TECHNICAL APPENDIX

TABLE OF CONTENTS

Appendix 1 – AM and PM Peak Hour Intersection Counts

Appendix 2 – Cumulative Trip Generation Worksheet

Appendix 3 – MUTCD Traffic Signal Warrants

Appendix 4 – Proportionate Share Calculations

Appendix 5 – Intersection Improvement Exhibits

Appendix 6 – Intersection Level of Service Calculation Worksheets

- Existing AM and PM Peak Hour
- Existing + Project AM and PM Peak Hour
- Baseline AM and PM peak Hour
- Cumulative and Cumulative + Project AM and PM Peak Hour

Appendix 1
AM and PM Peak Hour Intersection Counts

ITM Peak Hour Summary

Prepared by:

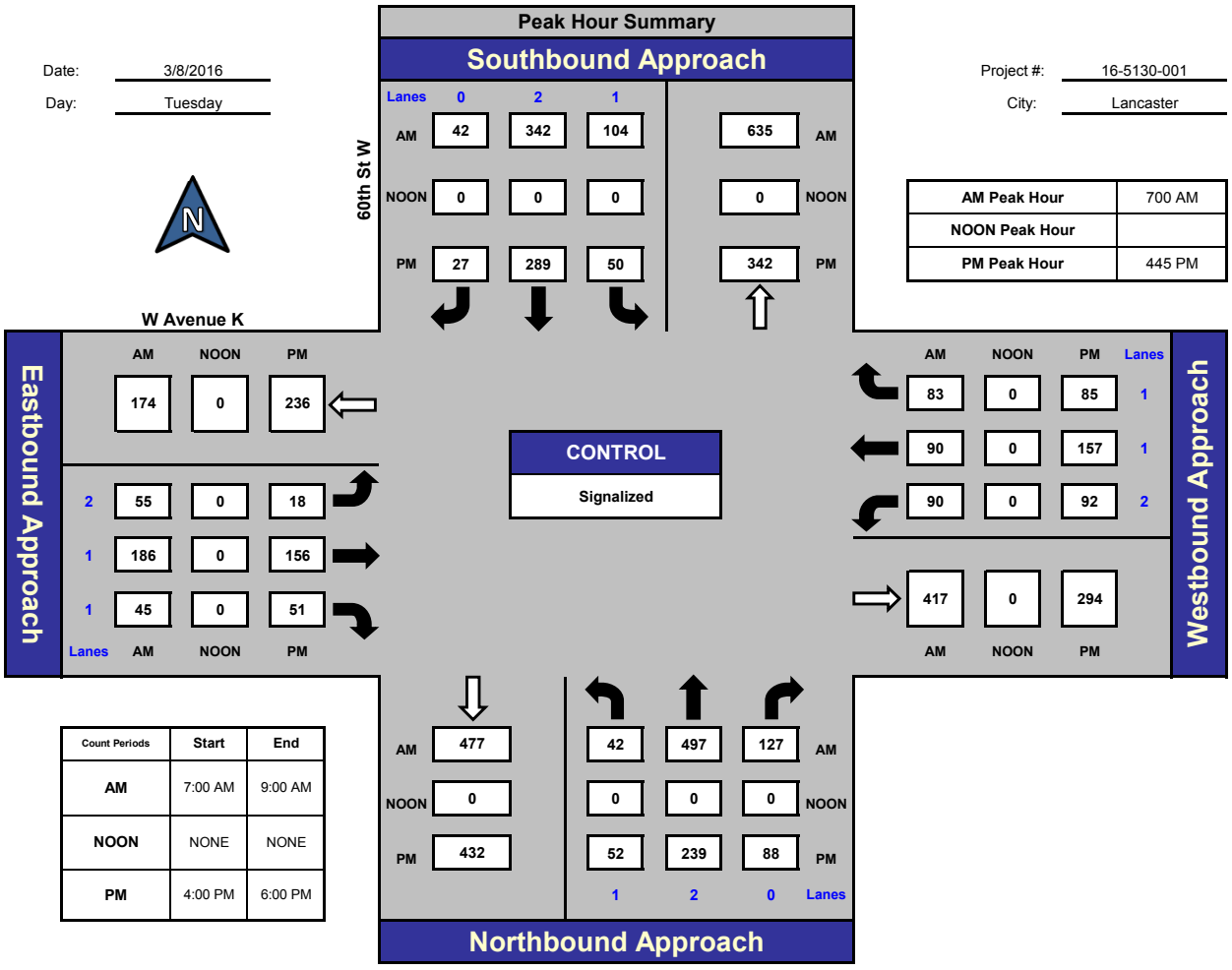
National Data & Surveying Services

60th St W and W Avenue K , Lancaster

Date: 3/8/2016
Day: Tuesday

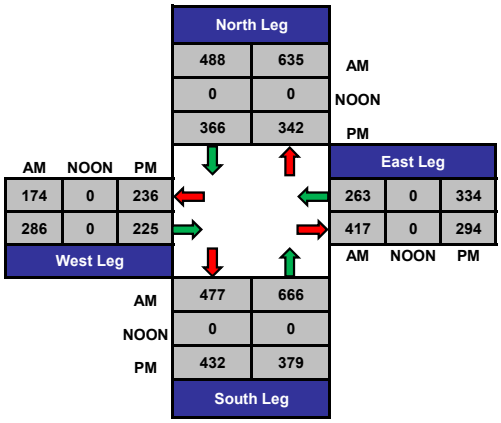
Project #: 16-5130-001
City: Lancaster

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	445 PM

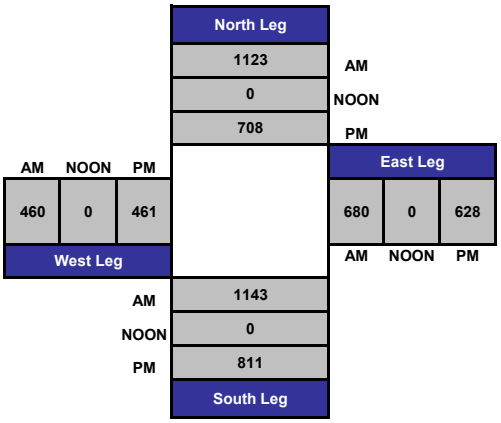


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

55th St W and W Avenue K , Lancaster

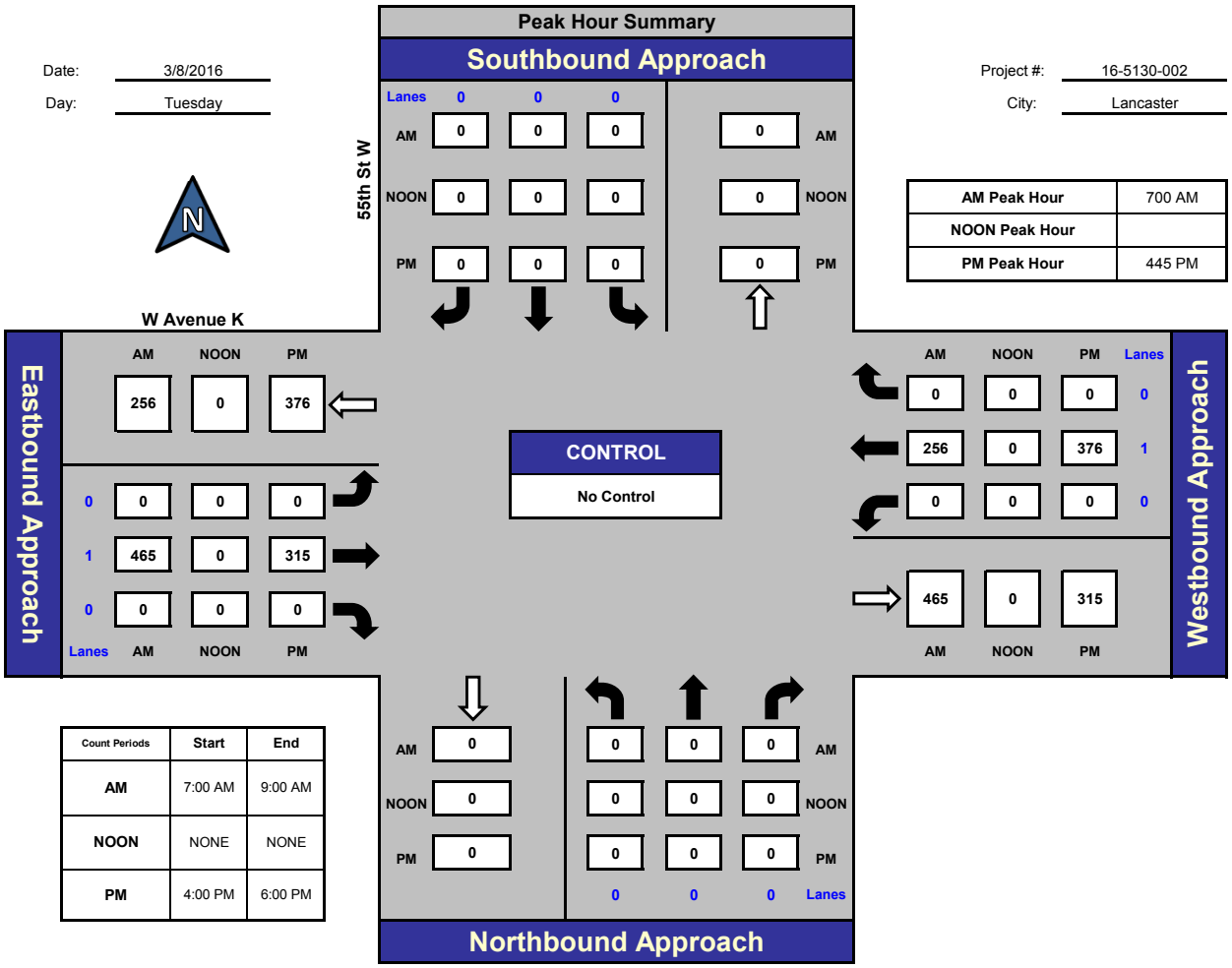
Date: 3/8/2016

Day: Tuesday

Project #: 16-5130-002

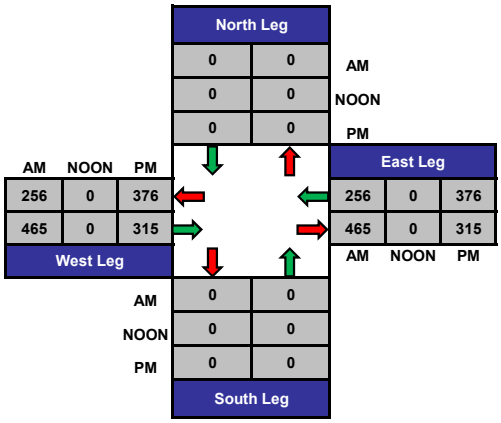
City: Lancaster

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	445 PM

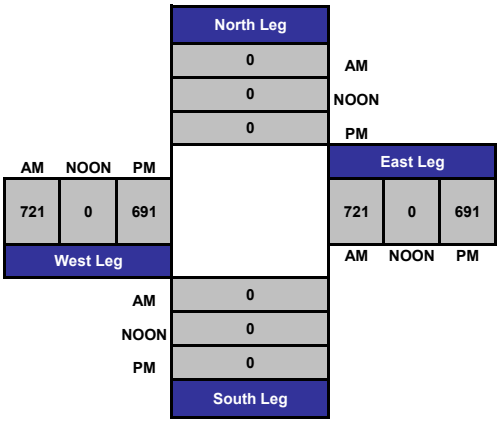


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

50th St W and W Avenue K , Lancaster

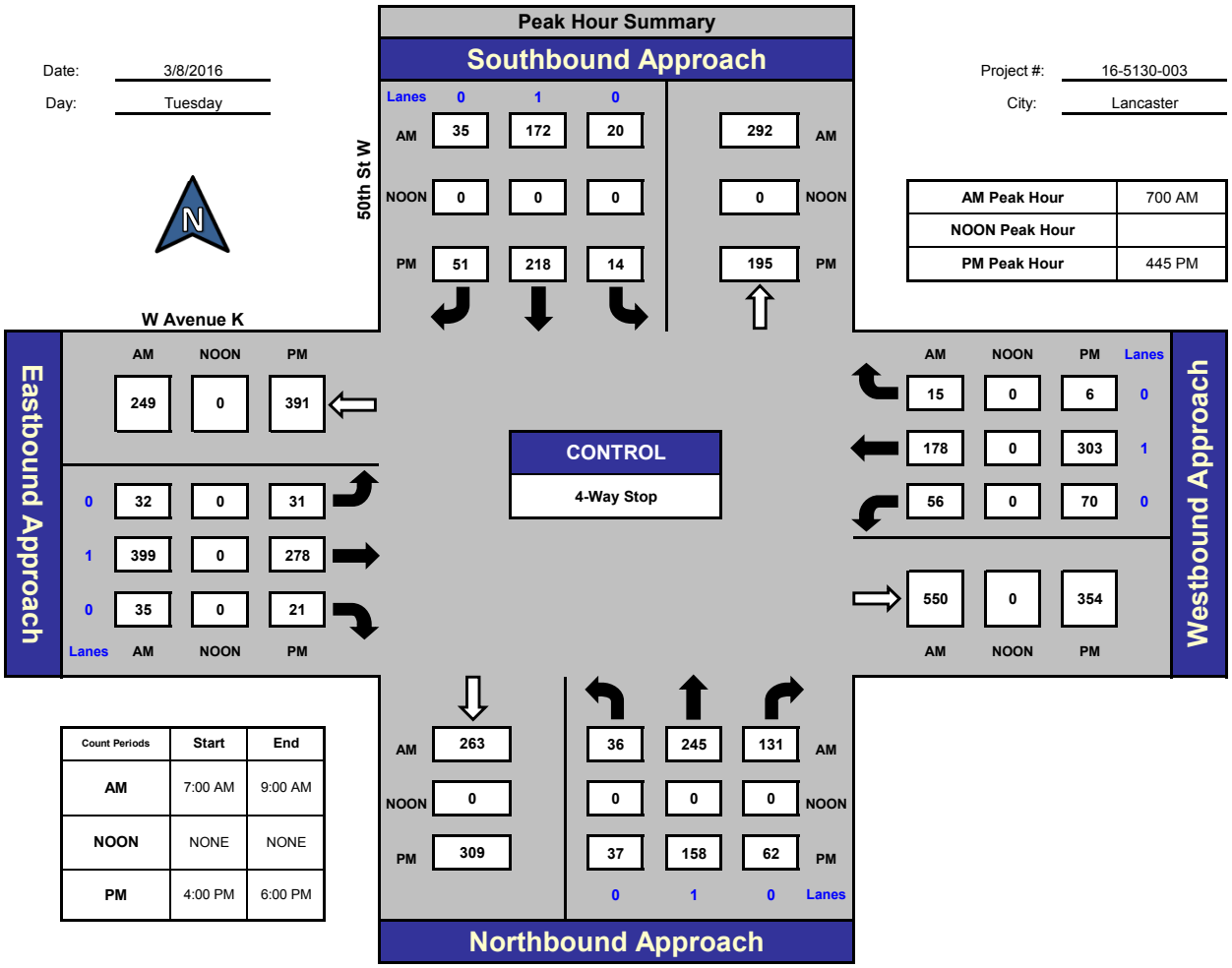
Date: 3/8/2016

Day: Tuesday

Project #: 16-5130-003

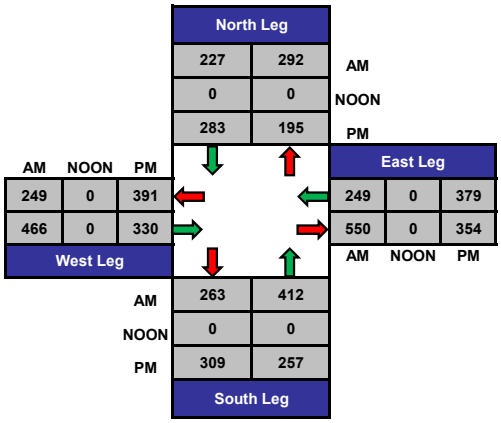
City: Lancaster

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	445 PM

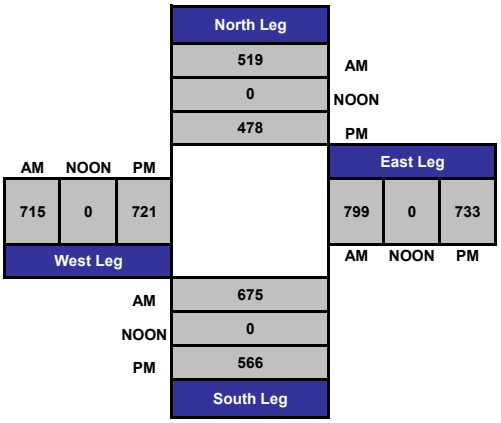


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

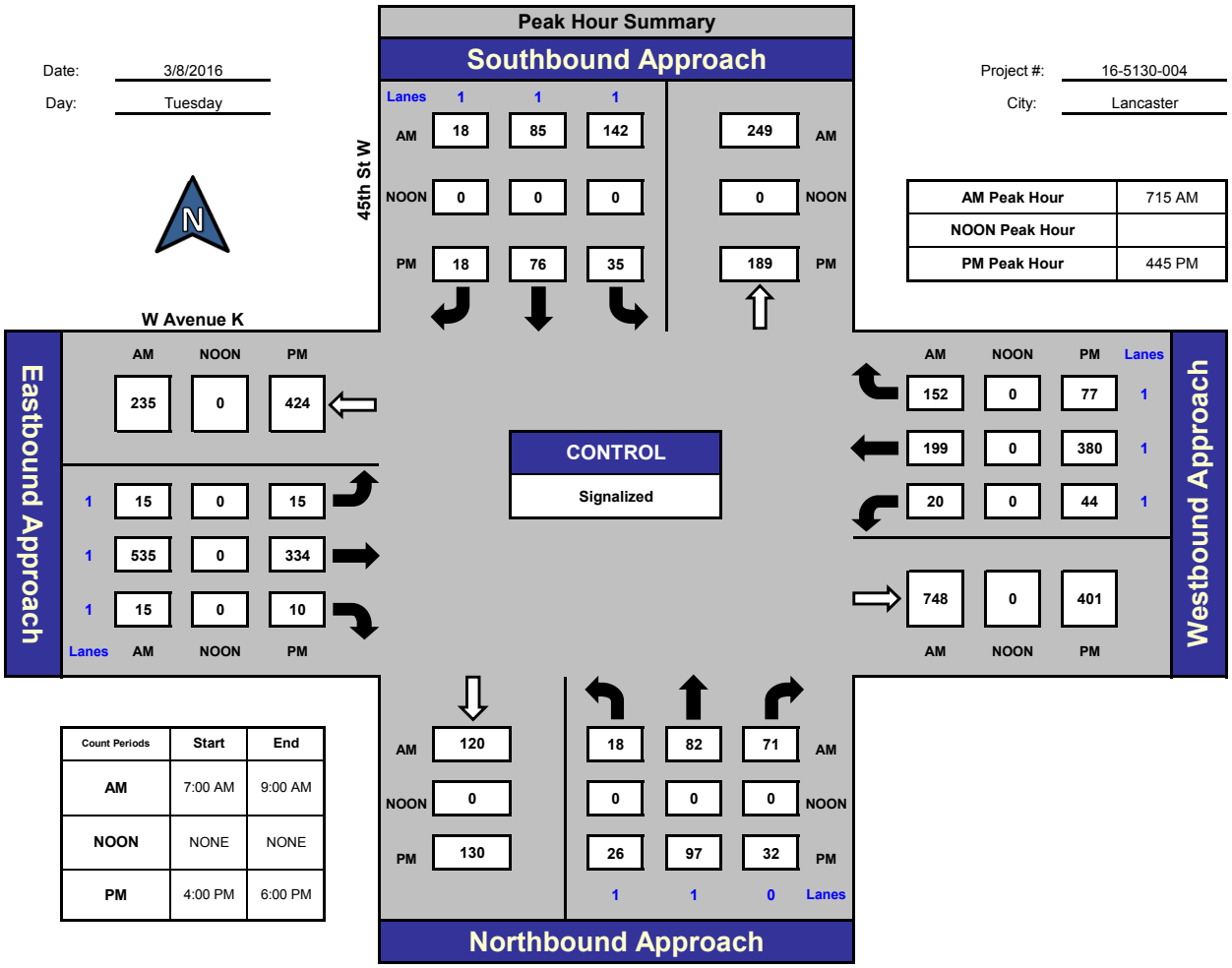
45th St W and W Avenue K , Lancaster

Date: 3/8/2016

Day: Tuesday

Project #: 16-5130-004

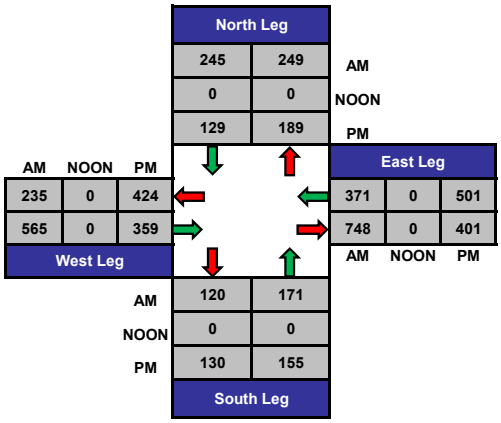
City: Lancaster



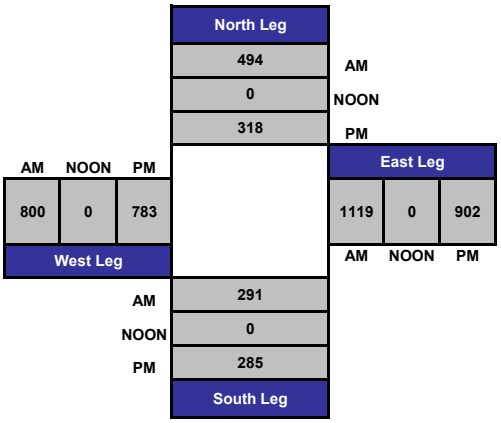
AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	445 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

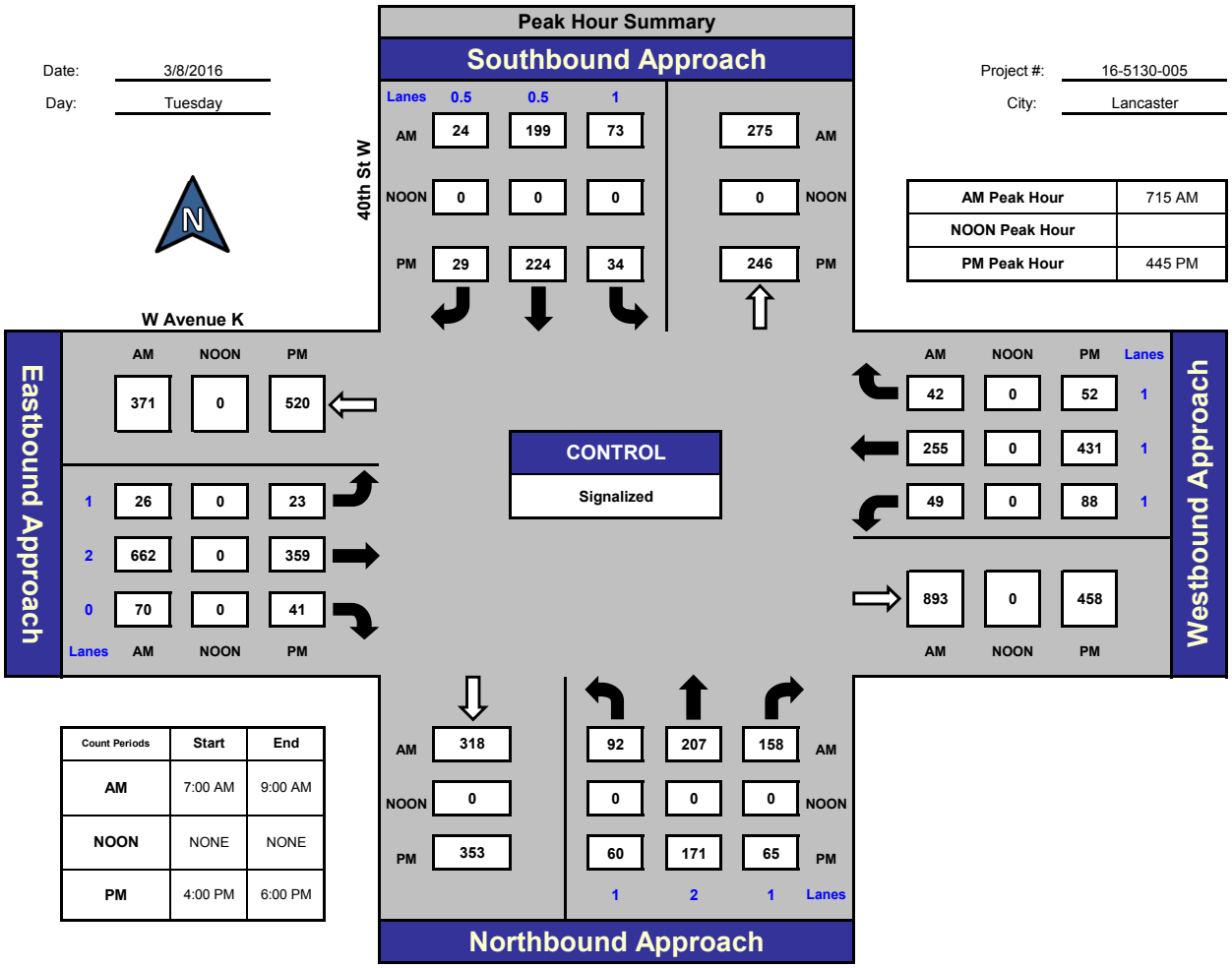
40th St W and W Avenue K , Lancaster

Date: 3/8/2016

Day: Tuesday

Project #: 16-5130-005

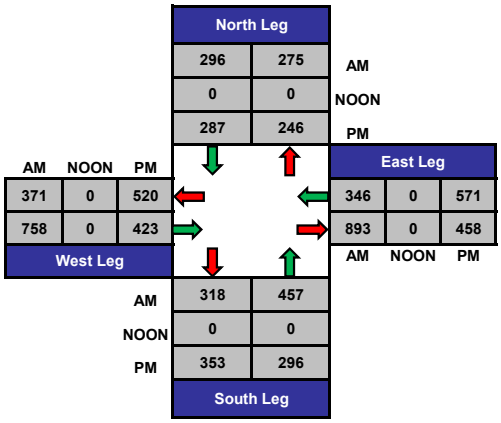
City: Lancaster



