0% N/A 0 0.0% N/A N/A Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 16 0.0% 16 350 2.0% 354 **Advancing Volume:** 406 Advancing Through Right 0.0% 36 **Right Turn Volume:** 36 **TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** N/A **Applicable Warrant Figure:** Figure 9 **Warrant Met?:** N/A Warrant Met?: No **TURN LANE LENGTH CALCULATIONS** Unsignalized **Intersection Control: Design Hour Volume of Turning Lane:** 36 Cycles Per Hour (Assumed): Known N/A 60 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized Α B or C Α В Right Turn Lane Storage Length, Condition A: N/A Feet **Condition B:** N/A Feet Condition C: N/A Feet N/A Required Right Turn Lane Storage Length: Feet **Additional Findings: Additional Comments / Justifications:**



### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc. Intersection & Approach Description: Ithan Avenue & LAH/PAC Driveway; NB **Analysis Period:** 2025 Build Number of Approach Lanes: Undivided **Design Hour:** PM Peak Hour **Undivided or Divided Highway:** Intersection Control: Unsignalized Type of Analysis Posted Speed Limit (MPH): Type of Terrain: Level Left or Right-Turn Lane Analysis?: Left Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** PCEV Include? Volume Movement % Trucks Left 16 0.0% 16 193 Yes **Advancing Volume:** Advancing Through 132 3.0% 134 354 **Opposing Volume:** 0.0% 43 Right Yes 43 **Left Turn Volume:** 16 71 0.0% 71 Yes 279 Opposing Through 2.0% 282 0.0% 8.29% Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 0 0.0% N/A 0 0.0% N/A **Advancing Volume:** N/A Advancing Through Right 0.0% N/A **Right Turn Volume:** N/A **TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** Figure 1 **Applicable Warrant Figure:** N/A Warrant Met?: N/A No Warrant Met?: **TURN LANE LENGTH CALCULATIONS** Unsignalized **Intersection Control: Design Hour Volume of Turning Lane:** 16 Cycles Per Hour (Assumed): Known N/A 60 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized Α B or C Α В Left Turn Lane Storage Length, Condition A: N/A Feet **Condition B:** N/A Feet Condition C: N/A Feet N/A Required Left Turn Lane Storage Length: Feet **Additional Findings: Additional Comments / Justifications:**



### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc. Intersection & Approach Description: Ithan Avenue & LAH/PAC Driveway; NB **Analysis Period:** 2025 Build **Number of Approach Lanes** Undivided **Design Hour:** PM Peak Hour **Undivided or Divided Highway:** Intersection Control: Unsignalized Type of Analysis Posted Speed Limit (MPH): Type of Terrain: Level Left or Right-Turn Lane Analysis?: Right Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** PCEV Include? Volume Movement % Trucks Left 0.0% N/A N/A Yes 0 **Advancing Volume:** Advancing Through 0 0.0% N/A N/A **Opposing Volume:** 0.0% N/A Right Yes 0 **Left Turn Volume:** N/A 0 0.0% N/A Yes Opposing Through 0 0.0% N/A 0 0.0% N/A N/A Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 16 0.0% 16 132 3.0% 134 **Advancing Volume:** 193 Advancing Through Right 43 0.0% 43 **Right Turn Volume:** 43 **TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** N/A **Applicable Warrant Figure:** Figure 9 **Warrant Met?:** N/A Warrant Met?: No **TURN LANE LENGTH CALCULATIONS** Unsignalized **Intersection Control: Design Hour Volume of Turning Lane:** 43 Cycles Per Hour (Assumed): Known N/A 60 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized Α B or C Α В Right Turn Lane Storage Length, Condition A: N/A Feet **Condition B:** N/A Feet Condition C: N/A Feet N/A Required Right Turn Lane Storage Length: Feet **Additional Findings: Additional Comments / Justifications:**



### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc Intersection & Approach Description: Ithan Avenue & LAH/PAC Driveway; SB **Analysis Period:** 2025 Build Number of Approach Lanes: Undivided **Design Hour:** AM Peak Hour **Undivided or Divided Highway:** Intersection Control: Unsignalized Posted Speed Limit (MPH): Type of Analysis Type of Terrain: Level Left or Right-Turn Lane Analysis?: Left Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** PCEV Include? Volume Movement % Trucks Left 60 0.0% 60 Advancing Volume: 261 Yes Advancing Through 195 4.0% 199 406 **Opposing Volume:** 0.0% Right Yes 2 2 **Left Turn Volume:** 60 0.0% 16 Yes Opposing Through 350 2.0% 354 36 0.0% 36 22.99% Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 0 0.0% N/A 0 0.0% N/A **Advancing Volume:** N/A Advancing Through Right 0.0% N/A **Right Turn Volume:** N/A **TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** Figure 1 **Applicable Warrant Figure:** N/A Warrant Met?: N/A No Warrant Met?: **TURN LANE LENGTH CALCULATIONS** Unsignalized **Intersection Control: Design Hour Volume of Turning Lane:** 60 Cycles Per Hour (Assumed): Known N/A 60 Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized Α B or C Α В Left Turn Lane Storage Length, Condition A: N/A Feet **Condition B:** N/A Feet Condition C: N/A Feet N/A Required Left Turn Lane Storage Length: Feet **Additional Findings:** Additional Comments / Justifications: A storage length of 50 feet is provided on the plans.



# Turn Lane Warrant and Length Analysis Workbook

#### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc Intersection & Approach Description: Ithan Avenue & LAH/PAC Driveway; SB **Analysis Period:** 2025 Build **Number of Approach Lanes** Undivided **Design Hour:** AM Peak Hour **Undivided or Divided Highway:** Intersection Control: Unsignalized Type of Analysis Posted Speed Limit (MPH): Type of Terrain: Level Left or Right-Turn Lane Analysis?: Right Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** PCEV Include? Volume Movement % Trucks Left 0.0% N/A N/A Yes 0 **Advancing Volume:** Advancing Through 0 0.0% N/A N/A **Opposing Volume:** 0.0% N/A Right Yes 0 **Left Turn Volume:** N/A 0 0.0% N/A Yes Opposing Through 0 0.0% N/A 0 0.0% N/A N/A Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 60 0.0% 60 195 4.0% 199 **Advancing Volume:** 261 Advancing Through Right 0.0% **Right Turn Volume: TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** N/A **Applicable Warrant Figure:** Figure 9 **Warrant Met?:** N/A Warrant Met?: No **TURN LANE LENGTH CALCULATIONS** Unsignalized **Intersection Control: Design Hour Volume of Turning Lane:** Cycles Per Hour (Assumed): Known 60 N/A Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized Α B or C Α В Right Turn Lane Storage Length, Condition A: N/A Feet **Condition B:** N/A Feet Condition C: N/A Feet N/A Required Right Turn Lane Storage Length: Feet **Additional Findings: Additional Comments / Justifications:**



# Turn Lane Warrant and Length Analysis Workbook

#### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc. Intersection & Approach Description: Ithan Avenue & LAH/PAC Driveway; SB **Analysis Period:** 2025 Build Number of Approach Lanes: Undivided **Design Hour:** PM Peak Hour **Undivided or Divided Highway:** Intersection Control: Unsignalized Posted Speed Limit (MPH): Type of Analysis Type of Terrain: Level Left or Right-Turn Lane Analysis?: Left Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** Include? Volume PCEV Movement % Trucks Left 0.0% 71 Advancing Volume: 354 Yes 71 Advancing Through 279 2.0% 282 193 **Opposing Volume:** 0.0% Right Yes 1 1 **Left Turn Volume:** 71 16 0.0% 16 Yes Opposing Through 132 3.0% 134 43 0.0% 43 20.06% Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 0 0.0% N/A 0 0.0% N/A **Advancing Volume:** N/A Advancing Through Right 0.0% N/A **Right Turn Volume:** N/A **TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** Figure 1 **Applicable Warrant Figure:** N/A Warrant Met?: N/A No Warrant Met?: **TURN LANE LENGTH CALCULATIONS** Unsignalized **Intersection Control: Design Hour Volume of Turning Lane:** 71 Cycles Per Hour (Assumed): Known 60 N/A Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized Α B or C Α В Left Turn Lane Storage Length, Condition A: N/A Feet **Condition B:** N/A Feet Condition C: N/A Feet N/A Required Left Turn Lane Storage Length: Feet **Additional Findings: Additional Comments / Justifications:** A storage length of 50 feet is provided on the plans.



# Turn Lane Warrant and Length Analysis Workbook

#### STUDY LOCATION AND ANALYSIS INFORMATION 3/5/2015 Radnor Township Municipality: **Analysis Date: Delaware County** Conducted By: FLT County **PennDOT Engineering District:** Checked By: FLT Agency/Company Name: F. Tavani and Associates, Inc Intersection & Approach Description: Ithan Avenue & LAH/PAC Driveway; SB **Analysis Period:** 2025 Build **Number of Approach Lanes** Undivided **Design Hour:** PM Peak Hour **Undivided or Divided Highway:** Intersection Control: Unsignalized Type of Analysis Posted Speed Limit (MPH): Type of Terrain: Level Left or Right-Turn Lane Analysis?: Right Turn Lane **VOLUME CALCULATIONS Left Turn Lane Volume Calculations** PCEV Include? Volume Movement % Trucks Left 0.0% N/A N/A Yes 0 **Advancing Volume:** Advancing Through 0 0.0% N/A N/A **Opposing Volume:** 0.0% N/A Right Yes 0 **Left Turn Volume:** N/A 0 0.0% N/A Yes Opposing Through 0 0.0% N/A 0 0.0% N/A N/A Right Yes % Left Turns in Advancing Volume: **Right Turn Lane Volume Calculations** Movement Include? Volume % Trucks **PCEV** Left Yes 71 0.0% 71 279 2.0% 282 **Advancing Volume:** 354 Advancing Through Right 0.0% **Right Turn Volume: TURN LANE WARRANT FINDINGS** Left Turn Lane Warrant Findings **Right Turn Lane Warrant Findings Applicable Warrant Figure:** N/A **Applicable Warrant Figure:** Figure 9 **Warrant Met?:** N/A Warrant Met?: No **TURN LANE LENGTH CALCULATIONS** Unsignalized **Intersection Control: Design Hour Volume of Turning Lane:** Cycles Per Hour (Assumed): Known 60 N/A Average # of Vehicles/Cycle: Cycles Per Hour (If Known): PennDOT Publication 46, Exhibit 11-6 Speed (MPH) 25-35 40-45 50-60 Type of Traffic Control Turn Demand Volume High High Low Low High Low Signalized Α Α B or C B or C B or C B or C Unsignalized Α B or C Α В Right Turn Lane Storage Length, Condition A: N/A Feet **Condition B:** N/A Feet Condition C: N/A Feet N/A Required Right Turn Lane Storage Length: Feet **Additional Findings: Additional Comments / Justifications:**



# **APPENDIX K**

Parking

### Parking Notes

Parking demands have been documented throughout the entire campus under both 'ordinary class' conditions and 'special event' conditions including home basketball games by the University. Spreadsheets which summarize campus-wide parking observations on more than a dozen different days are provided on the next two pages. Refer to **Appendix F** (Map Key) if required.