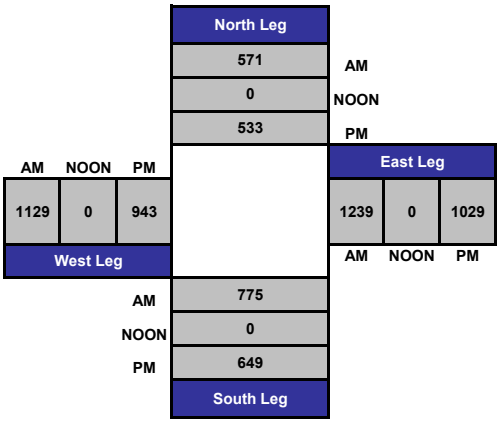
AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	445 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Appendix 2
Cumulative Trip Generation Worksheet

Cumulative Projects Trip Generation

ITE TRIP GENERATION RATES

Land Use	ITE Code	ADT	AM Peak Hour Rates			PM Peak Hour Rates		
			In	Out	Total	In	Out	Total
Single Family Dwelling	210	9.57	0.19	0.56	0.75	0.63	0.37	1.00
Condo	230	5.86	0.07	0.37	0.44	0.35	0.17	0.52
General Office	710	11.01	1.364	0.186	1.55	0.2533	1.2367	1.49
Medical Office	720	36.13	1.9592	0.5208	2.48	1.0044	2.7156	3.72
Retail	814	44.32	1.1924	1.5176	2.71	3.2832	3.5568	6.84
Restaurant	931	89.95	0.405	0.405	0.81	5.0183	2.4717	7.49

CUMULATIVE PROJECT TRIPS

Map No.		Land Use	Units/Size		ADT	AM Peak Hour Trips			PM Peak Hour Trips		
						In	Out	Total	In	Out	Total
	60294	SFD	99	du	947	19	55	74	62	37	99
	69446	SFD	4	du	38	1	2	3	3	1	4
	61921	SFD	77	du	737	15	43	58	49	28	77
	61535	SFD	240	du	2297	46	134	180	151	89	240
	61554	SFD	20	du	191	4	11	15	13	7	20
	67582	SFD	8	du	77	2	4	6	5	3	8
	60428	SFD	22	du	211	4	12	17	14	8	22
	63595	SFD	5	du	48	1	3	4	3	2	5
	72565	SFD	36	du	345	7	20	27	23	13	36
	61734	SFD	19	du	182	4	11	14	12	7	19
	60034	SFD	68	du	111	13	38	51	43	25	68
	53102	SFD	69	du	660	13	39	52	43	26	69
	62643	SFD	87	du	833	17	49	65	55	32	87
	60885	SFD	49	du	469	9	27	37	31	18	49
	62409	SFD	37	du	354	7	21	28	23	14	37
	61542	SFD	14	du	134	3	8	11	9	5	14
	61920	SFD	108	du	1034	21	60	81	68	40	108
	52719	SFD	78	du	746	15	44	59	49	29	78
	62121	SFD	115	du	1101	22	64	86	72	43	115
	60430	SFD	82	du	785	16	46	62	52	30	82
	61677	SFD	58	du	555	11	32	44	37	21	58
	61678	SFD	58	du	555	11	32	44	37	21	58
	53642	SFD	161	du	1541	31	90	121	101	60	161
	60291	SFD	66	du	632	13	37	50	42	24	66
	53229	SFD	1,594	du	15255	303	893	1196	1004	590	1594
	66680	SFD	238	du	2278	45	133	179	150	88	238
	61600	SFD	33	du	316	6	18	25	21	12	33
	61040	SFD	58	du	555	11	32	44	37	21	58
	61041	SFD	40	du	383	8	22	30	25	15	40
	67494	SFD	19	du	182	4	11	14	12	7	19
	61989	SFD	56	du	536	11	31	42	35	21	56
	69578	SFD	4	du	38	1	2	3	3	1	4
	62215	SFD	23	du	220	4	13	17	14	9	23
	60664	SFD	39	du	229	7	22	29	25	14	39
	71563	SFD	108	du	1034	21	60	81	68	40	108
TOTAL					**35,605**	**720**	**2,124**	**2,844**	**2,389**	**1,403**	**3,792**

Appendix 3
MUTCD Traffic Signal Warrants

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

COUNT DATE 3/8/2016
CALC DJC DATE 3/25/2016
CHK _____ DATE _____

DIST ____ CO ____ RTE ____ PM ____

Major St: Avenue K
Minor St: 50th Street West

Critical Approach Speed _____ mph
Critical Approach Speed _____ mph

Speed limit or critical speed on major street traffic > 40 mph ☒ } RURAL (R)
In built up area of isolated community of < 10,000 population ☐ } RURAL (R)
or
☐ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED YES ☐ NO ☐**
(Condition A or Condition B or combination of A and B must be satisfied) N/A

Condition A - Minimum Vehicle Volume **100% SATISFIED YES ☐ NO ☐**
80% SATISFIED YES ☐ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)									
	U	R	U	R						
APPROACH LANES	1		2 or More							Hour
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)						
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)						

Condition B - Interruption of Continuous Traffic **100% SATISFIED YES ☐ NO ☐** N/A
80% SATISFIED YES ☐ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)									
	U	R	U	R						
APPROACH LANES	1		2 or More							Hour
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)						
Highest Approach Minor Street	75 (60)	53 (42)	100 (80)	70 (56)						

Combination of Conditions A & B **SATISFIED YES ☐ NO ☐** N/A

REQUIREMENT	CONDITION	✓	FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME		Yes ☐ No ☐
	AND, B. INTERRUPTION OF CONTINUOUS TRAFFIC		
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐** N/A

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour			
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐	No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐	No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☒ NO ☐**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☒ NO ☐**
(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☒	No ☐
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☒	No ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒	No ☐

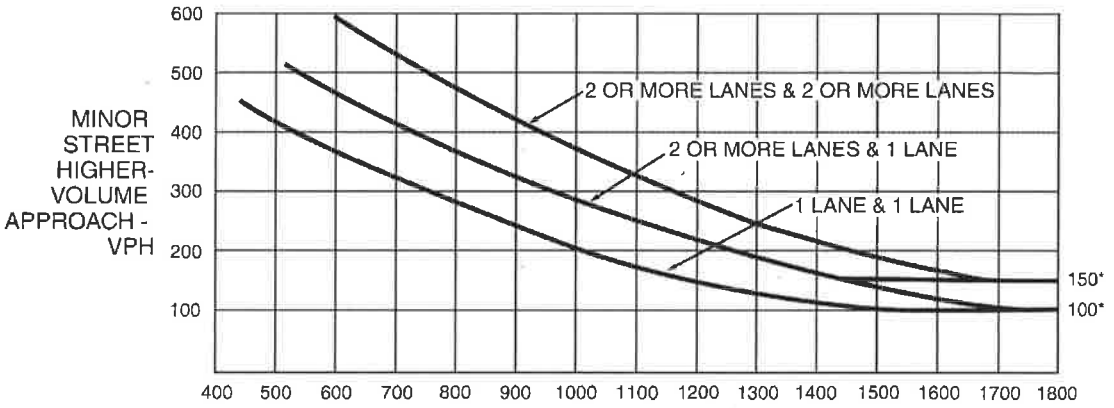
PART B **SATISFIED YES ☒ NO ☐**

APPROACH LANES	One	2 or More	Hour (Ex PM)	Cum PM
Both Approaches - Major Street		X	581	1,714
Higher Approach - Minor Street		X	283	400

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐	No ☐
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☒	No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-3. Warrant 3, Peak Hour

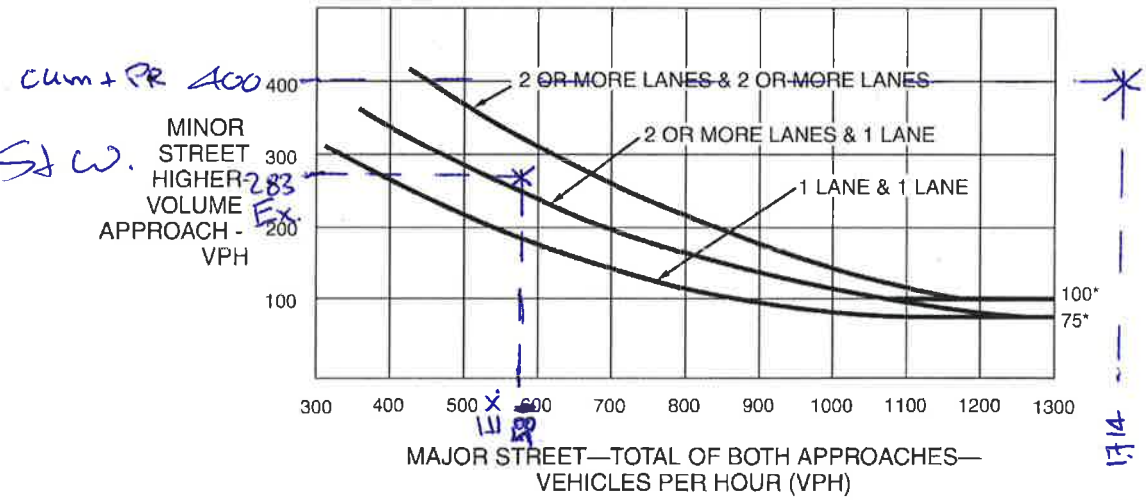


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

PM

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Cum + PR 400
50th St W.
NB
283 Ex.
Ave K
1714 Cum + PR

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

COUNT DATE 3/22/2016
CALC DJC DATE 3/25/2016
CHK _____ DATE _____

DIST ____ CO ____ RTE ____ PM ____

Major St: Avenue K
Minor St: 55th Street West

Critical Approach Speed 55 mph
Critical Approach Speed 45 mph

Speed limit or critical speed on major street traffic > 40 mph..... ☒
or
In built up area of isolated community of < 10,000 population..... ☐
} RURAL (R)
☐ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume SATISFIED YES ☐ NO ☐ N/A
(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume 100% SATISFIED YES ☐ NO ☐
80% SATISFIED YES ☐ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)									
	U	R	U	R						Hour
APPROACH LANES	1		2 or More							
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)						
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)						

Condition B - Interruption of Continuous Traffic 100% SATISFIED YES ☐ NO ☐ N/A
80% SATISFIED YES ☐ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)									
	U	R	U	R						Hour
APPROACH LANES	1		2 or More							
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)						
Highest Approach Minor Street	75 (60)	53 (42)	100 (80)	70 (56)						

Combination of Conditions A & B SATISFIED YES ☐ NO ☐ N/A

REQUIREMENT	CONDITION	✓	FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME		Yes ☐ No ☐
	AND, B. INTERRUPTION OF CONTINUOUS TRAFFIC		
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐** N/A

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More				Hour
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐ No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐ No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☒ NO ☐**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☐ NO ☒**
(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☐ No ☒
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☒ No ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒ No ☐

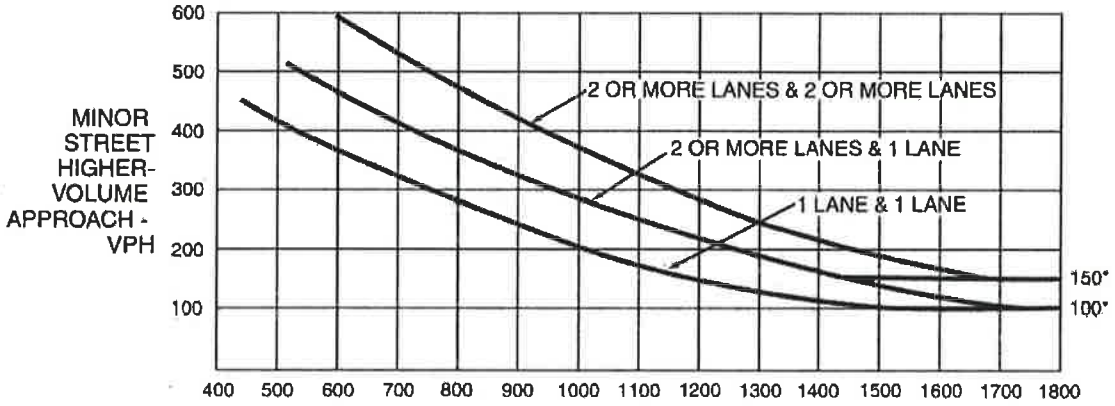
PART B **SATISFIED YES ☐ NO ☐**

APPROACH LANES	One	2 or More	PM Peak Hour
Both Approaches - Major Street		X	1,849
Higher Approach - Minor Street		X	202

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐ No ☐
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☒ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

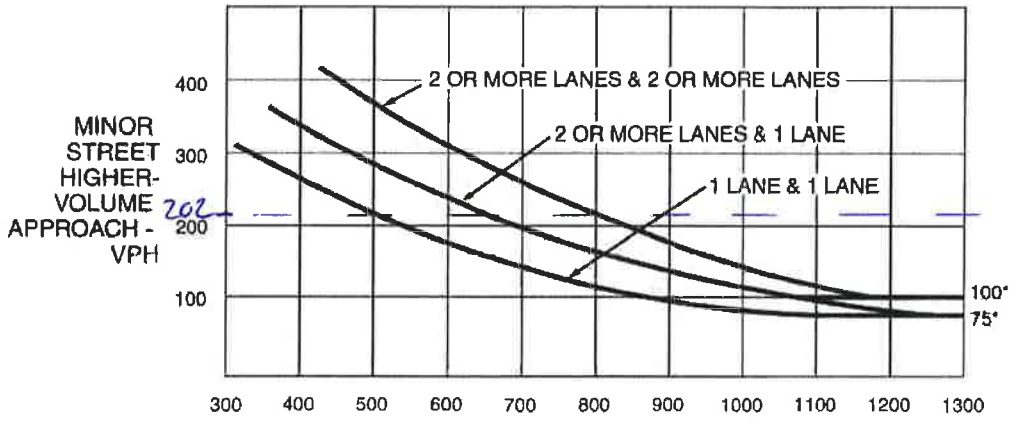
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Ave k
WB LT

Ave k
EB/WB except
WB LT

Appendix 4
Proportionate Share Calculations

PROPORTIONATE SHARE CALCULATION

Avenue K/55th Street West

CUMULATIVE-ADDED TRAFFIC VOLUMES		PROJECT-ADDED TRAFFIC VOLUMES	
AM PEAK HOUR =	914 PHT	AM PEAK HOUR =	132 PHT
PM PEAK HOUR =	1287 PHT	PM PEAK HOUR =	174 PHT
TOTAL =	2201 PHT	TOTAL =	306 PHT

PROPORTIONATE SHARE CALCULATION

306 PHT / (306 PHT + 2201 PHT) = 0.12

PROPORTIONATE SHARE = 12%

Avenue K/50th Street West

CUMULATIVE-ADDED TRAFFIC VOLUMES		PROJECT-ADDED TRAFFIC VOLUMES	
AM PEAK HOUR =	1078 PHT	AM PEAK HOUR =	115 PHT
PM PEAK HOUR =	1363 PHT	PM PEAK HOUR =	152 PHT
TOTAL =	2441 PHT	TOTAL =	267 PHT

PROPORTIONATE SHARE CALCULATION

267 PHT / (267 PHT + 2441 PHT) = 0.10

PROPORTIONATE SHARE = 10%

Avenue K/45th Street West

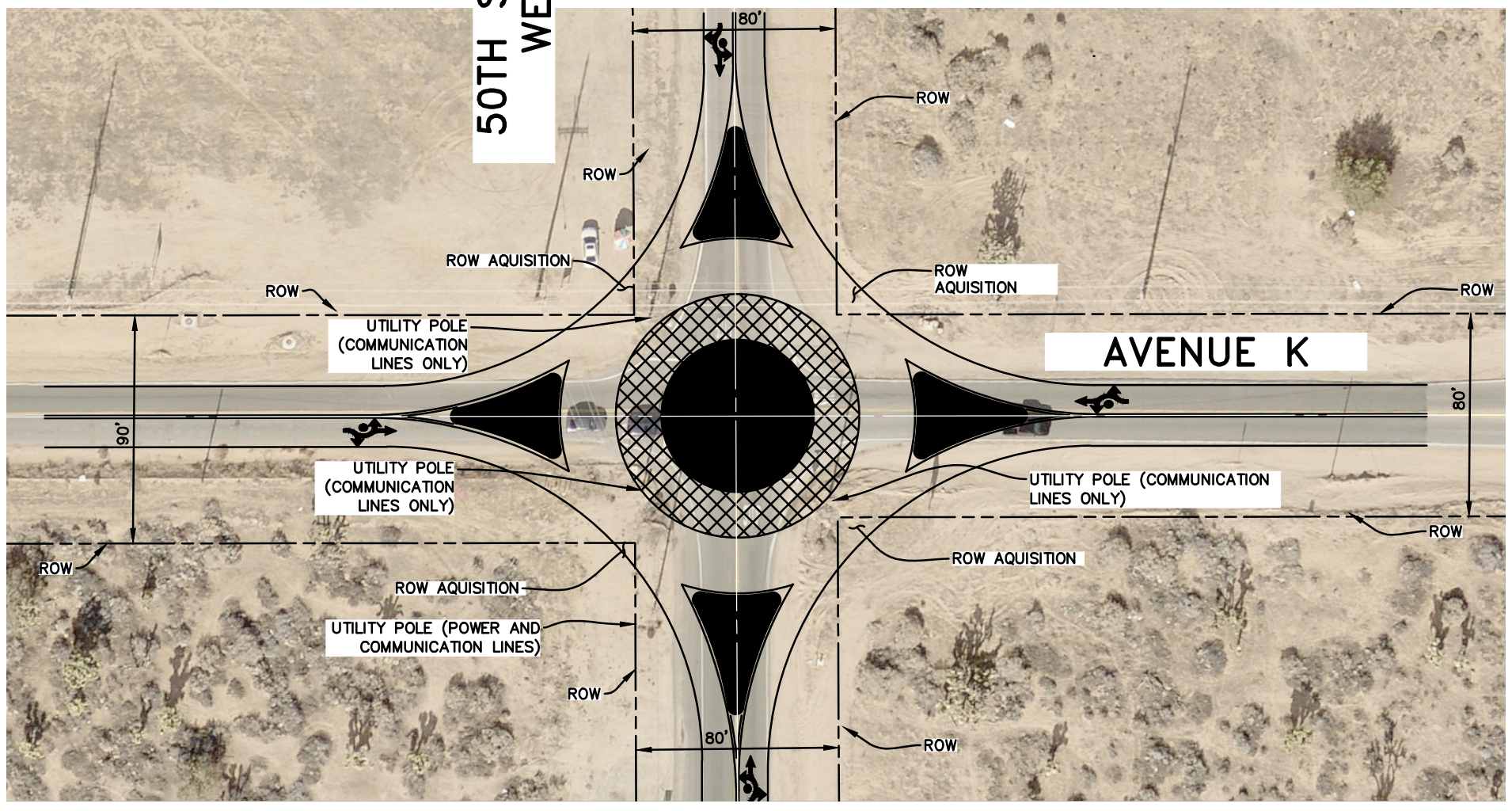
CUMULATIVE-ADDED TRAFFIC VOLUMES		PROJECT-ADDED TRAFFIC VOLUMES	
AM PEAK HOUR =	862 PHT	AM PEAK HOUR =	97 PHT
PM PEAK HOUR =	1110 PHT	PM PEAK HOUR =	127 PHT
TOTAL =	1972 PHT	TOTAL =	224 PHT