Questions regarding midday vehicular activity (trip generation) by the proposed LAH residents have been raised (see Gilmore letter dated 24 April 2013, **Appendix A**). The likelihood that campus residing students are any more (or less) likely to make midday trips is questionable, but regardless West Campus midday parking "turnover" was documented to quantify midday trip making. Investigations occurred on Tuesday, 30 April 2013. Spreadsheets summarizing those investigations are provided in this appendix. The conclusion was this midday trip generation rate per parking space was much lower than weekday peak period trip generation rates.

	Villanova University Parking Lot Inventory - Class Days																					
	Date	11/5	/2012	11/6	5/2012	11/7	/2012		/2012	11/9			/2011		/2011	10/19	3/2011	10/20	0/2011	11/1/2011	11/2/2011	11/3/2011
	Time		-		•		12:00 PM			10:00 AM		10:00 AM	12:00 PM		12:00 PM		12:00 PM	10:00 AM	•	1:30PM	1:30PM	1:30PM
	# of	10.00 7.11	12.001101	10.00 AW	12.001101	10.00 AW	12.001101	10.00 7.11	12.00 1 101	10.00 7.111	<b>_</b>			10.00 AIVI	12.001101	10.00 AW	12.001101	10.00 AIII	12.00 1 101	1.501 111	1.501 141	1.501 141
Lot Name	Spaces										Spac	ces Avail	able									
Alumni House	14	7	7	8	7	8	8	8	8	7	7	2	1	1	4	2	3	4	4	4	3	2
CEER	79	16	18	18	18	17	15	12	12	8	6	31	27	55	28	23	18	34	28	10	12	17
Campus Corner	14	2	1	3	2	1	0	1	1	2	1	0	2	1	2	1	2	2	1	0	0	0
Connelly	6	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	0	0	0
Dougherty Drive	22	0	0	0	0	0	0	0	0	0	0	0	1	3	0	1	0	5	1	0	0	0
Dundale	39	10	10	8	14	8	9	13	12	18	17	8	12	15	13	7	12	13	10	10	9	11
Farrell Hall	27	0	0	0	0	6	6	5	5	5	5	2	1	2	2	3	0	4	4	0	2	6
Fieldhouse	48	7	5	7	7	6	6	4	3	7	7	5	6	6	2	8	0	23	4	5	4	4
Galberry	10	5	5 <b>7</b>	0	0	4	4	5	5	7	7	1	3	2	0	2	2	2	2	2	1	1
Garey	<b>109</b>	14	,	2	5	14	5	13	11	20	15	0	4	6	8	1	15	4	6	13 1	9	12
Geraghty	84	5 20	5 <b>29</b>	6	4	6 <b>2</b> 9	6 8	6	6	21	10	19	6	2	3	30	0	36	1	7	2	0
HSB Upper HSB Lower	89	29 21	29	31 22	27	7	8	0	0	21 19	19 21	18 9	4	27	16 8	23	24 15	22	22 14	9	13	6 9
Kennedy	20	1	0	0	0	0	6	0	6	6	0	0	0	0	1	0	0	0	0	0	0	0
Geraghty B	13	6	1	6	6	6	6	5	6	6	7	0	0	0	0	0	0	0	0	9	4	0
Law Lot Upper	147	166	98	161	114	164	95	164	139	174	171	110	96	115	102	109	81	105	79	71	80	73
Law Lot Middle	199	30	1	15	11	26	4	22	7	116	83	43	41	66	70	104	34	74	28	32	58	36
Law Lot Lower	197	0	0	1	10	2	8	7	6	37	50	4	5	14	10	37	5	8	10	2	22	14
Law Lot Bottom	64	3	0	15	0	8	4	32	12	52	46	8	10	17	21	33	13	23	16	1	17	9
Law Surface Lot	113	8	3	13	9	15	4	11	7	23	14	10	6	7	6	23	12	4	1	13	8	10
Main Lot East	577	335	158	194	0	239	135	239	89	306	213	132	0	213	32	157	75	272	20	0	113	74
Main Lot West	1,126	327	71	138	0	170	99	170	113	251	228	317	0	302	46	229	30	308	30	0	62	82
Main Visitor Lot	80	55	44	43	0	76	66	76	69	0	22	69	0	76	67	48	65	63	39	60	75	60
Mendel	109	22	19	27	15	24	17	13	7	31	11	23	12	33	22	23	18	26	10	4	15	7
Monastery	25	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	0	0	0
Moriarity	15	0	3	2	0	5	0	1	0	0	0	4	2	7	1	0	0	3	1	0	0	4
Pavillion	222	104	84	88	85	103	107	94	92	120	126	83	94	122	80	125	84	123	79	83	75	78
St. Ritas	9	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	1	0	1	1
SAC Upper	136	6	8	7	7	10	10	6	2	17	9	6	1	32	0	1	5	6	1	2	5	0
SAC Lower	135	75	79	81	45	44	25	66	36	75 25	65	48	28	61	37	30	29	71	41	23	33	25
SAC Roadway	58	24	26	31	32	30	20	21	17	35	29	22	20	24	20	25	20	30	21	12	10	13
South Campus	281	141	132	152	135	145	137	146	136	131	145	151	168	176	178	176	181	191	182	142	143	160
Steam Plant	122	16	10	18	25	19	16	18	10	27	17	24	17	18	17	19	17	8	8	13	21	12
St. Mary's	98	19	17	19	16	20	27	22	24	29 7	20	18	15 1	29	25	22	22	20	19	29	20	22
Stone Hall	16 57	3	11	2	12	7	2 15	2 4	8	9	7	12	4	10	6	14	10	11	10	0	0	0
TSB Tolentine	88	18	11 16	3 19	12 12	21	15 21	24	19	11	23	12 0	3	10 0	2	14 0	10	11 0	10	0	3	2
John Barry	10	2	10	0	5	5	4	24	3	4	4	3	0	1	2	1	0	2	1	2	3	3
Stadium	50	41	41	20	32	44	37	27	35	43	45	8	2	23	22	19	17	25	19	22	25	15
Football offices	19	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
West Campus	596	164	171	212	197	191	192	199	190	185	180	184	170	182	190	165	178	169	151	165	175	169
Total Spaces	5,130	1,687	1,110	1,374	876	1,489	1,132	1,446	1,104	1,815	1,626	1,359	764	1,673	1,044	1,469	987	1,696	865	748	1,026	938
. otal opaces	3,130	1,007	1,110	1,37	5,0	1, 103	1)102	<del>-,</del> ,,,,,	1)101	1,013	1,020	1,333	, , ,	1,075	1,011	<u> </u>	33,	1,000		, 10	1,020	330

Upon further review of Public Safety data, it is unclear if certain '0' entries for Main Lot observations (conducted on 11/6/12, 10/4/2011, and 11/1/12) are in fact times when the Main Lot was 100% full or if the lots simply were not surveyed due to time constraints, calls, or other factors. This spreadsheet incorporates the '0' entries thereby giving the most conservative (i.e., highest demand) interpretation of the data.

**Campus Wide Parking Demand Summary Spreadsheet - Class Days** 

	Date	1/17	/2013	2/7	/2012	1/18/2012		
	Time	5:30PM	7:30PM	7:30PM	8:30PM	6:30 PM	7:30 PM	
	# of			_				
Lot Name	Spaces			<b>Empty Par</b>	king Spaces			
HSB Upper	84	38	2	27	4	13	5	
HSB Lower	89	13	7	34	4	22	2	
Law Lot Upper	147	102	116	147	162	171	159	
Law Lot Middle	199	104	136	97	135	82	142	
Law Lot Lower	197	44	71	28	46	25	121	
aw Lot Bottom	64	45	43	31	34	30	10	
Law Surface	113	50	38	50	62	51	65	
Main East	577	164	23	147	81	200	41	
Main West	1,126	385	76	171	204	382	52	
Main Visitors	80	42	10	21	22	47	2	
Mendel	109	68	78	64	77	0	66	
Moriarity	15	12	1	12	11	0	7	
SAC Upper	136	83	33	89	49	78	52	
SAC Lower	135	109	81	102	79	182	80	
SAC Roadway	58	25	30	50	58	28	37	
South Campus	281	147	0	0	0	0	0	
Garey Hall	109	33	32	0	0	0	45	
Total Spaces	3,519	1,464	777	1,070	1,028	1,311	886	
Pavilion seat capacity 6,500 Attendance = 6,300			6,300	Attendance =	4,332	Attendance = 5,794		

#### **West Campus Parking Turnover Investigation**

This spreadsheet provides data regarding traffic counts as well as a table summarizing a sample of 30 vehicles which were randomly selected throughout the West Campus (WC) on-street parking areas and parking lots surrounding the resident housing (vehicles displaying West Campus Resident parking permits). The 30 vehicles were evenly spaced throughout the parking areas to achieve a broad sample. The traffic counts were conducted at the gate house which is the only point of vehicular entry to the campus for WC student residents.

The traffic counts and parked vehicle survey were conducted on Tuesday, 30 April 2013 which was a regular school day for Villanova's campus. The counts were conducted midday as requested by the township traffic engineer. Data collection began at 10:00 AM and ended at 12:00 PM. Although all vehicles entering and exiting were counted at the gate house, only those displaying WR hang tags (West Campus Resident Students) were counted and are shown in the summary of count activity table below. Note the peak hour of the traffic counts was 11:00 AM to 12:00 PM.

The purpose of the study was to investigate parking turnover and so the vehicle survey included documenting license plate prefixes (i.e., the first three characters of a vehicle's license plate) and state (if other than PA) and then monitoring the parking space associated with each individual vehicle over the two-hour count period to see if there was turnover of the space as requested by the township. A key next to the table explains how this was documented. A summary below the key tabulates the turnover activity. A summary below the table provides data from the traffic counts near the gate house. More information (raw data) from the counts are provided on the next page.