PROPORTIONATE SHARE CALCULATION

224 PHT / (224 PHT + 1972 PHT) = 0.10

PROPORTIONATE SHARE = 10%

Appendix 5
Intersection Improvement Exhibits

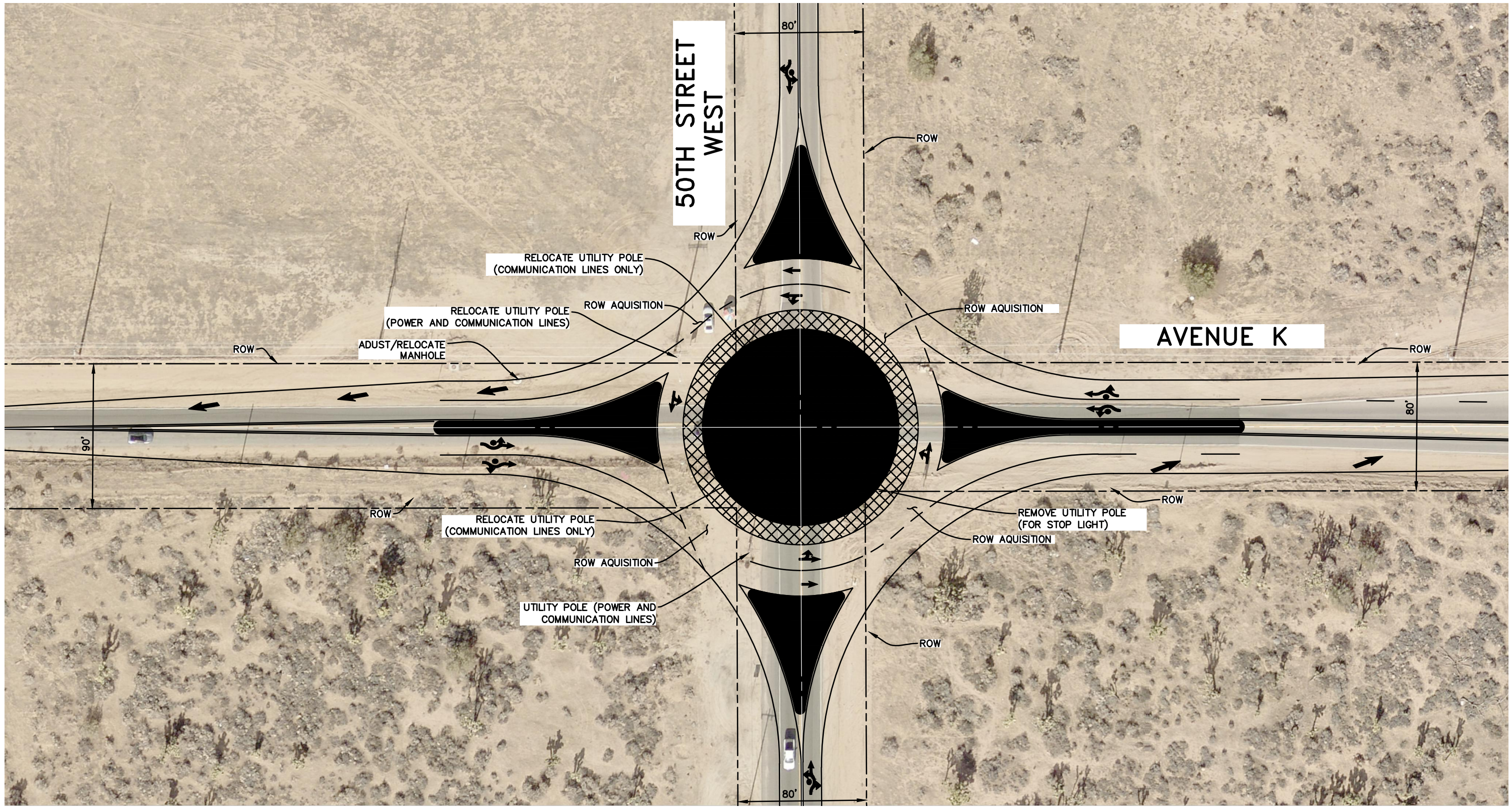


Stantec
111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532

N
1"=60'

70' RADIUS INSCRIBED CIRCLE
SINGLE LANE ROUNDABOUT
AVENUE K AND 50TH STREET WEST
SUGGESTED IMPROVEMENT
2064109000
7/26/2019

DRAWING: v: \2064\active\2064109000\17787 - new tr 71210\traffic\exhibits\suggested_improvements_exhibit.dwg

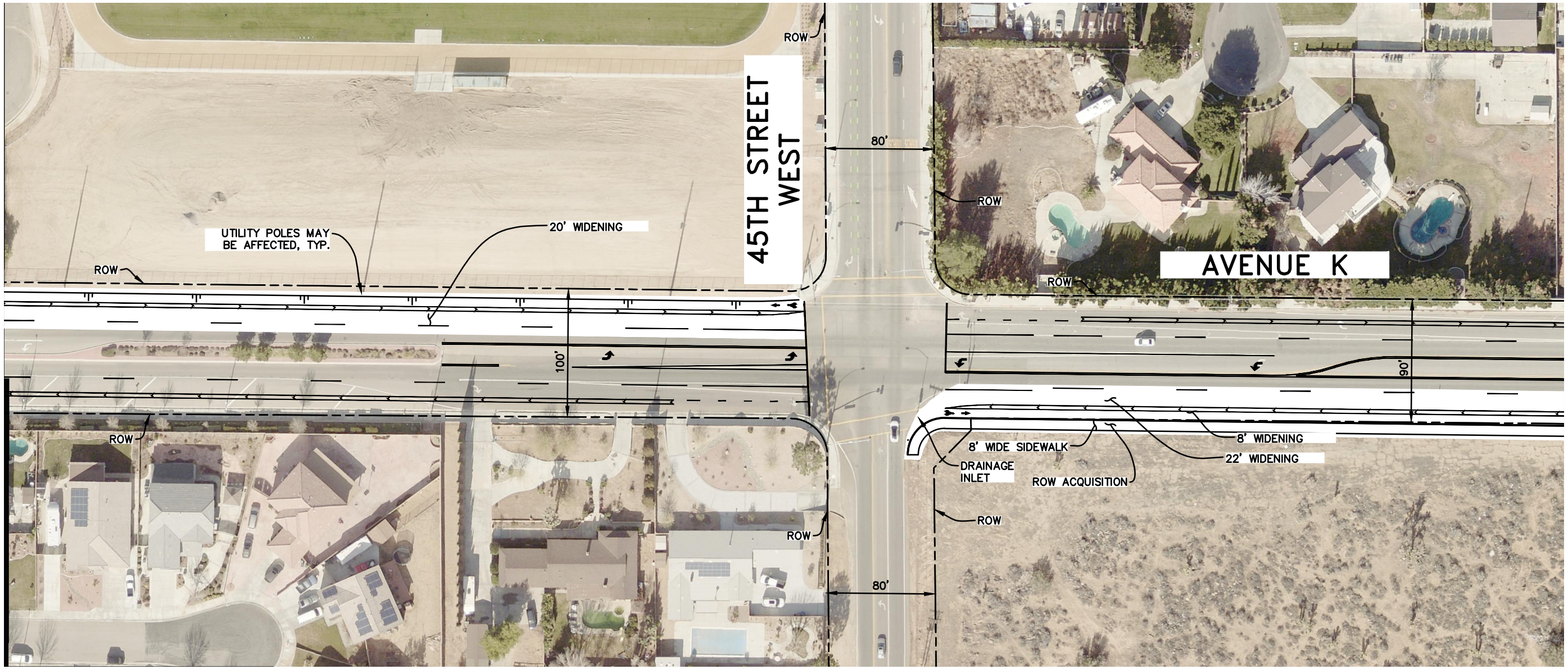


Stantec
111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532

N
1"=60'

105' RADIUS INSCRIBED CIRCLE
MULTI-LANE ROUNDABOUT
AVENUE K AND 50TH STREET WEST
SUGGESTED IMPROVEMENT
2064109000
7/26/2019

DRAWING: v: \2064\active\2064109000\17787 - new tr 71210\traffic\exhibits\suggested_improvements_exhibit.dwg

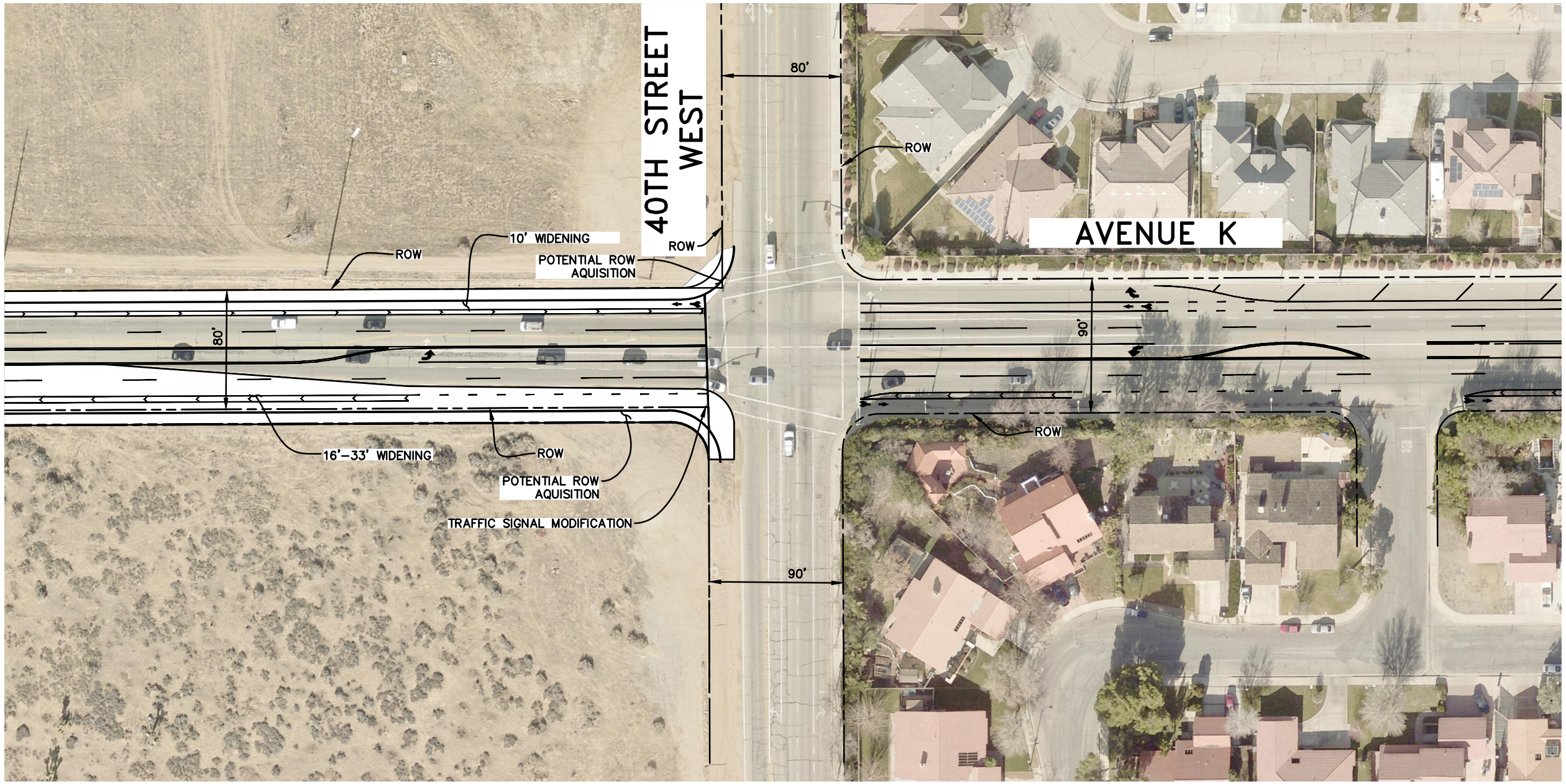


Stantec
111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532

N
1"=80'

INTERSECTION WIDENING
AVENUE K AND 45TH STREET WEST
SUGGESTED IMPROVEMENT
2064109000
7/26/2019

DRAWING: v:\2064\active\2064109000\17787 - new tr 71210\traffic\exhibits\suggested_improvements_exhibit.dwg



Stantec
111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963–9532

N
1"=80'

INTERSECTION WIDENING
AVENUE K AND 40TH STREET WEST
SUGGESTED IMPROVEMENT
2064109000
7/26/2019

DRAWING: v:\2064\active\2064109000\17787 – new tr 71210\traffic\exhibits\suggested_improvements_exhibit.dwg

Appendix 6
Intersection Level of Service Calculation Worksheets

Existing AM and PM Peak Hour

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 1
NORTH/SOUTH STREET: 60th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Existing
TIME PERIOD: AM/PM Peak Hour
COUNT DATE: 3/8/16

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	42	497	127	104	342	42	55	186	45	90	90	83
PM Peak	52	239	88	50	289	27	18	156	51	92	157	85
GEOMETRY	L	T	TR	L	T	TR	LL	T	R	LL	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	AM	PM	AM	PM
NBL	1.0	1,600	42	52	0.03	0.03 *
NBT	2.0	3,200	497	239	0.20 *	0.10
NBR	0.0	0	127	88	0.00	0.00
SBL	1.0	1,600	104	50	0.07 *	0.03
SBT	2.0	3,200	342	289	0.12	0.10 *
SBR	0.0	0	42	27	0.00	0.00
EBL	2.0	2,880	55	18	0.02	0.01
EBT	1.0	1,600	186	156	0.12 *	0.10 *
EBR	1.0 (a)	1,600	45	51	0.03	0.03
WBL	2.0	2,880	90	92	0.03 *	0.03 *
WBT	1.0	1,600	90	157	0.06	0.10
WBR	1.0 (a)	1,600	83	85	0.05	0.05
N/S Critical Movements					0.27	0.13
E/W Critical Movements					0.15	0.13
Right Turn Critical Movement					0.00	0.00
Clearance Interval					0.10	0.10
ICU					0.52	0.36
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Nor critical due to RTOR

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*DJL*
Agency/Co.	*STANTEC*
Date Performed	*3/20/2016*
Analysis Time Period	*AM PEAK HOUR*

Site Information

Intersection	*AVENUE K/50TH STREET W*
Jurisdiction	*LANCASTER*
Analysis Year	*EXISTING CONDITIONS*