		(PA if blank) SEE KEY TO LEFT								
<u>NUMBER</u>	<b>PREFIX</b>	STATE	<u>10:00</u>	<u>10:30</u>	<u>11:00</u>	<u>11:30</u>	<u>12:00</u>	TURNOVER?		
1	196	MA		V	V	74S		Yes, 1 in		
2	HJA									
3	PR3	IL								
4	W11	NJ								
5	456	CT								
6	024	MD								
7	NLE	NJ								
8	DND	NY								
9	AHE	NY								
10	ERB	NY								
11	YCL	NJ								
12	JBS									
13	YBU	NJ								
14	ZRB	NJ			V	HGK	V	Yes, 1 in 2 out		
15	ERT									
16	807	CT								
17	HGC									
18	X10	NJ								
19	HZD									
20	14K	MA								
21	XSS	VA								
22	вно	TX								
23	GTE									
24	572	MA								
25	JCG									
26	9AT	MD								
27	1DD	MA								
28	GPH			V						
29	HTX									
30	YRY	NC								

#### KEY

1) If vehicle did not move during the count period, cell was left blank. 2) If vehicle left and no vehicle arrived to occupy the vacant space "V", is shown.
3) If vehicle left and a different vehicle arrived and occupied the vacant space, the new vehicle's prefix was entered.

#### SUMMARY

During the peak hour (11:00 - 12:00), there were 2 exiting vehicles and 2 arriving vehicles

PK HR T	URNOVER
<u>IN</u>	<u>OUT</u>
2	2

The traffic counts at the gate shown the following student resident turnover activity during the peak hour:

<u>IN</u> <u>OU7</u> 30 23

#### F. Tavani and Associates, Inc.

105 Kenilworth Street Philadelphia, PA 19147

pass given includes those given access but no phyiscal paper pass

File Name: West Lot\_MID Site Code: 00000003

Start Date : 4/30/2013

Page No : 1

Groups Printed- WR hang tag - VU hang tag - Main hang tag - St Mary/Dundale/Gary hang - pass given - no hang - FH hang tag

Groups Printed- WR nang tag - VU na	ang tag - wain nang tag	- St Mary/Dundale/G	ary nang - pass given - no r	lang - FH nang tag
		Southbound		
Start Time	ins	outs	App. Total	Int. Total
10:00 AM	10	4	14	14
10:15 AM	8	9	17	17
10:30 AM	7	7	14	14
10:45 AM	5	6	11	11_
Total	30	26	56	56
11:00 AM	13	6	19	19
11:15 AM	14	10	24	24
11:30 AM	8	7	15	15
11:45 AM	8	9	17	17_
Total	43	32	75	75
Grand Total	73	58	131	131
Apprch %	55.7	44.3		
Total %	55.7	44.3	100	
WR hang tag	50	41	91	91
% WR hang tag	68.5	70.7	69.5	69.5
VU hang tag	1	4	5	5
% VU hang tag	1.4	6.9	3.8	3.8
Main hang tag	5	0	5	5
% Main hang tag	6.8	0	3.8	3.8
St Mary/Dundale/Gary hang	5	0	5	5
% St Mary/Dundale/Gary hang	6.8	0	3.8	3.8
pass given	12	0	12	12
% pass given	16.4	0	9.2	9.2
no hang	0	12	12	12
% no hang	0	20.7	9.2	9.2
FH hang tag	0	1	1	1
% FH hang tag	0	1.7	0.8	0.8

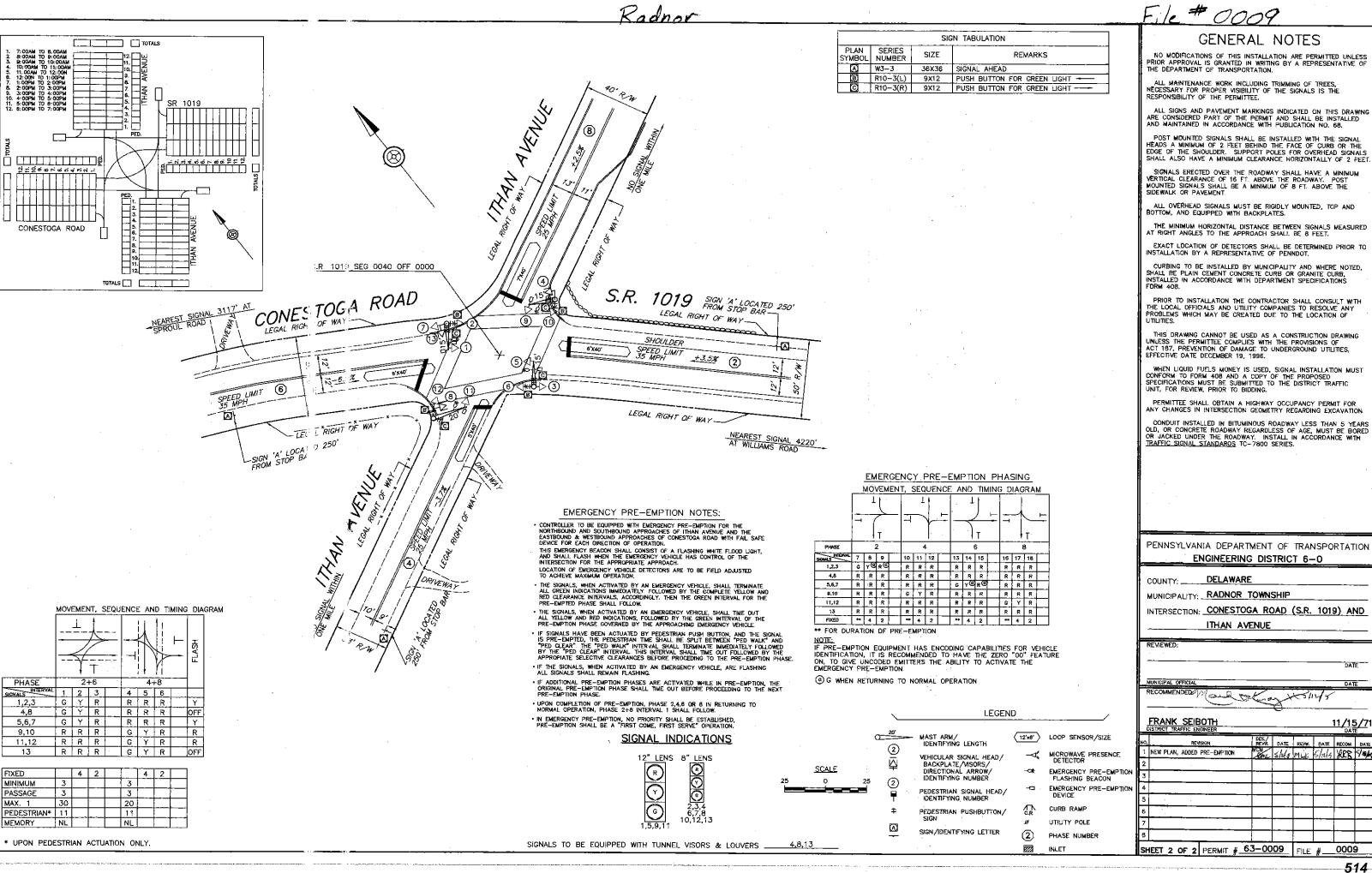
		Southbound		
Start Time	ins	outs	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 11:45 AM -				
Peak Hour for Entire Intersection Begins at 11:00 A				
11:00 AM	13	6	19	19
11:15 AM	14	10	24	24
11:30 AM	8	7	15	15
11:45 AM	8	9	17	17
Total Volume	43	32	75	75
% App. Total	57.3	42.7		
PHF	.768	.800	.781	.781
WR hang tag	(30)	<mark>(23</mark> )	53	53
% WR hang tag	69.8	71.9	70.7	70.7
VU hang tag	1	2	3	3
% VU hang tag	2.3	6.3	4.0	4.0
Main hang tag	2	0	2	2
% Main hang tag	4.7	0	2.7	2.7
St Mary/Dundale/Gary hang	2	0	2	2
% St Mary/Dundale/Gary hang	4.7	0	2.7	2.7
pass given	8	0	8	8
% pass given	18.6	0	10.7	10.7
no hang	0	6	6	6
% no hang	0	18.8	8.0	8.0
FH hang tag	0	1	1	1
% FH hang tag	0	3.1	1.3	1.3