Project ID *2064109000*

East/West Street: *AVENUE K* | North/South Street: *50TH ST W*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*32*	*399*	*35*	*56*	*178*	*15*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*36*	*245*	*131*	*20*	*172*	*35*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*1.00*		*1.00*		*1.00*		*1.00*	
Flow Rate (veh/h)	*466*		*249*		*412*		*227*	
% Heavy Vehicles	*0*		*0*		*0*		*0*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*1.00*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*		*0.2*		*0.1*		*0.1*	
Prop. Right-Turns	*0.1*		*0.1*		*0.3*		*0.2*	
Prop. Heavy Vehicle	*0.0*		*0.0*		*0.0*		*0.0*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*-0.0*		*0.0*		*-0.2*		*-0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*		*3.20*		*3.20*		*3.20*	
x, initial	*0.41*		*0.22*		*0.37*		*0.20*	
hd, final value (s)	*7.18*		*7.92*		*7.25*		*7.99*	
x, final value	*0.93*		*0.55*		*0.83*		*0.50*	
Move-up time, m (s)	*2.0*		*2.0*		*2.0*		*2.0*	
Service Time, t_s (s)	*5.2*		*5.9*		*5.2*		*6.0*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*494*		*413*		*476*		*406*	
Delay (s/veh)	*73.21*		*20.40*		*42.15*		*19.04*	
LOS	*F*		*C*		*E*		*C*	
Approach: Delay (s/veh)	*73.21*		*20.40*		*42.15*		*19.04*	
LOS	*F*		*C*		*E*		*C*	
Intersection Delay (s/veh)	*44.97*							
Intersection LOS	*E*							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*DJL*
Agency/Co.	*STANTEC*
Date Performed	*3/20/2016*
Analysis Time Period	*PM PEAK HOUR*

Site Information

Intersection	*AVENUE K/50TH STREET W*
Jurisdiction	*LANCASTER*
Analysis Year	*EXISTING CONDITIONS*

Project ID *2064109000*

East/West Street: *AVENUE K* | North/South Street: *50TH ST W*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*31*	*278*	*21*	*70*	*303*	*6*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*37*	*158*	*62*	*14*	*218*	*51*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*1.00*		*1.00*		*1.00*		*1.00*	
Flow Rate (veh/h)	*330*		*379*		*257*		*283*	
% Heavy Vehicles	*0*		*0*		*0*		*0*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*1.00*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*		*0.2*		*0.1*		*0.0*	
Prop. Right-Turns	*0.1*		*0.0*		*0.2*		*0.2*	
Prop. Heavy Vehicle	*0.0*		*0.0*		*0.0*		*0.0*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*-0.0*		*0.0*		*-0.1*		*-0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*		*3.20*		*3.20*		*3.20*	
x, initial	*0.29*		*0.34*		*0.23*		*0.25*	
hd, final value (s)	*6.88*		*6.80*		*7.13*		*7.06*	
x, final value	*0.63*		*0.72*		*0.51*		*0.56*	
Move-up time, m (s)	*2.0*		*2.0*		*2.0*		*2.0*	
Service Time, t_s (s)	*4.9*		*4.8*		*5.1*		*5.1*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*481*		*499*		*438*		*452*	
Delay (s/veh)	*21.46*		*26.38*		*17.45*		*18.77*	
LOS	*C*		*D*		*C*		*C*	
Approach: Delay (s/veh)	*21.46*		*26.38*		*17.45*		*18.77*	
LOS	*C*		*D*		*C*		*C*	
Intersection Delay (s/veh)	*21.52*							
Intersection LOS	*C*							

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: 45th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Existing
TIME PERIOD: AM/PM Peak Hour
COUNT DATE: 3/8/16

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	18	82	71	142	85	18	15	535	15	20	199	152
PM Peak	26	97	32	35	76	18	15	334	10	44	380	77
GEOMETRY	L	TR		L	T	R	L	T	R	L	T	R

	Level of Service Calculations						
Move-	**Lanes**		**Volume**		**V/C Ratio**		
ment	Lane	Capacity	AM	PM	AM	PM	
NBL	1.0	1,600	18	26	0.01	0.02	
NBT	1.0	1,600	82	97	0.10 *	0.08 *	
NBR	0.0	0	71	32	0.00	0.00	
SBL	1.0	1,600	142	35	0.09 *	0.02 *	
SBT	1.0	1,600	85	76	0.05	0.05	
SBR	1.0	1,600	18	18	0.01	0.01	
EBL	1.0	1,600	15	15	0.01	0.01 *	
EBT	1.0	1,600	535	334	0.33 *	0.21	
EBR	1.0 (a)	1,600	15	10	0.01	0.01	
WBL	1.0	1,600	20	44	0.01 *	0.03	
WBT	1.0	1,600	199	380	0.12	0.24 *	
WBR	1.0 (a)	1,600	152	77	0.10	0.05	
N/S Critical Movements					0.19	0.10	
E/W Critical Movements					0.34	0.25	
Right Turn Critical Movement					0.00	0.00	
Clearance Interval					0.10	0.10	
ICU					0.63	0.45	
Level of Service (LOS)					B	A	

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Nor critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: 40th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Existing
TIME PERIOD: AM/PM Peak Hour
COUNT DATE: 3/8/16

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	92	207	158	73	199	24	26	662	70	49	255	45
PM Peak	60	171	65	34	224	29	23	359	41	88	431	52
GEOMETRY	L	TT	R	L	TR		L	T TR		L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	AM	PM	AM	PM
NBL	1.0	1,600	92	60	0.06 *	0.04 *
NBT	2.0	3,200	207	171	0.06	0.05
NBR	1.0 (a)	1,600	158	65	0.10	0.04
SBL	1.0	1,600	73	34	0.05	0.02
SBT	1.0	1,600	199	224	0.14 *	0.16 *
SBR	0.0	0	24	29	0.00	0.00
EBL	1.0	1,600	26	23	0.02	0.01 *
EBT	2.0	3,200	662	359	0.23 *	0.13
EBR	0.0	0	70	41	0.00	0.00
WBL	1.0	1,600	49	88	0.03 *	0.06
WBT	1.0	1,600	255	431	0.16	0.27 *
WBR	1.0	1,600	42	52	0.03	0.03
N/S Critical Movements					0.20	0.20
E/W Critical Movements					0.26	0.28
Right Turn Critical Movement					0.00	0.00
Clearance Interval					0.10	0.10
ICU					0.56	0.58
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Nor critical due to RTOR

Existing + Project AM and PM Peak Hour

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 1
NORTH/SOUTH STREET: 60th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Existing + Project
TIME PERIOD: AM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	42	497	127	104	342	42	55	186	45	90	90	83
Project Trips	0	0	3	1	0	0	0	0	0	8	2	3
GEOMETRY	L	T TR		L	T TR		LL	T	R	LL	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	42	42	0.03	0.03
NBT	2.0	3,200	497	497	0.20 *	0.20 *
NBR	0.0	0	127	130	0.00	0.00
SBL	1.0	1,600	104	105	0.07 *	0.07 *
SBT	2.0	3,200	342	342	0.12	0.12
SBR	0.0	0	42	42	0.00	0.00
EBL	2.0	2,880	55	55	0.02	0.02
EBT	1.0	1,600	186	186	0.12 *	0.12 *
EBR	1.0	1,600	45	45	0.03	0.03
WBL	2.0	2,880	90	98	0.03 *	0.03 *
WBT	1.0	1,600	90	92	0.06	0.06
WBR	1.0	1,600	83	86	0.05	0.05
N/S Critical Movements					0.27	0.27
E/W Critical Movements					0.15	0.15
Clearance Interval					0.10	0.10
ICU					0.52	0.52
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 1
NORTH/SOUTH STREET: 60th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Existing + Project
TIME PERIOD: PM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	52	239	88	50	289	27	18	156	51	92	157	85
Project Trips	0	0	9	3	0	0	0	2	0	5	1	2
GEOMETRY	L	T	TR	L	T	TR	LL	T	R	LL	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	52	52	0.03 *	0.03
NBT	2.0	3,200	239	239	0.10	0.11 *
NBR	0.0	0	88	97	0.00	0.00
SBL	1.0	1,600	50	53	0.03	0.03 *
SBT	2.0	3,200	289	289	0.10 *	0.10
SBR	0.0	0	27	27	0.00	0.00
EBL	2.0	2,880	18	18	0.01	0.01
EBT	1.0	1,600	156	158	0.10 *	0.10 *
EBR	1.0	1,600	51	51	0.03	0.03
WBL	2.0	2,880	92	97	0.03 *	0.03 *
WBT	1.0	1,600	157	158	0.10	0.10
WBR	1.0	1,600	85	87	0.05	0.05
N/S Critical Movements					0.13	0.14
E/W Critical Movements					0.13	0.13
Clearance Interval					0.10	0.10
ICU					0.36	0.37
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

HCS7 Roundabouts Report

General Information

Analyst	DJL
Agency or Co.	Stantec
Date Performed	8/23/2017
Analysis Year	EXPR
Time Analyzed	AM peak Hour
Project Description	TTM 71210

Site Information

Intersection	Avenue K/55th St W
E/W Street Name	Avenue K
N/S Street Name	55th St W
Analysis Time Period (hrs)	0.25
Peak Hour Factor	1.00
Jurisdiction	City of Lancaster

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Lane Assignment			LTR				LT				LR					
Volume (V), veh/h	0	0	465	4	0	30	256		0	13		85				
Percent Heavy Vehicles, %	3	3	3	3	3	3	3		3	3		3				
Flow Rate (v_{PCE}), pc/h	0	0	479	4	0	31	264		0	13		88				
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1							
Pedestrians Crossing, p/h	0				0				0							

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.8000			4.8000			4.8000				
Follow-Up Headway (s)		2.5000			2.5000			2.5000				

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		483			295			101				
Entry Volume veh/h		469			286			98				
Circulating Flow (v_c), pc/h	31			13			479			308		
Exiting Flow (v_{ex}), pc/h	567			277			0			35		
Capacity (c_{pce}), pc/h		1397			1422			898				
Capacity (c), veh/h		1356			1380			872				
v/c Ratio (x)		0.35			0.21			0.11				

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		5.8			4.3			5.2				
Lane LOS		A			A			A				
95% Queue, veh		1.6			0.8			0.4				
Approach Delay, s/veh	5.8			4.3			5.2					
Approach LOS	A			A			A					
Intersection Delay, s/veh | LOS	5.2						A					

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HCS7 Roundabouts Report

General Information

Analyst	DJL
Agency or Co.	Stantec
Date Performed	8/23/2017
Analysis Year	EXPR
Time Analyzed	PM peak Hour
Project Description	TTM 71210

Site Information

Intersection	Avenue K/55th St W
E/W Street Name	Avenue K
N/S Street Name	55th St W
Analysis Time Period (hrs)	0.25
Peak Hour Factor	1.00
Jurisdiction	City of Lancaster

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Lane Assignment			LTR				LT				LR					
Volume (V), veh/h	0	0	315	14	0	95	376		0	8		57				
Percent Heavy Vehicles, %	3	3	3	3	3	3	3		3	3		3				
Flow Rate (v_{PCE}), pc/h	0	0	324	14	0	98	387		0	8		59				
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1							
Pedestrians Crossing, p/h	0				0				0							

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.8000			4.8000			4.8000				
Follow-Up Headway (s)		2.5000			2.5000			2.5000				

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		338			485			67				
Entry Volume veh/h		328			471			65				
Circulating Flow (v_c), pc/h		98			8			324			493	
Exiting Flow (v_{ex}), pc/h		383			395			0			112	
Capacity (c_{pce}), pc/h		1307			1429			1046				
Capacity (c), veh/h		1269			1387			1016				
v/c Ratio (x)		0.26			0.34			0.06				

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		5.1			5.6			4.1				
Lane LOS		A			A			A				
95% Queue, veh		1.0			1.5			0.2				
Approach Delay, s/veh	5.1			5.6			4.1					
Approach LOS	A			A			A					
Intersection Delay, s/veh | LOS	5.3						A					

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*DJL*
Agency/Co.	*STANTEC*
Date Performed	*3/20/2016*
Analysis Time Period	*AM PEAK HOUR*

Site Information

Intersection	*AVENUE K/50TH STREET W*
Jurisdiction	*LANCASTER*
Analysis Year	*EX + PR CONDITIONS*

Project ID *2064109000*

East/West Street: *AVENUE K* North/South Street: *50TH ST W*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*34*	*471*	*59*	*56*	*203*	*15*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*45*	*245*	*131*	*20*	*172*	*35*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*1.00*		*1.00*		*1.00*		*1.00*	
Flow Rate (veh/h)	*564*		*274*		*421*		*227*	
% Heavy Vehicles	*0*		*0*		*0*		*0*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*1.00*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*		*0.2*		*0.1*		*0.1*	
Prop. Right-Turns	*0.1*		*0.1*		*0.3*		*0.2*	
Prop. Heavy Vehicle	*0.0*		*0.0*		*0.0*		*0.0*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*-0.1*		*0.0*		*-0.2*		*-0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*		*3.20*		*3.20*		*3.20*	
x, initial	*0.50*		*0.24*		*0.37*		*0.20*	
hd, final value (s)	*7.53*		*8.30*		*7.64*		*8.51*	
x, final value	*1.179*		*0.632*		*0.894*		*0.537*	
Move-up time, m (s)	*2.0*		*2.0*		*2.0*		*2.0*	
Service Time, t_s (s)	*5.5*		*6.3*		*5.6*		*6.5*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*478*		*435*		*473*		*420*	
Delay (s/veh)	*376.9*		*25.3*		*61.4*		*21.3*	
LOS	*F*		*D*		*F*		*C*	
Approach: Delay (s/veh)	*376.9*		*25.3*		*61.4*		*21.3*	
LOS	*F*		*D*		*F*		*C*	
Intersection Delay (s/veh)	*168.4*							
Intersection LOS	*F*							

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HCS7 Roundabouts Report

General Information		Site Information	
Analyst	DJL	Intersection	Avenue K/50th St W
Agency or Co.	Stantec	E/W Street Name	Avenue K
Date Performed	8/23/2017	N/S Street Name	50th St W
Analysis Year	EXPR Mitigated	Analysis Time Period (hrs)	0.25
Time Analyzed	AM peak Hour	Peak Hour Factor	1.00
Project Description	TTM 71210	Jurisdiction	City of Lancaster

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	34	471	59	0	56	203	15	0	45	245	131	0	20	172	35
Percent Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Flow Rate (v_{PCE}), pc/h	0	35	485	61	0	58	209	15	0	46	252	135	0	21	177	36
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.8000			4.8000			4.8000			4.8000	
Follow-Up Headway (s)		2.5000			2.5000			2.5000			2.5000	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		581			282			433			234	
Entry Volume veh/h		564			274			420			227	
Circulating Flow (v_c), pc/h		256			333			541			313	
Exiting Flow (v_{ex}), pc/h		641			291			302			296	
Capacity (c_{pce}), pc/h		1119			1037			845			1058	
Capacity (c), veh/h		1086			1007			820			1027	
v/c Ratio (x)		0.52			0.27			0.51			0.22	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		9.4			6.3			11.5			5.6	
Lane LOS		A			A			B			A	
95% Queue, veh		3.1			1.1			3.0			0.8	
Approach Delay, s/veh	9.4			6.3			11.5			5.6		
Approach LOS	A			A			B			A		
Intersection Delay, s/veh | LOS	8.8						A					