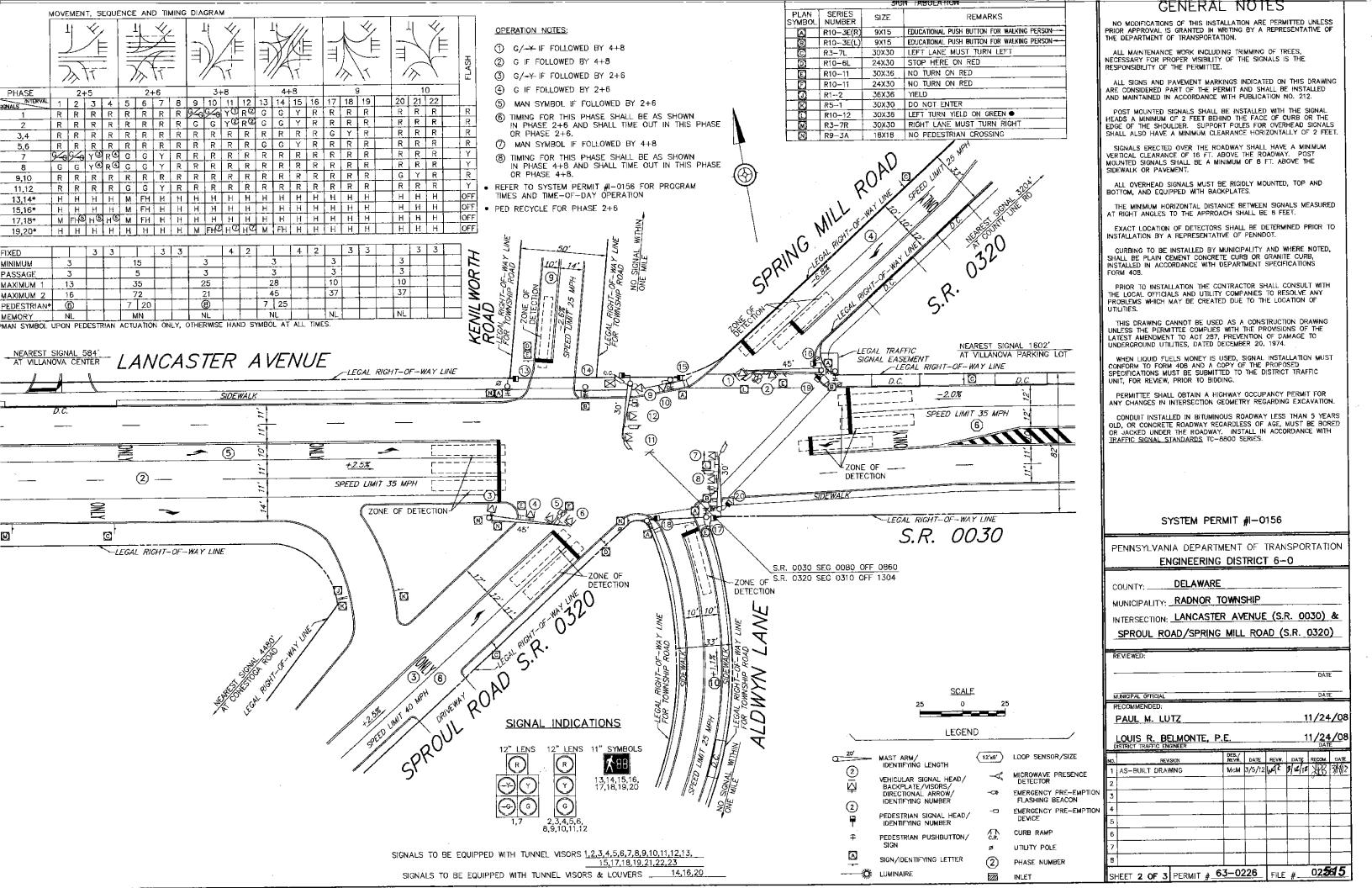
# **APPENDIX L**

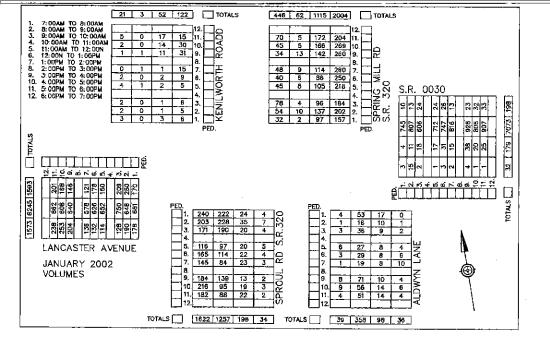
Example of RRFB and Signal Plans

# Rectangular Rapid Flash Beacon (RRFB) Example









#### EMERGENCY PRE-EMPTION PHASING

		<u> </u>	/EM	EN	Τ, :	SEC	UE	NCE	<u> A</u>	ND	TIN	AIN	3 D	IAG	RA	M
			1	/ /     		7	1	——————————————————————————————————————	1/4							
PHASE	2				4			6				8				
SIGNALS	23	24	25		26	27	28		29	30	31		32	33	34	
1	R	R	R		R	R	R		R	R	R		G/-6	Υ	R	
2	R	R	R		R	R	R		R	R	R		G	Υ	R	
3,4	R	R	R		Ř	R	R		R	R	R		R	R	R	
5,6	R	R	R		G	Υ	R		R	R	R		R	R	R	
7	<u>~</u>	γ@	R (b)		R	R	R		R	R	R		R	R	R	
8	G	<b>У</b> (D)	R®		R	R	R		R	R	R		R	R	R	
9,10	R	R	R		R	R	R		R	R	R		R	R	R	
11,12	R	R	R		R	R	R		G	Υ(6)	R (6)		R	R	R	
13,14	Н	Н	Н		Н	Ξ	Ξ		Н	Η	Н		Н	Н	Н	
15,16	Н	Ι	Н		н	Ξ	Ι		н	Η	Ξ		I	H	Н	
17,18	Ι	Ξ	Н		Ξ	Н	Н		Н	Η	Ξ		Н	Н	Н	
19,20	Н	Н	Н		Н	Н	Н		Н	Η	Н		Н	H	H	
FIXED	**	_			**	_			**							
FIXED	7.5	3	3	[	***	4	2		77	3	3		**	4	2	- 1

\*\* FOR DURATION OF PRE-EMPTION

IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

- (a) G/4-WHEN RETURNING TO NORMAL OPERATION
- (b) G WHEN RETURNING TO NORMAL OPERATION

#### EMERGENCY PRE-EMPTION NOTES:

. CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND & SOUTHBOUND APPROACHES OF SPROUL ROAD AND THE EASTBOUND & WESTBOUND APPROACHES OF LANCASTER AVENUE WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION.

THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.

- THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTED PHASE SHALL FOLLOW.
- . THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF SIGNALS HAVE BEEN ACTUATED BY PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED DURING THE "MAN" INTERVAL, THE "MAN" INTERVAL SHALL TERMINATE IMMEDIATELY FOLLOWED BY THE "FLASHING HAND" INDICATION IN ITS ENTIRETY, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE PROCEEDING INTO THE PRE-EMPTION PHASE.
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- · IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE
- · UPON COMPLETION OF PRE-EMPTION, PHASE 2,4,6 OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 4 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.



				Ш.	CAUL M. LUIZ				
\	LEGEN	1D			LOUIS R. BELMONTE,	DE			
20'				Ē	DISTRICT TRAFFIC ENGINEER	F.E			
20'	- MAST ARM/ IDENTIFYING LENGTH	(12'x6')	LOOP SENSOR/SIZE	NO.	REVISION	DES./ REVW.	DATE	REYW.	DA
② ₽		<b>⊸</b> 1°	MICROWAVE PRESENCE	1	AS-BUILT DRAWING	McM	3/5/12	wite	3/1
$\bar{\square}$	VEHICULAR SIGNAL HEAD/ BACKPLATE/VISORS/		DETECTOR	2			T		<b> </b> '
	DIRECTIONAL ARROW/ IDENTIFYING NUMBER	-O#	EMERGENCY PRE-EMPTION FLASHING BEACON	3			<del>                                     </del>		$\vdash$
2	PEDESTRIAN SIGNAL HEAD/	-0	EMERGENCY PRE-EMPTION	4					
7	IDENTIFYING NUMBER		DEVICE	5		<u> </u>	T	_	
<b></b>	PEDESTRIAN PUSHBUTTON/	<b>√</b> C.R.	CURB RAMP	6	· · · · · · · · · · · · · · · · · · ·	+-	†		$\vdash$
P79	SIGN	Ø	UTILITY POLE	7					Т
<u>A</u>	SIGN/IDENTIFYING LETTER	2	PHASE NUMBER	8					<u> </u>
		222	INLET	SH	IEET 3 OF 3 PERMIT #_	63-02	226	FILE	#_

#### GENERAL NOTES

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ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT

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THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