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*DJL*
Agency/Co.	*STANTEC*
Date Performed	*3/20/2016*
Analysis Time Period	*PM PEAK HOUR*

Site Information

Intersection	*AVENUE K/50TH STREET W*
Jurisdiction	*LANCASTER*
Analysis Year	*EX+PR CONDITIONS*

Project ID *2064109000*

East/West Street: *AVENUE K* North/South Street: *50TH ST W*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*32*	*325*	*38*	*70*	*383*	*6*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*64*	*158*	*62*	*14*	*218*	*53*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*1.00*		*1.00*		*1.00*		*1.00*	
Flow Rate (veh/h)	*395*		*459*		*284*		*285*	
% Heavy Vehicles	*0*		*0*		*0*		*0*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*1.00*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*		*0.2*		*0.2*		*0.0*	
Prop. Right-Turns	*0.1*		*0.0*		*0.2*		*0.2*	
Prop. Heavy Vehicle	*0.0*		*0.0*		*0.0*		*0.0*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*-0.0*		*0.0*		*-0.1*		*-0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*		*3.20*		*3.20*		*3.20*	
x, initial	*0.35*		*0.41*		*0.25*		*0.25*	
hd, final value (s)	*8.07*		*7.92*		*8.60*		*8.58*	
x, final value	*0.886*		*1.010*		*0.679*		*0.680*	
Move-up time, m (s)	*2.0*		*2.0*		*2.0*		*2.0*	
Service Time, t_s (s)	*6.1*		*5.9*		*6.6*		*6.6*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*444*		*454*		*418*		*419*	
Delay (s/veh)	*61.3*		*140.1*		*29.2*		*29.2*	
LOS	*F*		*F*		*D*		*D*	
Approach: Delay (s/veh)	*61.3*		*140.1*		*29.2*		*29.2*	
LOS	*F*		*F*		*D*		*D*	
Intersection Delay (s/veh)	*73.9*							
Intersection LOS	*F*							

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HCS7 Roundabouts Report

General Information		Site Information	
Analyst	DJL	Intersection	Avenue K/50th St W
Agency or Co.	Stantec	E/W Street Name	Avenue K
Date Performed	8/23/2017	N/S Street Name	50th St W
Analysis Year	EXPR Mitigated	Analysis Time Period (hrs)	0.25
Time Analyzed	PM peak Hour	Peak Hour Factor	1.00
Project Description	TTM 71210	Jurisdiction	City of Lancaster

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	32	325	38	0	70	383	6	0	64	158	62	0	14	218	53
Percent Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Flow Rate (v_{PCE}), pc/h	0	33	335	39	0	72	394	6	0	66	163	64	0	14	225	55
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.8000			4.8000			4.8000			4.8000	
Follow-Up Headway (s)		2.5000			2.5000			2.5000			2.5000	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		407			472			293			294	
Entry Volume veh/h		395			458			284			285	
Circulating Flow (v_c), pc/h		311			262			382			532	
Exiting Flow (v_{ex}), pc/h		413			515			202			336	
Capacity (c_{pce}), pc/h		1060			1112			988			852	
Capacity (c), veh/h		1029			1080			959			827	
v/c Ratio (x)		0.38			0.42			0.30			0.35	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		7.6			7.9			6.8			8.4	
Lane LOS		A			A			A			A	
95% Queue, veh		1.8			2.2			1.2			1.5	
Approach Delay, s/veh	7.6			7.9			6.8			8.4		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	7.7						A					

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: 45th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Existing + Project
TIME PERIOD: AM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	18	82	71	142	85	18	15	535	15	20	199	152
Project Trips	0	0	0	0	0	0	0	72	0	0	25	0
GEOMETRY	L	TR		L	T	R	L	T	R	L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	18	18	0.01	0.01
NBT	1.0	1,600	82	82	0.10 *	0.10 *
NBR	0.0	0	71	71	0.00	0.00
SBL	1.0	1,600	142	142	0.09 *	0.09 *
SBT	1.0	1,600	85	85	0.05	0.05
SBR	1.0	1,600	18	18	0.01	0.01
EBL	1.0	1,600	15	15	0.01	0.01
EBT	1.0	1,600	535	607	0.33 *	0.38 *
EBR	1.0	1,600	15	15	0.01	0.01
WBL	1.0	1,600	20	20	0.01 *	0.01 *
WBT	1.0	1,600	199	224	0.12	0.14
WBR	1.0	1,600	152	152	0.10	0.10
N/S Critical Movements					0.19	0.19
E/W Critical Movements					0.34	0.39
Clearance Interval					0.10	0.10
ICU					0.63	0.68
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: 45th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Existing + Project
TIME PERIOD: PM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	26	97	32	35	76	18	15	334	10	44	380	77
Project Trips	0	0	0	0	0	0	0	47	0	0	80	0
GEOMETRY	L	TR		L	T	R	L	T	R	L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	26	26	0.02	0.02
NBT	1.0	1,600	97	97	0.08 *	0.08 *
NBR	0.0	0	32	32	0.00	0.00
SBL	1.0	1,600	35	35	0.02 *	0.02 *
SBT	1.0	1,600	76	76	0.05	0.05
SBR	1.0	1,600	18	18	0.01	0.01
EBL	1.0	1,600	15	15	0.01 *	0.01 *
EBT	1.0	1,600	334	381	0.21	0.24
EBR	1.0	1,600	10	10	0.01	0.01
WBL	1.0	1,600	44	44	0.03	0.03
WBT	1.0	1,600	380	460	0.24 *	0.29 *
WBR	1.0	1,600	77	77	0.05	0.05
N/S Critical Movements					0.10	0.10
E/W Critical Movements					0.25	0.30
Clearance Interval					0.10	0.10
ICU					0.45	0.50
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: 40th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Existing + Project
TIME PERIOD: AM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	92	207	158	73	199	24	26	662	70	49	255	42
Project Trips	0	0	0	0	0	0	0	72	0	0	25	0
GEOMETRY	L	TT	R	L	TR		L	T TR		L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	92	92	0.06 *	0.06 *
NBT	2.0	3,200	207	207	0.06	0.06
NBR	1.0	1,600	158	158	0.00	0.00
SBL	1.0	1,600	73	73	0.05	0.05
SBT	1.0	1,600	199	199	0.14 *	0.14 *
SBR	0.0	0	24	24	0.00	0.00
EBL	1.0	1,600	26	26	0.02	0.02
EBT	2.0	3,200	662	734	0.23 *	0.25 *
EBR	0.0	0	70	70	0.04	0.04
WBL	1.0	1,600	49	49	0.03 *	0.03 *
WBT	1.0	1,600	255	280	0.16	0.18
WBR	1.0	1,600	42	42	0.03	0.03
N/S Critical Movements					0.20	0.20
E/W Critical Movements					0.26	0.28
Clearance Interval					0.10	0.10
ICU					0.56	0.58
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: 40th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Existing + Project
TIME PERIOD: PM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	60	171	65	34	224	29	23	359	41	88	431	52
Project Trips	0	0	0	0	0	0	0	47	0	0	80	0
GEOMETRY	L	TT	R	L	TR		L	T TR		L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	60	60	0.04 *	0.04 *
NBT	2.0	3,200	171	171	0.05	0.05
NBR	1.0	1,600	65	65	0.04	0.04
SBL	1.0	1,600	34	34	0.02	0.02
SBT	1.0	1,600	224	224	0.16 *	0.16 *
SBR	0.0	0	29	29	0.00	0.00
EBL	1.0	1,600	23	23	0.01 *	0.01 *
EBT	2.0	3,200	359	406	0.13	0.14
EBR	0.0	0	41	41	0.00	0.00
WBL	1.0	1,600	88	88	0.06	0.06
WBT	1.0	1,600	431	511	0.27 *	0.32 *
WBR	1.0	1,600	52	52	0.03	0.03
N/S Critical Movements					0.20	0.20
E/W Critical Movements					0.28	0.33
Clearance Interval					0.10	0.10
ICU					0.58	0.63
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

Baseline AM and PM Peak Hour

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 1
NORTH/SOUTH STREET: 60th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Baseline
TIME PERIOD: AM/PM Peak Hour
COUNT DATE: 3/8/16

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	48	567	145	119	390	48	63	212	51	103	103	95
PM Peak	59	272	100	57	329	31	21	178	58	105	179	97
GEOMETRY	L	T	TR	L	T	TR	LL	T	R	LL	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	AM	PM	AM	PM
NBL	1.0	1,600	48	59	0.03	0.04
NBT	2.0	3,200	567	272	0.22 *	0.12 *
NBR	0.0	0	145	100	0.00	0.00
SBL	1.0	1,600	119	57	0.07 *	0.04 *
SBT	2.0	3,200	390	329	0.14	0.11
SBR	0.0	0	48	31	0.00	0.00
EBL	2.0	2,880	63	21	0.02	0.01
EBT	1.0	1,600	212	178	0.13 *	0.11 *
EBR	1.0 (a)	1,600	51	58	0.03	0.04
WBL	2.0	2,880	103	105	0.04 *	0.04 *
WBT	1.0	1,600	103	179	0.06	0.11
WBR	1.0 (a)	1,600	95	97	0.06	0.06
N/S Critical Movements					0.29	0.16
E/W Critical Movements					0.17	0.15
Right Turn Critical Movement					0.00	0.00
Clearance Interval					0.10	0.10
ICU					0.56	0.41
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Nor critical due to RTOR

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*DJL*
Agency/Co.	*STANTEC*
Date Performed	*3/20/2016*
Analysis Time Period	*AM PEAK HOUR*

Site Information

Intersection	*AVENUE K/50TH STREET W*
Jurisdiction	*LANCASTER*
Analysis Year	*BASELINE CONDITIONS*

Project ID *2064109000*

East/West Street: *AVENUE K* | North/South Street: *50TH ST W*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*36*	*455*	*40*	*64*	*203*	*17*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*41*	*279*	*149*	*23*	*196*	*40*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*1.00*		*1.00*		*1.00*		*1.00*	
Flow Rate (veh/h)	*531*		*284*		*469*		*259*	
% Heavy Vehicles	*0*		*0*		*0*		*0*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*1.00*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*		*0.2*		*0.1*		*0.1*	
Prop. Right-Turns	*0.1*		*0.1*		*0.3*		*0.2*	
Prop. Heavy Vehicle	*0.0*		*0.0*		*0.0*		*0.0*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*-0.0*		*0.0*		*-0.2*		*-0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*		*3.20*		*3.20*		*3.20*	
x, initial	*0.47*		*0.25*		*0.42*		*0.23*	
hd, final value (s)	*8.16*		*8.86*		*8.01*		*8.92*	
x, final value	*1.20*		*0.70*		*1.04*		*0.64*	
Move-up time, m (s)	*2.0*		*2.0*		*2.0*		*2.0*	
Service Time, t_s (s)	*6.2*		*6.9*		*6.0*		*6.9*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*531*		*400*		*469*		*395*	
Delay (s/veh)	*420.14*		*31.70*		*178.97*		*27.55*	
LOS	*F*		*D*		*F*		*D*	
Approach: Delay (s/veh)	*420.14*		*31.70*		*178.97*		*27.55*	
LOS	*F*		*D*		*F*		*D*	
Intersection Delay (s/veh)	*209.44*							
Intersection LOS	*F*							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*DJL*
Agency/Co.	*STANTEC*
Date Performed	*3/20/2016*
Analysis Time Period	*AM PEAK HOUR*

Site Information

Intersection	*AVENUE K/50TH STREET W*
Jurisdiction	*LANCASTER*
Analysis Year	*BASELINE CONDITIONS*

Project ID *2064109000*

East/West Street: *AVENUE K* | North/South Street: *50TH ST W*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*35*	*317*	*24*	*80*	*345*	*7*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*42*	*180*	*71*	*16*	*249*	*58*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*1.00*		*1.00*		*1.00*		*1.00*	
Flow Rate (veh/h)	*376*		*432*		*293*		*323*	
% Heavy Vehicles	*0*		*0*		*0*		*0*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*1.00*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*		*0.2*		*0.1*		*0.0*	
Prop. Right-Turns	*0.1*		*0.0*		*0.2*		*0.2*	
Prop. Heavy Vehicle	*0.0*		*0.0*		*0.0*		*0.0*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*-0.0*		*0.0*		*-0.1*		*-0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*		*3.20*		*3.20*		*3.20*	
x, initial	*0.33*		*0.38*		*0.26*		*0.29*	
hd, final value (s)	*8.39*		*8.22*		*8.75*		*8.62*	
x, final value	*0.88*		*0.99*		*0.71*		*0.77*	
Move-up time, m (s)	*2.0*		*2.0*		*2.0*		*2.0*	
Service Time, t_s (s)	*6.4*		*6.2*		*6.7*		*6.6*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*419*		*436*		*388*		*400*	
Delay (s/veh)	*60.19*		*120.17*		*32.54*		*39.10*	
LOS	*F*		*F*		*D*		*E*	
Approach: Delay (s/veh)	*60.19*		*120.17*		*32.54*		*39.10*	
LOS	*F*		*F*		*D*		*E*	
Intersection Delay (s/veh)	*67.91*							
Intersection LOS	*F*							

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: 45th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Baseline
TIME PERIOD: AM/PM Peak Hour
COUNT DATE: 3/8/16

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	21	93	81	162	97	21	17	607	17	23	227	173
PM Peak	30	111	36	40	87	21	17	381	11	50	433	88
GEOMETRY	L	TR		L	T	R	L	T	R	L	T	R

	Level of Service Calculations						
Move-	**Lanes**		**Volume**		**V/C Ratio**		
ment	Lane	Capacity	AM	PM	AM	PM	
NBL	1.0	1,600	21	30	0.01	0.02	
NBT	1.0	1,600	93	111	0.11 *	0.09 *	
NBR	0.0	0	81	36	0.00	0.00	
SBL	1.0	1,600	162	40	0.10 *	0.03 *	
SBT	1.0	1,600	97	87	0.06	0.05	
SBR	1.0	1,600	21	21	0.01	0.01	
EBL	1.0	1,600	17	17	0.01	0.01 *	
EBT	1.0	1,600	607	381	0.38 *	0.24	
EBR	1.0 (a)	1,600	17	11	0.01	0.01	
WBL	1.0	1,600	23	50	0.01 *	0.03	
WBT	1.0	1,600	227	433	0.14	0.27 *	
WBR	1.0 (a)	1,600	173	88	0.11	0.06	
N/S Critical Movements					0.21	0.12	
E/W Critical Movements					0.39	0.28	
Right Turn Critical Movement					0.00	0.00	
Clearance Interval					0.10	0.10	
ICU					0.70	0.50	
Level of Service (LOS)					B	A	

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Nor critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: 40th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Baseline
TIME PERIOD: AM/PM Peak Hour
COUNT DATE: 3/8/16

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	105	236	180	83	227	27	30	755	80	56	291	48
PM Peak	68	195	74	39	255	33	26	409	47	100	491	59
GEOMETRY	L	TT	R	L	TR		L	T TR		L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	AM	PM	AM	PM
NBL	1.0	1,600	105	68	0.07 *	0.04 *
NBT	2.0	3,200	236	195	0.07	0.06
NBR	1.0 (a)	1,600	180	74	0.11	0.05
SBL	1.0	1,600	83	39	0.05	0.02
SBT	1.0	1,600	227	255	0.16 *	0.18 *
SBR	0.0	0	27	33	0.00	0.00
EBL	1.0	1,600	30	26	0.02	0.02 *
EBT	2.0	3,200	755	409	0.26 *	0.14
EBR	0.0	0	80	47	0.00	0.00
WBL	1.0	1,600	56	100	0.04 *	0.06
WBT	1.0	1,600	291	491	0.18	0.31 *
WBR	1.0	1,600	48	59	0.03	0.04
N/S Critical Movements					0.23	0.22
E/W Critical Movements					0.30	0.33
Right Turn Critical Movement					0.00	0.00
Clearance Interval					0.10	0.10
ICU					0.63	0.65
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Nor critical due to RTOR

Cumulative and Cumulative + Project AM and PM Peak Hour

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 1
NORTH/SOUTH STREET: 60th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Cumulative
TIME PERIOD: AM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	101	596	261	189	417	72	138	535	148	159	195	137
Project Trips	0	0	3	1	0	0	0	0	0	8	2	3
GEOMETRY	L	T	TR	L	T	TR	LL	T	R	LL	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	101	101	0.06	0.06
NBT	2.0	3,200	596	596	0.27 *	0.27 *
NBR	0.0	0	261	264	0.00	0.00
SBL	1.0	1,600	189	190	0.12 *	0.12 *
SBT	2.0	3,200	417	417	0.15	0.15
SBR	0.0	0	72	72	0.00	0.00
EBL	2.0	2,880	138	138	0.05	0.05
EBT	1.0	1,600	535	535	0.33 *	0.33 *
EBR	1.0	1,600	148	148	0.09	0.09
WBL	2.0	2,880	159	167	0.06 *	0.06 *
WBT	1.0	1,600	195	197	0.12	0.12
WBR	1.0	1,600	137	140	0.09	0.09
N/S Critical Movements					0.39	0.39
E/W Critical Movements					0.39	0.39
Clearance Interval					0.10	0.10
ICU					0.88	0.88
Level of Service (LOS)					D	D

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 1
NORTH/SOUTH STREET: 60th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Cumulative
TIME PERIOD: PM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	173	311	186	110	365	116	74	405	129	236	553	178
Project Trips	0	0	9	3	0	0	0	2	0	5	1	2
GEOMETRY	L	T	TR	L	T	TR	LL	T	R	LL	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	173	173	0.11 *	0.11 *
NBT	2.0	3,200	311	311	0.16	0.16
NBR	0.0	0	186	195	0.00	0.00
SBL	1.0	1,600	110	113	0.07	0.07
SBT	2.0	3,200	365	365	0.15 *	0.15 *
SBR	0.0	0	116	116	0.00	0.00
EBL	2.0	2,880	74	74	0.03 *	0.03 *
EBT	1.0	1,600	405	407	0.25	0.25
EBR	1.0	1,600	129	129	0.08	0.08
WBL	2.0	2,880	236	241	0.08	0.08
WBT	1.0	1,600	553	554	0.35 *	0.35 *
WBR	1.0	1,600	178	180	0.11	0.11
N/S Critical Movements					0.26	0.26
E/W Critical Movements					0.38	0.38
Clearance Interval					0.10	0.10
ICU					0.74	0.74
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*DJL*
Agency/Co.	*STANTEC*
Date Performed	*3/23/2016*
Analysis Time Period	*AM PEAK HOUR*

Site Information

Intersection	*AVENUE K/55TH STREET WEST*
Jurisdiction	*LANCASTER*
Analysis Year	*CUMULATIVE CONDITIONS*

Project Description *2064109000*

East/West Street: *AVENUE K* | North/South Street: *55TH STREET WEST*

Intersection Orientation: *East-West* | Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*5*	*1039*			*444*	*17*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*5*	*1039*	*0*	*0*	*444*	*17*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*53*		*16*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*53*	*0*	*16*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*5*					*53*		*16*
C (m) (veh/h)	*1111*					*256*		*612*
v/c	*0.00*					*0.21*		*0.03*
95% queue length	*0.01*					*0.78*		*0.08*
Control Delay (s/veh)	*8.3*					*22.7*		*11.0*
LOS	*A*					*C*		*B*
Approach Delay (s/veh)	--	--				*20.0*		
Approach LOS	--	--				*C*		

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HCS7 Roundabouts Report

General Information

Analyst	DJL
Agency or Co.	Stantec
Date Performed	8/23/2017
Analysis Year	CUMPR
Time Analyzed	AM peak Hour
Project Description	TTM 71210

Site Information

Intersection	Avenue K/55th St W
E/W Street Name	Avenue K
N/S Street Name	55th St W
Analysis Time Period (hrs)	0.25
Peak Hour Factor	1.00
Jurisdiction	City of Lancaster

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	5	1039	12	0	63	444	17	0	37	2	180	0	48	7	14
Percent Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Flow Rate (v_{PCE}), pc/h	0	5	1070	12	0	65	457	18	0	38	2	185	0	49	7	14
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.8000			4.8000			4.8000			4.8000	
Follow-Up Headway (s)		2.5000			2.5000			2.5000			2.5000	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		1087			540			225			70	
Entry Volume veh/h		1055			524			218			68	
Circulating Flow (v_c), pc/h	121			45			1124			560		
Exiting Flow (v_{ex}), pc/h	1304			509			25			84		
Capacity (c_{pce}), pc/h		1278			1377			475			829	
Capacity (c), veh/h		1241			1337			461			805	
v/c Ratio (x)		0.85			0.39			0.47			0.08	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		20.9			6.4			17.0			5.3	
Lane LOS		C			A			C			A	
95% Queue, veh		11.4			1.9			2.5			0.3	
Approach Delay, s/veh	20.9			6.4			17.0			5.3		
Approach LOS	C			A			C			A		
Intersection Delay, s/veh | LOS	15.8						C					

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*DJL*
Agency/Co.	*STANTEC*
Date Performed	*3/23/2016*
Analysis Time Period	*PM PEAK HOUR*

Site Information

Intersection	*AVENUE K/55TH STREET WEST*
Jurisdiction	*LANCASTER*
Analysis Year	*CUMULATIVE CONDITIONS*

Project Description *2064109000*

East/West Street: *AVENUE K* | North/South Street: *55TH STREET WEST*

Intersection Orientation: *East-West* | Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*15*	*725*			*1014*	*54*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*15*	*725*	*0*	*0*	*1014*	*54*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*36*		*10*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*36*	*0*	*10*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*15*					*36*		*10*
C (m) (veh/h)	*660*					*218*		*282*
v/c	*0.02*					*0.17*		*0.04*
95% queue length	*0.07*					*0.59*		*0.11*
Control Delay (s/veh)	*10.6*					*24.8*		*18.2*
LOS	*B*					*C*		*C*
Approach Delay (s/veh)	--	--				*23.4*		
Approach LOS	--	--				*C*		

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HCS7 Roundabouts Report

General Information

Analyst	DJL
Agency or Co.	Stantec
Date Performed	8/23/2017
Analysis Year	CUMPR
Time Analyzed	PM peak Hour
Project Description	TTM 71210

Site Information

Intersection	Avenue K/55th St W
E/W Street Name	Avenue K
N/S Street Name	55th St W
Analysis Time Period (hrs)	0.25
Peak Hour Factor	1.00
Jurisdiction	City of Lancaster

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	15	725	41	0	202	1014	54	0	24	8	120	0	32	5	9
Percent Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Flow Rate (v_{PCE}), pc/h	0	15	747	42	0	208	1044	56	0	25	8	124	0	33	5	9
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.8000			4.8000			4.8000			4.8000	
Follow-Up Headway (s)		2.5000			2.5000			2.5000			2.5000	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		804			1308			157			47	
Entry Volume veh/h		781			1270			152			46	
Circulating Flow (v_c), pc/h	246			48			795			1277		
Exiting Flow (v_{ex}), pc/h	904			1078			79			255		
Capacity (c_{pce}), pc/h		1130			1373			657			409	
Capacity (c), veh/h		1097			1333			638			397	
v/c Ratio (x)		0.71			0.95			0.24			0.11	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		14.5			32.4			8.6			10.8	
Lane LOS		B			D			A			B	
95% Queue, veh		6.4			18.2			0.9			0.4	
Approach Delay, s/veh	14.5			32.4			8.6			10.8		
Approach LOS	B			D			A			B		
Intersection Delay, s/veh | LOS	24.1						C					

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*DJL*
Agency/Co.	*STANTEC*
Date Performed	*3/20/2016*
Analysis Time Period	*AM PEAK HOUR*

Site Information

Intersection	*AVENUE K/50TH STREET W*
Jurisdiction	*LANCASTER*
Analysis Year	*CUMULATIVE CONDITIONS*

Project ID *2064109000*

East/West Street: *AVENUE K* | North/South Street: *50TH ST W*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*65*	*1020*	*98*	*72*	*371*	*32*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*58*	*284*	*152*	*69*	*211*	*57*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*L*	*TR*	*LTR*		*LTR*	
PHF	*1.00*		*1.00*	*1.00*	*1.00*		*1.00*	
Flow Rate (veh/h)	*1183*		*72*	*403*	*494*		*337*	
% Heavy Vehicles	*0*		*0*	*0*	*0*		*0*	
No. Lanes	*1*		*2*		*1*		*1*	
Geometry Group	*4a*		*5*		*2*		*2*	
Duration, T	*1.00*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*		*1.0*	*0.0*	*0.1*		*0.2*	
Prop. Right-Turns	*0.1*		*0.0*	*0.1*	*0.3*		*0.2*	
Prop. Heavy Vehicle	*0.0*		*0.0*	*0.0*	*0.0*		*0.0*	
hLT-adj	*0.2*	*0.2*	*0.5*	*0.5*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.7*	*-0.7*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*-0.0*		*0.5*	*-0.1*	*-0.2*		*-0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*		*3.20*	*3.20*	*3.20*		*3.20*	
x, initial	*1.05*		*0.06*	*0.36*	*0.44*		*0.30*	
hd, final value (s)	*9.67*		*10.27*	*9.69*	*9.38*		*9.73*	
x, final value	*3.18*		*0.21*	*1.08*	*1.29*		*0.91*	
Move-up time, m (s)	*2.0*		*2.3*		*2.0*		*2.0*	
Service Time, t_s (s)	*7.7*		*8.0*	*7.4*	*7.4*		*7.7*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*1183*		*322*	*403*	*494*		*371*	
Delay (s/veh)	*3946*		*15.63*	*245.87*	*568.27*		*82.02*	
LOS	*F*		*C*	*F*	*F*		*F*	
Approach: Delay (s/veh)	*3946*		*210.97*		*568.27*		*82.02*	
LOS	*F*		*F*		*F*		*F*	
Intersection Delay (s/veh)	*2040*							
Intersection LOS	*F*							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	DJL
Agency/Co.	STANTEC
Date Performed	3/20/2016
Analysis Time Period	AM PEAK HOUR

Site Information

Intersection	AVENUE K/50TH STREET W
Jurisdiction	LANCASTER
Analysis Year	CUM+PR CONDITIONS

Project ID 2064109000

East/West Street: AVENUE K | North/South Street: 50TH ST W

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	67	1092	122	72	396	32
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	67	284	152	69	211	57
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		L	TR	LTR		LTR	
PHF	1.00		1.00	1.00	1.00		1.00	
Flow Rate (veh/h)	1281		72	428	503		337	
% Heavy Vehicles	0		0	0	0		0	
No. Lanes	1		2		1		1	
Geometry Group	4a		5		2		2	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.1		1.0	0.0	0.1		0.2	
Prop. Right-Turns	0.1		0.0	0.1	0.3		0.2	
Prop. Heavy Vehicle	0.0		0.0	0.0	0.0		0.0	
hLT-adj	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.0		0.5	-0.1	-0.2		-0.1	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value (s)	3.20		3.20	3.20	3.20		3.20	
x, initial	1.14		0.06	0.38	0.45		0.30	
hd, final value (s)	9.66		10.27	9.69	9.39		9.73	
x, final value	3.437		0.205	1.152	1.312		0.911	
Move-up time, m (s)	2.0		2.3		2.0		2.0	
Service Time, t_s (s)	7.7		8.0	7.4	7.4		7.7	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	372		343	372	384		370	
Delay (s/veh)	4414		15.6	346.8	610.2		82.0	
LOS	F		C	F	F		F	
Approach: Delay (s/veh)	4414		299.1		610.2		82.0	
LOS	F		F		F		F	
Intersection Delay (s/veh)	2342							
Intersection LOS	F							

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HCS7 Roundabouts Report

General Information

Analyst	DJL
Agency or Co.	Stantec
Date Performed	8/23/2017
Analysis Year	CUMPR Mitigated
Time Analyzed	AM peak Hour
Project Description	TTM 71210

Site Information

Intersection	Avenue K/50th St W
E/W Street Name	Avenue K
N/S Street Name	50th St W
Analysis Time Period (hrs)	0.25
Peak Hour Factor	1.00
Jurisdiction	City of Lancaster

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0
Lane Assignment	LT		TR		LT		TR				LTR				LTR	
Volume (V), veh/h	0	67	1092	122	0	72	396	32	0	67	284	152	0	69	211	57
Percent Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Flow Rate (v_{PCE}), pc/h	0	69	1125	126	0	74	408	33	0	69	293	157	0	71	217	59
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				2				2			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.5436	4.5436		4.5436	4.5436			4.3276			4.3276	
Follow-Up Headway (s)	2.5352	2.5352		2.5352	2.5352			2.5352			2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	620	700		242	273			519			347	
Entry Volume veh/h	602	679		235	265			504			337	
Circulating Flow (v_c), pc/h	362			431			1265			551		
Exiting Flow (v_{ex}), pc/h	1353			536			395			417		
Capacity (c_{pce}), pc/h	1021	1021		959	959			485			889	
Capacity (c), veh/h	992	992		931	931			470			863	
v/c Ratio (x)	0.61	0.68		0.25	0.28			1.07			0.39	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	12.1	14.5		6.4	6.8			91.5			8.8	
Lane LOS	B	B		A	A			F			A	
95% Queue, veh	4.3	5.7		1.0	1.2			16.0			1.9	
Approach Delay, s/veh	13.4			6.6			91.5			8.8		
Approach LOS	B			A			F			A		
Intersection Delay, s/veh | LOS	26.5						D					

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 3
NORTH/SOUTH STREET: 50th St. W **MITIGATED**
EAST/WEST STREET: Avenue K
SCENARIO: Cumulative
TIME PERIOD: AM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	67	284	152	69	211	57	67	1092	122	72	396	32
Project Trips	0	0	0	0	0	0	0	72	0	0	25	0
GEOMETRY	L	TR		L	TR		L	T TR		L	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	67	67	0.04	0.04
NBT	1.0	1,600	284	284	0.27 *	0.27 *
NBR	0.0	0	152	152	0.00	0.00
SBL	1.0	1,600	69	69	0.04 *	0.04 *
SBT	1.0	1,600	211	211	0.17	0.17
SBR	0.0	0	57	57	0.00	0.00
EBL	1.0	1,600	67	67	0.04	0.04
EBT	2.0	3,200	1,092	1,164	0.38 *	0.40 *
EBR	0.0	0	122	122	0.08	0.08
WBL	1.0	1,600	72	72	0.05 *	0.05 *
WBT	2.0	3,200	396	421	0.13	0.14
WBR	0.0	0	32	32	0.02	0.02
N/S Critical Movements					0.31	0.31
E/W Critical Movements					0.43	0.45
Clearance Interval					0.10	0.10
ICU					0.84	0.86
Level of Service (LOS)					D	D