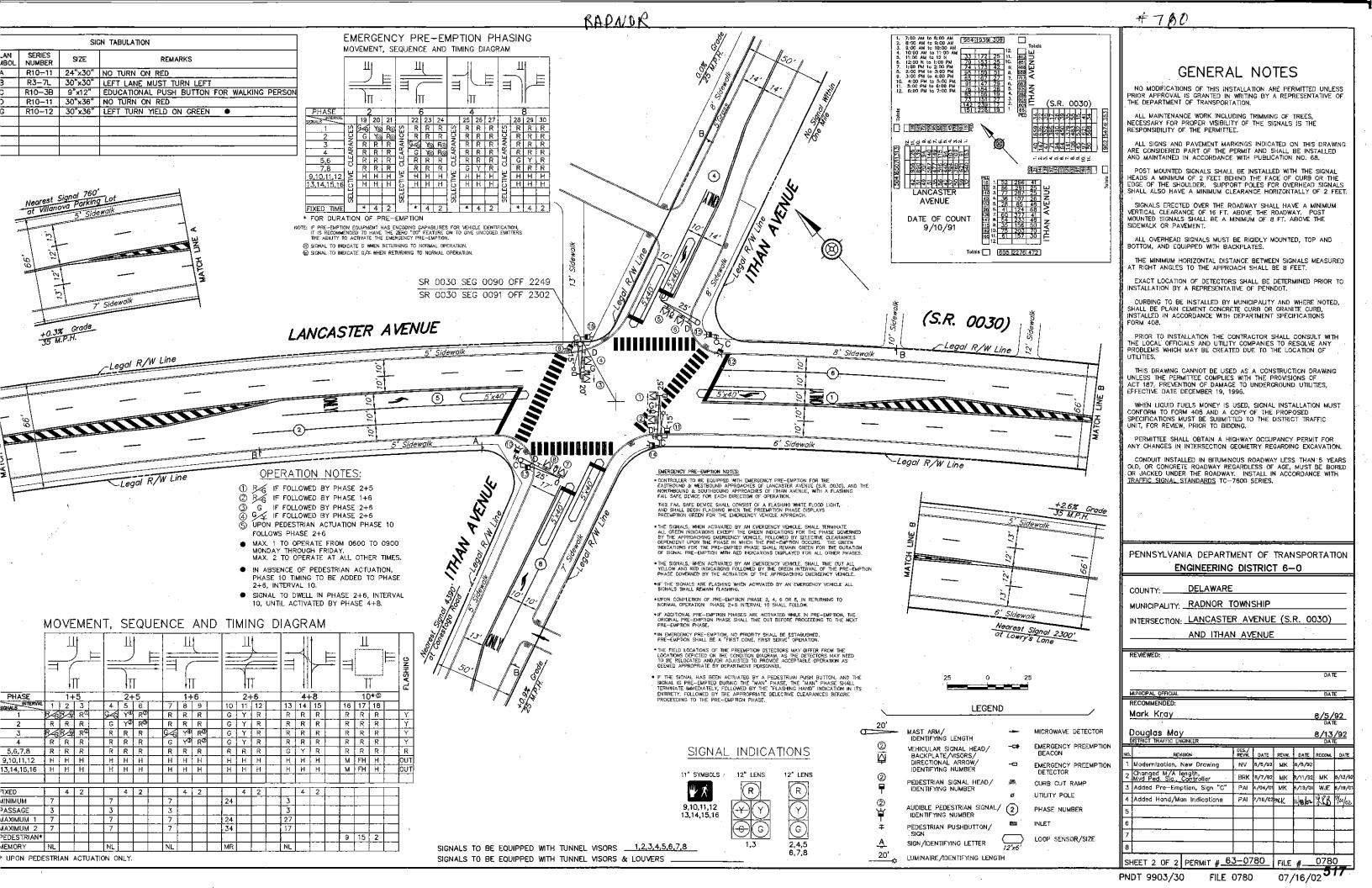
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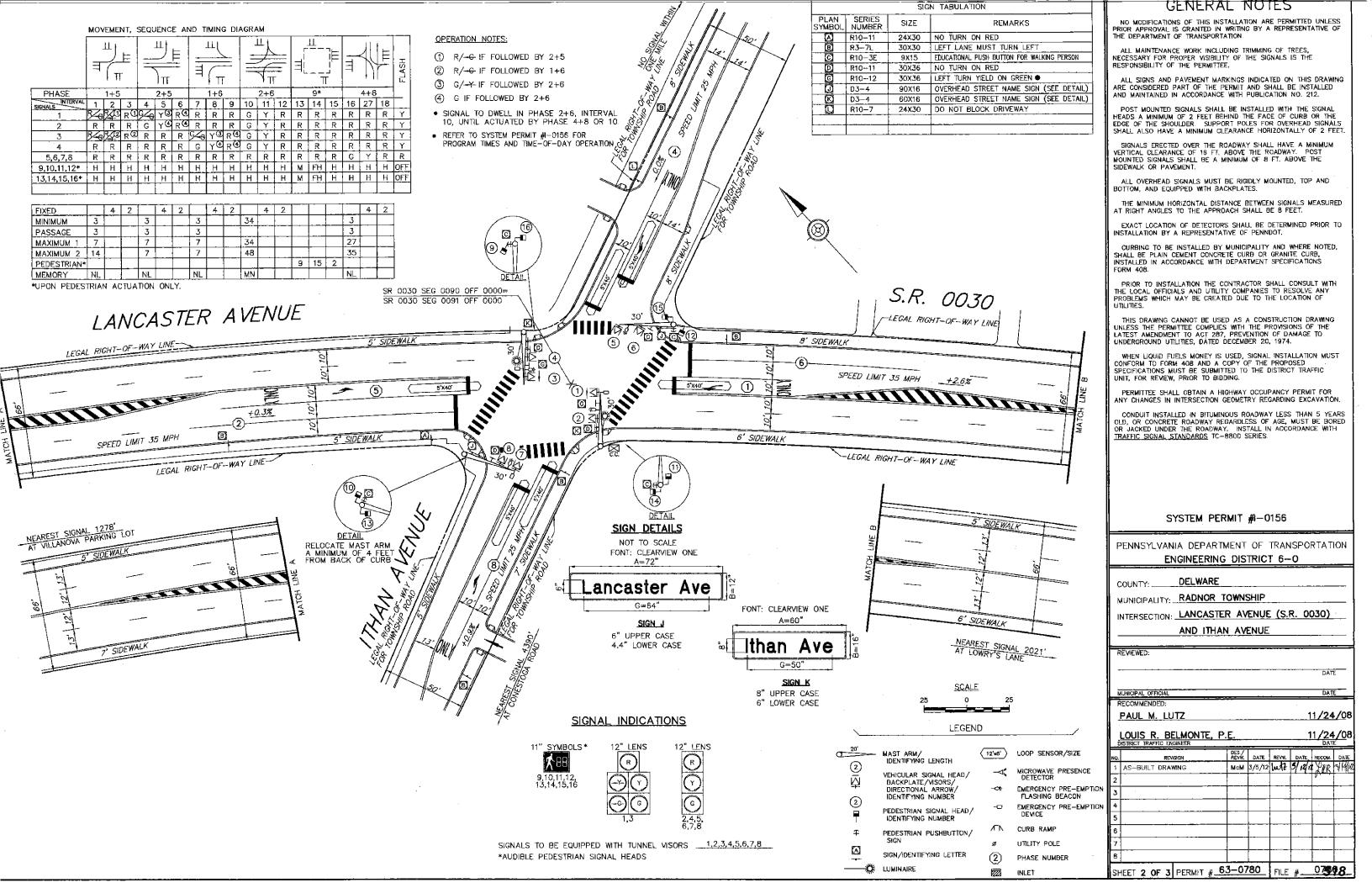
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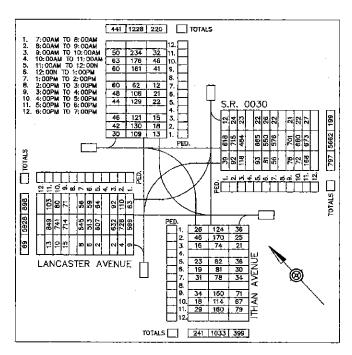
CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES

KMII	#-(	1156									
PENNSYLVANIA DEPARTMENT OF TRANSPORTATION ENGINEERING DISTRICT 6-0											
COUNTY:DELAWARE											
MUNICIPALITY: RADNOR TOWNSHIP											
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DES./ REVW.	DATE 3/5/12	REVW.	1 DATE	1/24 1/24 0AT RECOM	/ <u>0</u> 8						
	MENT G DIS TOWN	MENT OF  G DISTRIC  TOWNSHIP  ER AVENUE	DISTRICT 6- E TOWNSHIP ER AVENUE (S.	MENT OF TRANSPO 3 DISTRICT 6-0 E TOWNSHIP ER AVENUE (S.R. 00	MENT OF TRANSPORTATE DISTRICT 6-0  TOWNSHIP R AVENUE (S.R. 0030)  MILL ROAD (S.R. 0320)						

0225316







#### EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE AND TIMING DIAGRAM																
	===		<b>ј</b> Г		1 111		T				T	=				
PHASE	2			4			6			8						
SIGNALS	19	20	21		22	23	24		25	26	27		28	29	30	Γ
1	G/÷	γ@	R (b		R	. R	R		R	R	R		R	R	R	
2	G	γ <b>6</b>	<sub>R</sub> (6)		R	R	R		R	R	R		R	R	R	
3	R	R	R		R	R	R		G/G	Y@	R (G		R	R	R	
4	R	R	R		R	R	R		G	γŒ	R (b)		R	R	R	
5,6	R	R	R		R	R	R		R	R	R		G	Υ	R	
7,8	R	R	R		G	Y	R		R	R	R		R	R	R	
9,10,11,12	Н	Н	Ξ		Н	Ħ	Н		Н	Н	Н		Н	H.	Н	
13,14,15,16	Н	Н	Н		Н	±	Н		H	Н	Η		Н	Н	Н	
FIXED	**	4	2		**	4	2		**	4	2		**	4	2	

\*\* FOR DURATION OF PRE-EMPTION

#### NOTE:

IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

- (a) G/Y WHEN RETURNING TO NORMAL OPERATION
- (b) G WHEN RETURNING TO NORMAL OPERATION

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SCALE LEGEND Q\_\_\_\_\_ MAST ARM/ (12'x8') LOOP SENSOR/SIZE IDENTIFYING LENGTH (2) MICROWAVE PRESENCE DETECTOR VEHICULAR SIGNAL HEAD/ BACKPLATE/VISORS/ DIRECTIONAL ARROW, EMERGENCY PRE-EMPTION IDENTIFYING NUMBER FLASHING BEACON (2) EMERGENCY PRE-EMPTION PEDESTRIAN SIGNAL HEAD/ DEVICE Æ. CURB RAMP Ŧ PEDESTRIAN PUSHBUTTON/ UTILITY POLE SIGN/IDENTIFYING LETTER (2) PHASE NUMBER INLET

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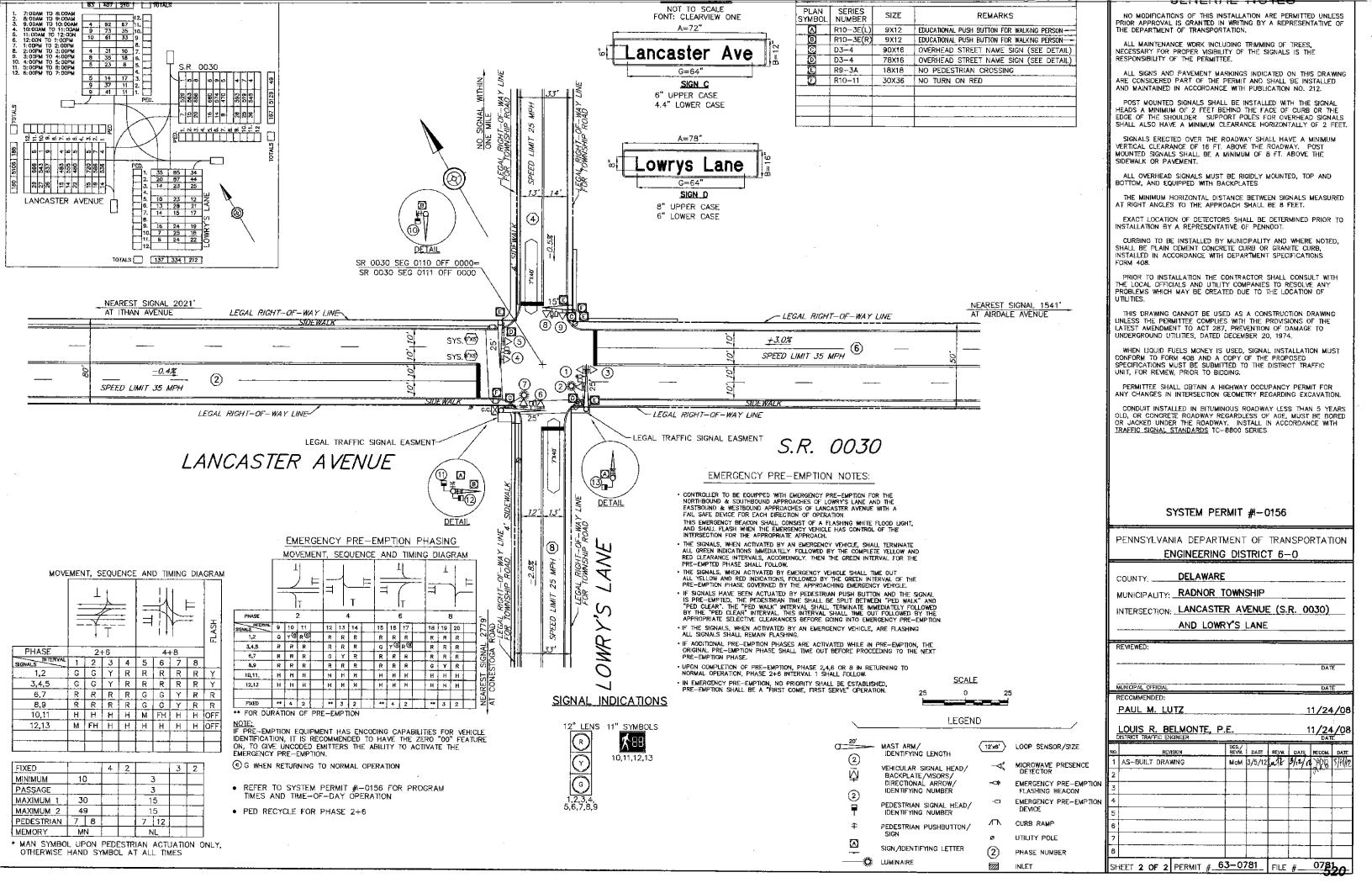
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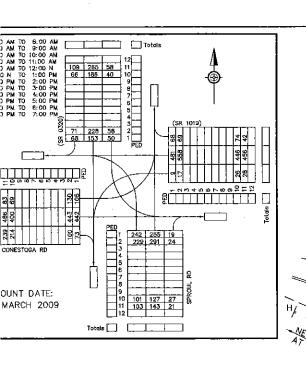
#### SYSTEM PERMIT #1-0156

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0
COUNTY: DELWARE
MUNICIPALITY: RADNOR TOWNSHIP
INTERSECTION: LANCASTER AVENUE (S.R. 0030)
AND ITHAN AVENUE
REVIEWED:

MUNICIPAL OFFICIA

1	(COOMMENDED:							
	<u>PAUL M. LL</u>	)TZ				1	1/24	/01
Ī	LOUIS R. BI	1	11/24/08					
NO.	REV	SION	DES./ REVW.	DATE	REVW.	DATE	RECOM.	DATE
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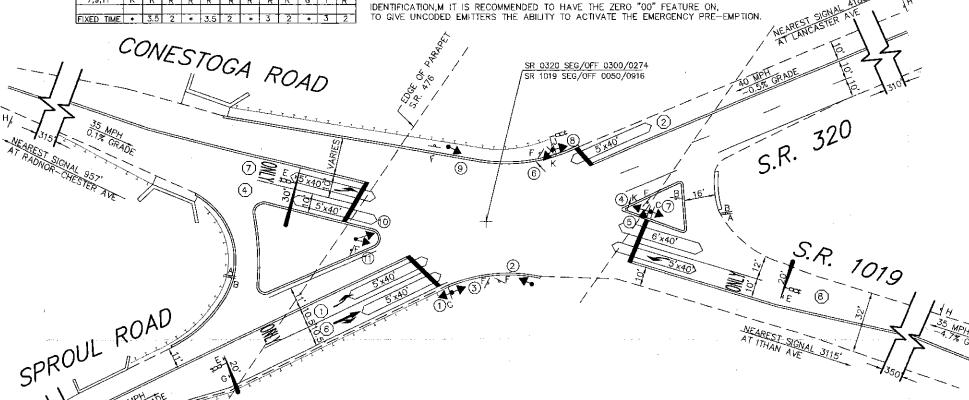


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MOVEMENT, SEQUENCE, AND TIMING DIAGRAM	/   	)	Y / k	7/3	7				·	7 1	<u></u>	
		6			2			4			8	
SIGNALS	13	14	15	16	17_	18	19	20	21	22	23	[ ]
1,5	G	Υ	R	R	R	R	R	Я	R	R	R	
6	ઉત્ર≨	Υ	R	R	R	R	R	R	R	R	R	
3,8,10	R	R	R	G	Ϋ́	R	R	R	R	R	R	1
2	R	R	R	R	R	R	G	ΥØ	R.®	R	R	-
4	R	R	R	R	R	R	G-6	_ \ @	R @	R	R	ī
7,9,11	R	R	R	R	R	R	R	R	R	G	Ϋ́	F
												Γ
FIXED TIME	*	3.5	2	*	3.5	2	*	3	2	*	-3	

- \* FOR DURATION OF OPTICAL PRE-EMPTION
- @ G WHEN RETURNING TO NORMAL OPERATION. ⑤ G/¥ WHEN RETURNING TO NORMAL OPERATION.

NOTE: IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE

		SIGN TAB	JLATION
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
Α	R1-2	36"X36"	YIELD
В	R5-1	36"X36"	DO NOT ENTER
С	R3-7L	30"X30"	LEFT LANE MUST TURN LEFT
E	R3-5L	30"X36"	LEFT TURN SIGN
F	R3-9	18"X18"	NO PEDESTRIAN CROSSING
G	R3-6SR	30"X36"	OPTIONAL RIGHT TURN SIGN
Н	W3-3	36"X36"	SIGNAL AHEAD SIGN
J	R1011	24"X30"	NO TURN ON RED
K	R10-12	30"X36"	LEFT TURN YIELD ON GREEN .



				_							
	WEEKLY PROGRAM CHART										
EVENT	DAY*	TIME	CYCLE	PROGRAM	REMARKS						
- 1	15	0600	90	1	AM PEAK						
2	1-5	1000	80	2	MID DAY						
3	1-5	1600	80 .	3	PM PEAK						
4	1-5	1900		MAX.	FREE						
5	6,7	0800	80	2	WEEKEND						
6	6,7	2000		MAX.	FREE						

\* DAY 1 = MONDAY

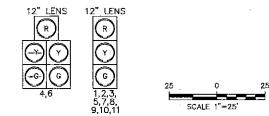
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- TO ACHIEVE MAXIMUM OPERATION. THE SIGNALS SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE
- PRE-EMPTED PHASE SHALL FOLLOW. THE SIGNALS SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, WHEN ACTIVATED BY EMERGENCY VEHICLE, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
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#### SIGNAL INDICATIONS



SIGNALS TO BE EQUIPPED WITH LOUVERS 5,9,10,11 SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS 1+11

ALL SIGNAL HEADS SHALL BE SIDE MOUNTED **LEGEND** MAST ARM/ IDENTIFYING LENGTH LOOP SENSOR/SIZE 12'x6' VEHICULAR SIGNAL HEAD/ BACKPLATE/VISORS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER MICROWAVE DETECTOR FLASHING BEACON PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER DETECTOR CURB CUT RAMP PEDESTRIAN PUSHBUTTON/ PHASE NUMBER SIGN/IDENTIFYING LETTER

#### GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED JNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART, OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT, ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSUL' WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

PERMITTEE SHALL BE OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-7800

#### PENNSYLVANIA DEPARTMENT OF TRANSPORTATION ENGINEERING DISTRICT 6-0

COUNTY:	DELAWARE
MUNICIPALITY:	RADNOR TOWNSHIP
	SPROUL ROAD (S.R. 320) AND
	CONESTOGA ROAD (S.R. 1019)

RE	VIEWED:			-	
		<del> </del>		DAT	E
ΜU	NICIPAL OFFICIAL			DAT	Ė.
RE	COMMENDED:				
MU	INICIPAL SIGNALS ENGINEER			DAT	_
	RNER J. EICHORN		5	<u>/17/</u>	
DIS	STRICT TRAFFIC ENGINEER			DAT	<u>E., </u>
NO.	REVISION	REW. DATE REVW.	DATE	RECOM	DATE
1	ADDED PRE-EMPTION	CEC RMO9 9 04 MLK	9 13 04	LRB	9 20 0

ADD EB LT PHASE, RETIMING 154/09 JULY 5/4/09 JULY 15/4/09 JULY 15/4/09 JULY 15/4/09

	17-11.1		) \	1	1/5		T	// <u> </u>	7	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Y.			$\nearrow$	Š		FLASHING
PHASE			-6				+6		L	4-1	- 7			4-	-8_		
SIGNALS	1	2	3		4	5	6		7	8	9		10	11	12		
1,5	Ģ	YØ	RØ	ľ	G	Y	R		R	R	R		R	R	R		R
6	G∕ <del>c</del>	YO	RQ		G	Y	R		R	R	R		R	R,	R		R
3,8,10	R	R	R		G	Υ	. R		R	R	R		R	R	R		R
2	Ŕ	R	R		R	R	R		G	Y4)	R4		G	Υ	R		Υ
4	R	R	R	$\Box$	R	R	R		G/G	Y®	RŒ		Ģ	Υ	R		Υ
7,9,11	R	R	R		R	R	R		R	R	R		G	Υ	R		Υ
FIXED		3.5	2			3.5	2			3.0	2			3.0	2		
MINIMUM	3				5				3			-	10				
PASSAGE	3				3				.3				4				
MAXIMUM	7				15				7				20				
PEDESTRIAN		Ī	l	L					$ldsymbol{ldsymbol{ldsymbol{ldsymbol{ld}}}$								
MEMORY	NL	L	l		NL	L	L	<u> </u>	NL				MN				<u>l</u>
					l												
PROGRAM 1	7	3.5	2		26	3.5	2		7	3	2		29≠	3	2		<u> </u>
PROGRAM 2	7	3.5	2		20	3.5	2		7	3	2		25₹	3	2		
PROGRAM 3	7	3.5	2		21	3.5	2		7	3	2		24≠	3	2		

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

• SIGNAL TO DWELL IN PHASE 4+8 UNTIL ACTUATED BY PHASE 1.2 OR 6.

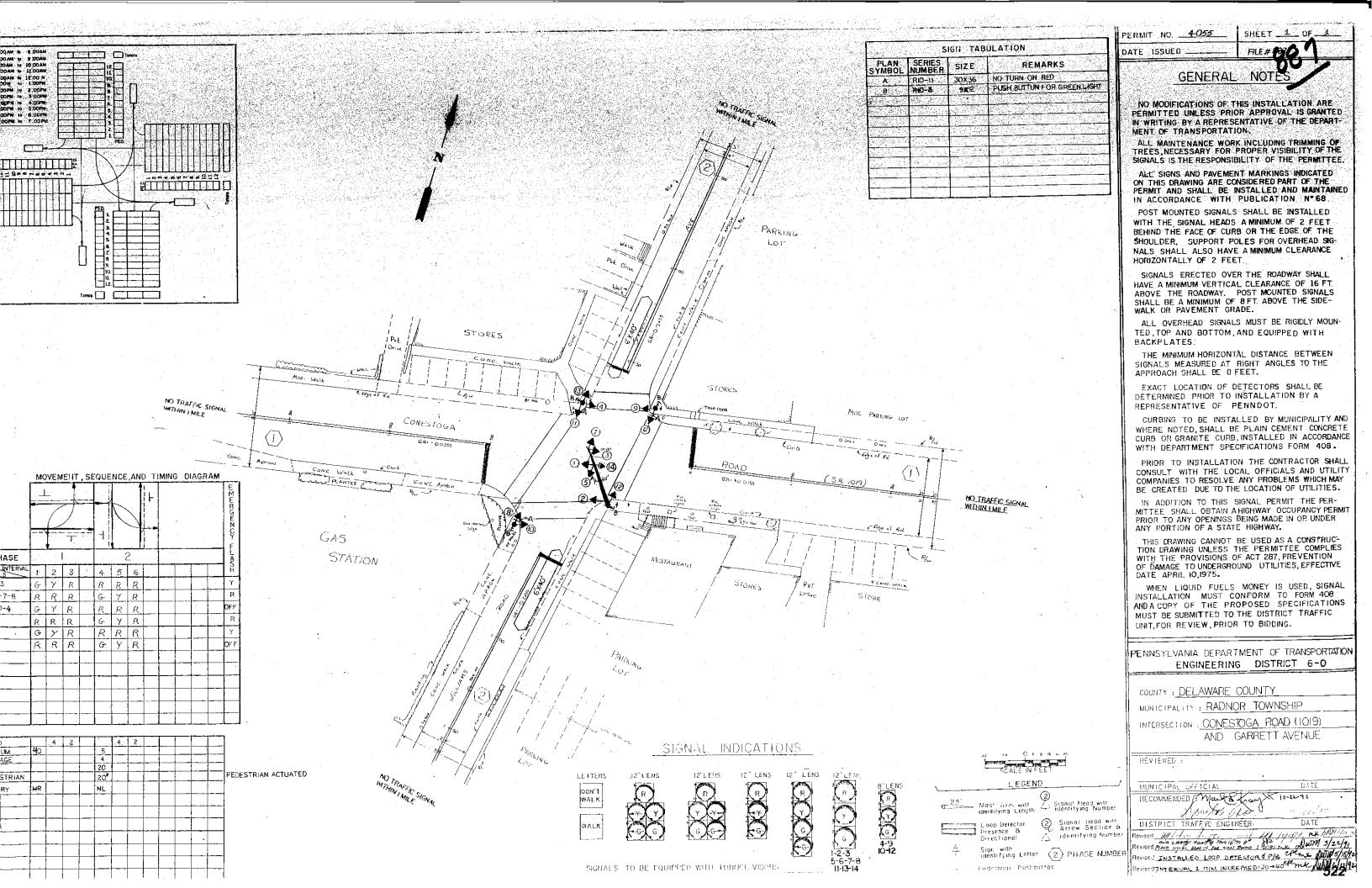
① G/Y IF FOLLOWED BY 2+6 ② G IF FOLLOWED BY 2+6 3 GAY IF FOLLOWED BY 4+8 (4) G IF FOLLOWED BY 4+8

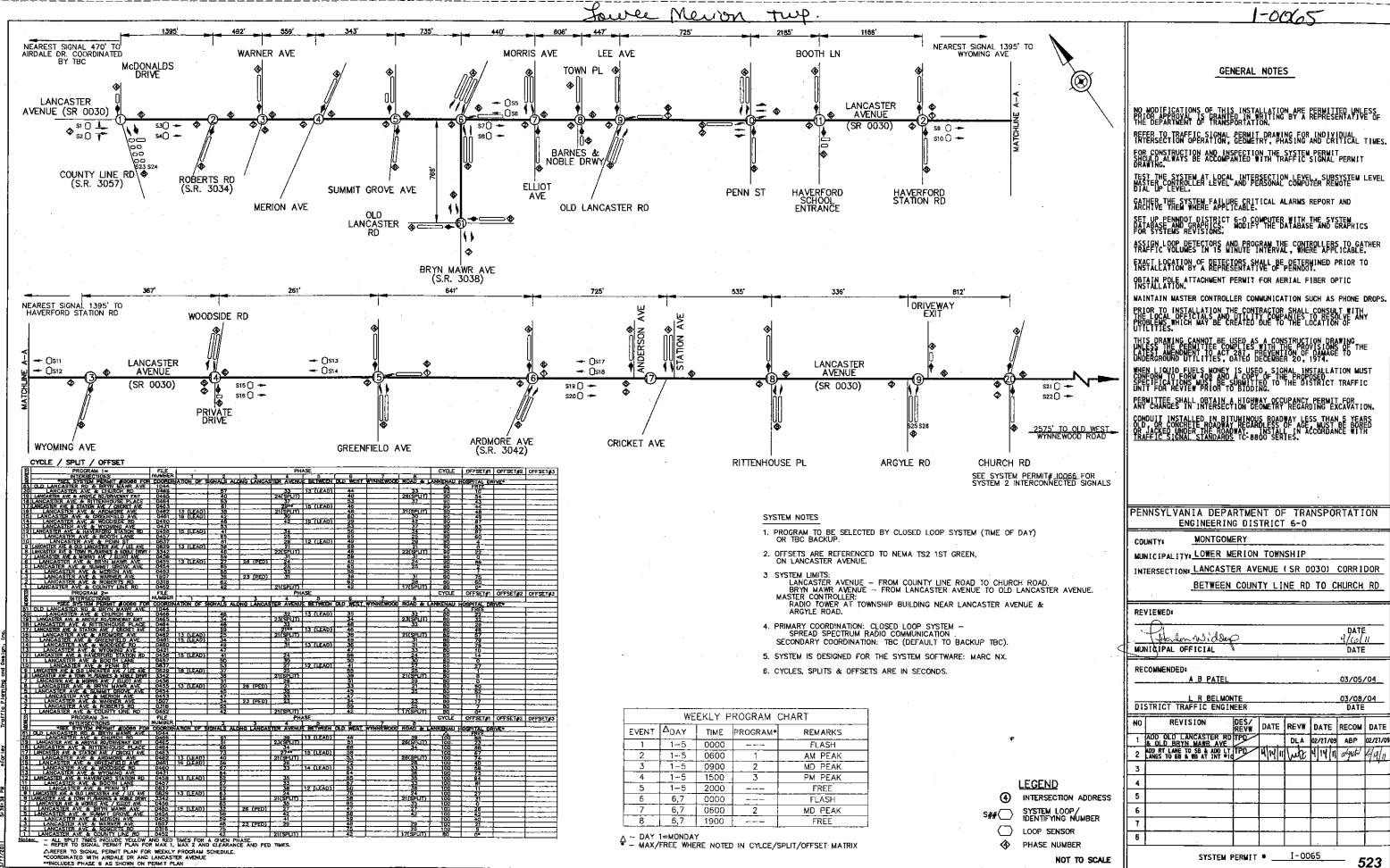
90 SEC

80 SEC

≠ MINIMUM TIME. ACTUAL GREEN TIME DETERMINED BY CYCLE LENGTH.

• IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.





♦ PHASE NUMBER

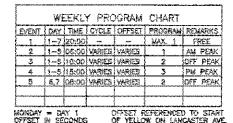
NOT TO SCALE

SYSTEM PERMIT .\_\_

## TRAFFIC SIGNAL SYSTEM PERMIT PLAN

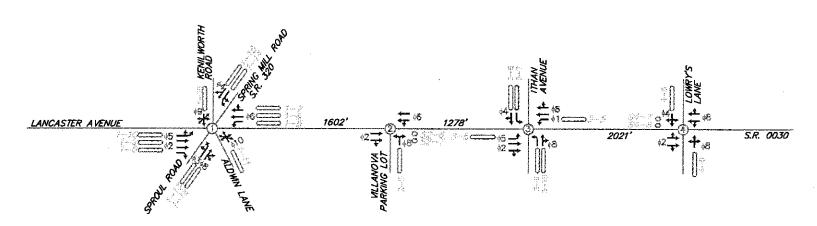
#### SYSTEM NOTES

- PROGRAM TO DE SELECTED BY CLOSED LOSS SYSTEM (THE OF DAY) OF SEC BACKUP.
- 2. OFFECTS AND SEPERANCED TO THE BECOMMENG OF FOLICH! ON LONGESTER AVERAGE.
- O SYSTEM LIMITS: LANGASTED AVENUE (4 MITERGESTACES)
  FROM TRICAR NO TO LORRY'S LANE
  MASTER: PADROS MAINTENANCE PARLITHE
- COST GUDGOS OF TARASTO) SOFT SOFTAMULTANCES PRACTICES A



<u>HOTEX</u> — ALL SPLIT THES ANGLESE TOLLOW AND RED THEX FOR A CHIEF PANCE.

- SEED TO DOWN PRIMET PLAN FOR MAR I, MAR 2. GLARANCE AND PRICE



#### CYCLE/SPLIT/OFFSET

	Program 1 =	*****					Phose				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~ <del>~~~~</del>		Cycle	Offset
	intersections	File #	Moster	1	2	3	4.	5	5	7 1	8	9	10	j	
1	LANCASTER AVE & SPROUL ROAD	0228			55	15 (LEAD)	26	16 (LEAD)	39		41	32 (SPUT)	32 (SPLIT)	160	FREE
2	LANCASTER AVE & VILLANOVA PARKING LOT	0779			29				29		31			60	24
3	LANCASTER AVE & ITHAN AVE	0780		15 (LEAD)	44		35	13 (LEAD)	46		35	26 (PED)		120	0
4	LANCASTER AVE & LOWRY'S LANE	0781			33		27		33		27			60	25

#### CYCLE/SPLIT/OFFSET

	Frogram 2 =	***************************************			***************************************	Phase		<del></del>				· · · · · · · · · · · · · · · · · · ·	Cycle	Offset }
	intersections	File # Mas	ter 1	2	3	4	5	5	7	8	9	10	<del></del>	
11	LANCASTER AVE & SPROUL ROAD	0226		49	13 (LEAD)	24	13 (LEAD) I	39		37	32 (SPUT)	32 (SPLIT)	150	FREE
2	LANCASTER AVE & VILLANOVA PARKING LOT	0779		29			1	29		31		1	60	24
3	LANCASTER AVE & ITHAN AVE	0780	19 (LEAD)	42		33	13 (LEAD)	48		33	26 (PED)	1	120	1 1
4	LANCASTER AVE & LOWRY'S LANE	0781		33		27		33		27			60	25

#### CYCLE/SPLIT/OFFSET

, And I was	Program 3 =			***********	******************************		Phase	***************************************		TOWNS TO BEST TO SECURITION OF THE SECURITION OF				Cycle	Offset
-	Intersections	Fle #	Moster	7	2	3	4	5	6	7	8	9	10		
1	LANCASTER AVE & SPROUL ROAD	0228	New York	1	50	13 (LEAD)	23	114 (LEAD)	36		36	32 (SPLIT)	32 (SPLIT)	150	FREE
2	LANCASTER AVE & VILLANOVA PARKING LOT	0779			29				29		31	1		60	26
[3]	LANCASTER AVE & ITHAN AVE	0780	16 /	LEAD)	46		32	15 (LEAD)	47		32	26 (PED)	<del></del>	120	8
4	LANCASTER AVE & LOWRY'S LANE	0781			33		27		33		27		<del> </del>	60	27

#### LEGEND

SYSTEM DETECTOR, INTERSECTION X - LOOP NO. Y

(N-Y) INTERSECTION X - LOOP NO. Y

PHASE

SCALE: NOT TO SCALE



RADNOR TOWNSHIP

REVISIONS

COUNTY ROUTE SECTION SHEET

0030 CLR-T 4 OF 4

DATE BY

System # I-0156

DELAWARE

DISTRICT

8-0

#### GENERAL NOTES

HO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

REFER TO TRAFFIC SIGNAL PERMIT DRAWING FOR INDIVIDUAL INTERSECTION OPERATION, GEOMETRY, PHASING AND CRITICAL TIMES.

FOR CONSTRUCTION AND INSPECTION THE SYSTEM PERMIT SHOULD ALWAYS BE ACCOMPANIED WITH TRAFFIC SIGNAL PERMIT

TEST THE SYSTEM AT LOCAL INTERSECTION LEVEL, SUBSYSTEM LEVEL MASTER CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE

GATHER THE SYSTEM FABLURE CRUTICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.

SET UP PENNDOT DISTRICT 8-0 COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SYSTEMS REVISIONS.

ASSIGN LOOP DETECTORS AND PROGRAM THE CONTROLLERS TO GATHER TRAFFIC VOLUMES IN 15 MINUTE INTERVAL, WHERE APPLICABLE

EKACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

OBTAIN POLE ATTACHMENT PERMIT FOR AERIAL FIBER OPTIC INSTALLATION.

MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND LITLITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLES WITH THE PROVISIONS OF ACT 181, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES EFFECTIVE DATE MARCH 29, 2007.

WHEN LIGHED FUELS HONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN SITUMIMOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST DE SORED OR JACKED LINDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TO-7500 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION ENGINEERING DISTRICT 6-0

COUNTY: DELAWARE

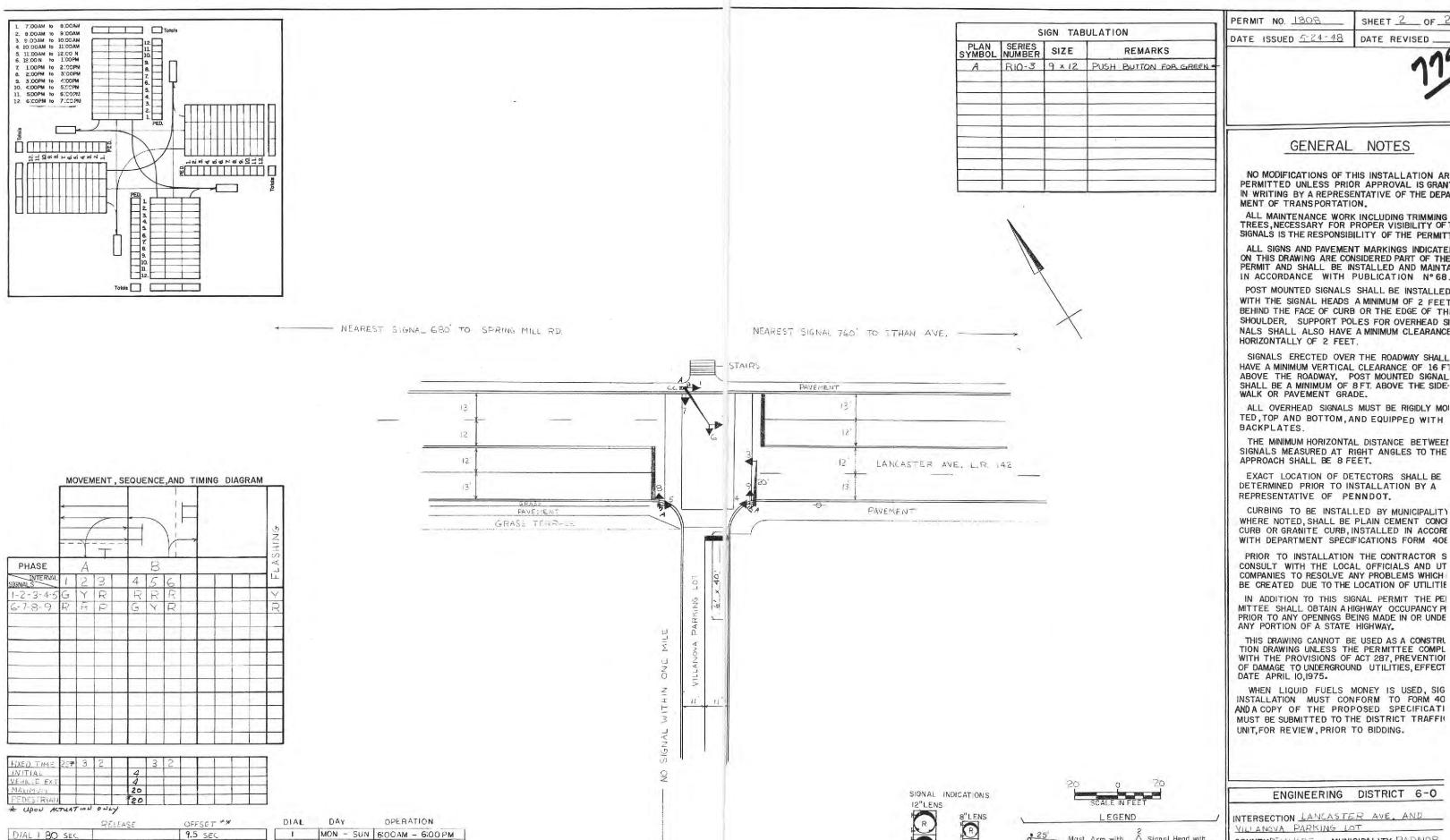
MUNICIPALITY: RADNOR TOWNSHIP

INTERSECTION: TRAFFIC SIGNAL SYSTEM

RECOMMENDED:

SHEET 1 OF 524

INTERCONNECT PERMIT #1-0156



MON - SUN 6:00PM - 12;MID

MON - SUN 12 MID - 600AM - FLASH

DIAL 2 70 SE

DIAL 3 FLASH

+ MINIMUM GREEN TIME ; ACTUAL GREEN TIME TO

DETERMINED BY CYCLE LENGTH AND THE \*\* OFFSET REFERENCED TO START OF INTERVAL Nº 2

PERMIT NO. 1808 SHEET 2 OF 2 DATE ISSUED 5-24-48 DATE REVISED

#### GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANT IN WRITING BY A REPRESENTATIVE OF THE DEPAI MENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING TREES, NECESSARY FOR PROPER VISIBILITY OF SIGNALS IS THE RESPONSIBILITY OF THE PERMITT

ALL SIGNS AND PAVEMENT MARKINGS INDICATE! ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTA IN ACCORDANCE WITH PUBLICATION Nº 68

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF TH SHOULDER. SUPPORT POLES FOR OVERHEAD SI NALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 F1
ABOVE THE ROADWAY, POST MOUNTED SIGNAL
SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT GRADE.

TED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES. THE MINIMUM HORIZONTAL DISTANCE BETWEEN

SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET. EXACT LOCATION OF DETECTORS SHALL BE

DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY WHERE NOTED, SHALL BE PLAIN CEMENT CONCE CURB OR GRANITE CURB, INSTALLED IN ACCORD WITH DEPARTMENT SPECIFICATIONS FORM 408

PRIOR TO INSTALLATION THE CONTRACTOR S CONSULT WITH THE LOCAL OFFICIALS AND UT COMPANIES TO RESOLVE ANY PROBLEMS WHICH BE CREATED DUE TO THE LOCATION OF UTILITIE

IN ADDITION TO THIS SIGNAL PERMIT THE PEI MITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PI PRIOR TO ANY OPENINGS BEING MADE IN OR UNDE ANY PORTION OF A STATE HIGHWAY.

THIS DRAWING CANNOT BE USED AS A CONSTRUTION DRAWING UNLESS THE PERMITTEE COMPL WITH THE PROVISIONS OF ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECT DATE APRIL 10,1975.

WHEN LIQUID FUELS MONEY IS USED, SIG INSTALLATION MUST CONFORM TO FORM 40 AND A COPY OF THE PROPOSED SPECIFICATI MUST BE SUBMITTED TO THE DISTRICT TRAFFIL UNIT, FOR REVIEW, PRIOR TO BIDDING.

ENGINEERING	DISTRICT	6-0

INTERSECTION LANCASTER AVE. AND VILLANOVA PARKING LOT

A Signal Head with Identifying Number

Loop Detector Presence &

Sign with identifying Letter

Pedestrian Pushbutton

Directional

2 Signal Head with
Arrow Section &
identifying Number

COUNTY DELAWARE MUNICIPALITY RADNOR Drawn by RAYMOND M. LABADIE Date 7-17-8

Approved by Station Date 7-19-6

Approved by Station B. Station Date 7-19DISTRICT TRAFFIC ENGR.

REVISED New Draw my , added TB( M525 &)
REVISED OFFSET 3/88 C. GROWN TES THENTE 3-15.