Notes: V/C - Volume to Capacity Ratio

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*DJL*
Agency/Co.	*STANTEC*
Date Performed	*3/20/2016*
Analysis Time Period	*PM PEAK HOUR*

Site Information

Intersection	*AVENUE K/50TH STREET W*
Jurisdiction	*LANCASTER*
Analysis Year	*CUMULATIVE CONDITIONS*

Project ID *2064109000*

East/West Street: *AVENUE K* North/South Street: *50TH ST W*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*63*	*712*	*62*	*86*	*875*	*53*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*99*	*195*	*79*	*44*	*258*	*87*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*L*	*TR*	*LTR*		*LTR*	
PHF	*1.00*		*1.00*	*1.00*	*1.00*		*1.00*	
Flow Rate (veh/h)	*837*		*86*	*928*	*373*		*389*	
% Heavy Vehicles	*0*		*0*	*0*	*0*		*0*	
No. Lanes	*1*		*2*		*1*		*1*	
Geometry Group	*4a*		*5*		*2*		*2*	
Duration, T	*1.00*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*		*1.0*	*0.0*	*0.3*		*0.1*	
Prop. Right-Turns	*0.1*		*0.0*	*0.1*	*0.2*		*0.2*	
Prop. Heavy Vehicle	*0.0*		*0.0*	*0.0*	*0.0*		*0.0*	
hLT-adj	*0.2*	*0.2*	*0.5*	*0.5*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.7*	*-0.7*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*-0.0*		*0.5*	*-0.0*	*-0.1*		*-0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*		*3.20*	*3.20*	*3.20*		*3.20*	
x, initial	*0.74*		*0.08*	*0.82*	*0.33*		*0.35*	
hd, final value (s)	*9.92*		*10.47*	*9.90*	*9.71*		*9.67*	
x, final value	*2.307*		*0.250*	*2.553*	*1.006*		*1.045*	
Move-up time, m (s)	*2.0*		*2.3*		*2.0*		*2.0*	
Service Time, t_s (s)	*7.9*		*8.2*	*7.6*	*7.7*		*7.7*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*362*		*344*	*364*	*369*		*370*	
Delay (s/veh)	*2383*		*16.7*	*2824*	*151.3*		*194.4*	
LOS	*F*		*C*	*F*	*F*		*F*	
Approach: Delay (s/veh)	*2383*		*2586*		*151.3*		*194.4*	
LOS	*F*		*F*		*F*		*F*	
Intersection Delay (s/veh)	*1817*							
Intersection LOS	*F*							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*DJL*
Agency/Co.	*STANTEC*
Date Performed	*3/20/2016*
Analysis Time Period	*PM PEAK HOUR*

Site Information

Intersection	*AVENUE K/50TH STREET W*
Jurisdiction	*LANCASTER*
Analysis Year	*CUM+PR CONDITIONS*

Project ID *2064109000*

East/West Street: *AVENUE K* North/South Street: *50TH ST W*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*64*	*759*	*79*	*86*	*955*	*53*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*126*	*195*	*79*	*44*	*258*	*89*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*L*	*TR*	*LTR*		*LTR*	
PHF	*1.00*		*1.00*	*1.00*	*1.00*		*1.00*	
Flow Rate (veh/h)	*902*		*86*	*1008*	*400*		*391*	
% Heavy Vehicles	*0*		*0*	*0*	*0*		*0*	
No. Lanes	*1*		*2*		*1*		*1*	
Geometry Group	*4a*		*5*		*2*		*2*	
Duration, T	*1.00*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*		*1.0*	*0.0*	*0.3*		*0.1*	
Prop. Right-Turns	*0.1*		*0.0*	*0.1*	*0.2*		*0.2*	
Prop. Heavy Vehicle	*0.0*		*0.0*	*0.0*	*0.0*		*0.0*	
hLT-adj	*0.2*	*0.2*	*0.5*	*0.5*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.7*	*-0.7*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*-0.0*		*0.5*	*-0.0*	*-0.1*		*-0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*		*3.20*	*3.20*	*3.20*		*3.20*	
x, initial	*0.80*		*0.08*	*0.90*	*0.36*		*0.35*	
hd, final value (s)	*9.91*		*10.47*	*9.91*	*9.73*		*9.67*	
x, final value	*2.484*		*0.250*	*2.774*	*1.081*		*1.050*	
Move-up time, m (s)	*2.0*		*2.3*		*2.0*		*2.0*	
Service Time, t_s (s)	*7.9*		*8.2*	*7.6*	*7.7*		*7.7*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*364*		*344*	*364*	*370*		*372*	
Delay (s/veh)	*2700*		*16.7*	*3221*	*242.0*		*200.7*	
LOS	*F*		*C*	*F*	*F*		*F*	
Approach: Delay (s/veh)	*2700*		*2969*		*242.0*		*200.7*	
LOS	*F*		*F*		*F*		*F*	
Intersection Delay (s/veh)	*2102*							
Intersection LOS	*F*							

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HCS7 Roundabouts Report

General Information

Analyst	DJL
Agency or Co.	Stantec
Date Performed	8/23/2017
Analysis Year	CUMPR Mitigated
Time Analyzed	PM peak Hour
Project Description	TTM 71210

Site Information

Intersection	Avenue K/50th St W
E/W Street Name	Avenue K
N/S Street Name	50th St W
Analysis Time Period (hrs)	0.25
Peak Hour Factor	1.00
Jurisdiction	City of Lancaster

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0
Lane Assignment	LT		TR		LT		TR				LTR				LTR	
Volume (V), veh/h	0	64	759	79	0	86	955	53	0	126	195	79	0	44	258	89
Percent Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Flow Rate (v_{PCE}), pc/h	0	66	782	81	0	89	984	55	0	130	201	81	0	45	266	92
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				2				2			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.5436	4.5436		4.5436	4.5436			4.3276			4.3276	
Follow-Up Headway (s)	2.5352	2.5352		2.5352	2.5352			2.5352			2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	437	492		530	598			412			403	
Entry Volume veh/h	424	478		515	580			400			391	
Circulating Flow (v_c), pc/h	400			397			893			1203		
Exiting Flow (v_{ex}), pc/h	908			1206			322			436		
Capacity (c_{pce}), pc/h	987	987		989	989			665			511	
Capacity (c), veh/h	958	958		961	961			645			496	
v/c Ratio (x)	0.44	0.50		0.54	0.60			0.62			0.79	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	8.9	9.9		10.7	12.3			17.3			33.2	
Lane LOS	A	A		B	B			C			D	
95% Queue, veh	2.3	2.9		3.3	4.2			4.3			7.2	
Approach Delay, s/veh	9.5			11.5			17.3			33.2		
Approach LOS	A			B			C			D		
Intersection Delay, s/veh | LOS	14.7						B					

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 3
NORTH/SOUTH STREET: 50th St. W **MITIGATED**
EAST/WEST STREET: Avenue K
SCENARIO: Cumulative
TIME PERIOD: PM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	126	195	79	44	258	89	64	759	79	86	955	53
Project Trips	0	0	0	0	0	0	0	72	0	0	25	0
GEOMETRY	L	TR		L	TR		L	T TR		L	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	126	126	0.08 *	0.08 *
NBT	1.0	1,600	195	195	0.17	0.17
NBR	0.0	0	79	79	0.00	0.00
SBL	1.0	1,600	44	44	0.03	0.03
SBT	1.0	1,600	258	258	0.22 *	0.22 *
SBR	0.0	0	89	89	0.00	0.00
EBL	1.0	1,600	64	64	0.04 *	0.04 *
EBT	2.0	3,200	759	831	0.26	0.28
EBR	0.0	0	79	79	0.05	0.05
WBL	1.0	1,600	86	86	0.05	0.05
WBT	2.0	3,200	955	980	0.32 *	0.32 *
WBR	0.0	0	53	53	0.03	0.03
N/S Critical Movements					0.30	0.30
E/W Critical Movements					0.36	0.36
Clearance Interval					0.10	0.10
ICU					0.76	0.76
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: 45th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Cumulative
TIME PERIOD: AM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	37	98	83	184	105	28	30	1175	50	30	395	186
Project Trips	0	0	0	0	0	0	0	72	0	0	25	0
GEOMETRY	L	TR		L	T	R	L	T	R	L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	37	37	0.02	0.02
NBT	1.0	1,600	98	98	0.11 *	0.11 *
NBR	0.0	0	83	83	0.00	0.00
SBL	1.0	1,600	184	184	0.12 *	0.12 *
SBT	1.0	1,600	105	105	0.07	0.07
SBR	1.0	1,600	28	28	0.02	0.02
EBL	1.0	1,600	30	30	0.02	0.02
EBT	1.0	1,600	1,175	1,247	0.73 *	0.78 *
EBR	1.0	1,600	50	50	0.03	0.03
WBL	1.0	1,600	30	30	0.02 *	0.02 *
WBT	1.0	1,600	395	420	0.25	0.26
WBR	1.0	1,600	186	186	0.12	0.12
N/S Critical Movements					0.23	0.23
E/W Critical Movements					0.75	0.80
Clearance Interval					0.10	0.10
ICU					1.08	1.13
Level of Service (LOS)					F	F

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: 45th St. W **MITIGATED**
EAST/WEST STREET: Avenue K
SCENARIO: Cumulative
TIME PERIOD: AM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	37	98	83	184	105	28	30	1175	50	30	395	186
Project Trips	0	0	0	0	0	0	0	72	0	0	25	0
GEOMETRY	L	TR		L	T	R	L	**T TR**		L	**T TR**	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	37	37	0.02	0.02
NBT	1.0	1,600	98	98	0.11 *	0.11 *
NBR	0.0	0	83	83	0.00	0.00
SBL	1.0	1,600	184	184	0.12 *	0.12 *
SBT	1.0	1,600	105	105	0.07	0.07
SBR	1.0	1,600	28	28	0.02	0.02
EBL	1.0	1,600	30	30	0.02	0.02
EBT	2.0	3,200	1,175	1,247	0.38 *	0.41 *
EBR	0.0	0	50	50	0.03	0.03
WBL	1.0	1,600	30	30	0.02 *	0.02 *
WBT	2.0	3,200	395	420	0.18	0.19
WBR	0.0	0	186	186	0.12	0.12
N/S Critical Movements					0.23	0.23
E/W Critical Movements					0.40	0.43
Clearance Interval					0.10	0.10
ICU					0.73	0.76
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: 45th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Cumulative
TIME PERIOD: PM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	65	126	42	63	96	36	31	776	33	55	965	127
Project Trips	0	0	0	0	0	0	0	47	0	0	80	0
GEOMETRY	L	TR		L	T	R	L	T	R	L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	65	65	0.04	0.04
NBT	1.0	1,600	126	126	0.11 *	0.11 *
NBR	0.0	0	42	42	0.00	0.00
SBL	1.0	1,600	63	63	0.04 *	0.04 *
SBT	1.0	1,600	96	96	0.06	0.06
SBR	1.0	1,600	36	36	0.02	0.02
EBL	1.0	1,600	31	31	0.02 *	0.02 *
EBT	1.0	1,600	776	823	0.49	0.51
EBR	1.0	1,600	33	33	0.02	0.02
WBL	1.0	1,600	55	55	0.03	0.03
WBT	1.0	1,600	965	1,045	0.60 *	0.65 *
WBR	1.0	1,600	127	127	0.08	0.08
N/S Critical Movements					0.15	0.15
E/W Critical Movements					0.62	0.67
Clearance Interval					0.10	0.10
ICU					0.87	0.92
Level of Service (LOS)					D	E

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: 45th St. W **MITIGATED**
EAST/WEST STREET: Avenue K
SCENARIO: Cumulative
TIME PERIOD: PM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	65	126	42	63	96	36	31	776	33	55	965	127
Project Trips	0	0	0	0	0	0	0	47	0	0	80	0
GEOMETRY	L	TR		L	T	R	L	**T TR**		L	**T TR**	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	65	65	0.04	0.04
NBT	1.0	1,600	126	126	0.11 *	0.11 *
NBR	0.0	0	42	42	0.00	0.00
SBL	1.0	1,600	63	63	0.04 *	0.04 *
SBT	1.0	1,600	96	96	0.06	0.06
SBR	1.0	1,600	36	36	0.02	0.02
EBL	1.0	1,600	31	31	0.02 *	0.02 *
EBT	2.0	3,200	776	823	0.25	0.27
EBR	0.0	0	33	33	0.02	0.02
WBL	1.0	1,600	55	55	0.03	0.03
WBT	2.0	3,200	965	1,045	0.34 *	0.37 *
WBR	0.0	0	127	127	0.08	0.08
N/S Critical Movements					0.15	0.15
E/W Critical Movements					0.36	0.39
Clearance Interval					0.10	0.10
ICU					0.61	0.64
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: 40th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Cumulative
TIME PERIOD: AM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	118	245	182	143	252	48	60	1278	124	61	445	68
Project Trips	0	0	0	0	0	0	0	72	0	0	25	0
GEOMETRY	L	TT	R	L	TR		L	T TR		L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	118	118	0.07 *	0.07 *
NBT	2.0	3,200	245	245	0.08	0.08
NBR	1.0	1,600	182	182	0.00	0.00
SBL	1.0	1,600	143	143	0.09	0.09
SBT	1.0	1,600	252	252	0.19 *	0.19 *
SBR	0.0	0	48	48	0.00	0.00
EBL	1.0	1,600	60	60	0.04	0.04
EBT	2.0	3,200	1,278	1,350	0.44 *	0.46 *
EBR	0.0	0	124	124	0.08	0.08
WBL	1.0	1,600	61	61	0.04 *	0.04 *
WBT	1.0	1,600	445	470	0.28	0.29
WBR	1.0	1,600	68	68	0.04	0.04
N/S Critical Movements					0.26	0.26
E/W Critical Movements					0.48	0.50
Clearance Interval					0.10	0.10
ICU					0.84	0.86
Level of Service (LOS)					D	D

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5 **MITIGATED**
NORTH/SOUTH STREET: 40th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Cumulative
TIME PERIOD: AM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	118	245	182	143	252	48	60	1278	124	61	445	68
Project Trips	0	0	0	0	0	0	0	72	0	0	25	0
GEOMETRY	L	TT	R	L	TR		L	T TR		L	**T TR**	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	118	118	0.07 *	0.07 *
NBT	2.0	3,200	245	245	0.08	0.08
NBR	1.0	1,600	182	182	0.00	0.00
SBL	1.0	1,600	143	143	0.09	0.09
SBT	1.0	1,600	252	252	0.19 *	0.19 *
SBR	0.0	0	48	48	0.00	0.00
EBL	1.0	1,600	60	60	0.04	0.04
EBT	2.0	3,200	1,278	1,350	0.44 *	0.46 *
EBR	0.0	0	124	124	0.08	0.08
WBL	1.0	1,600	61	61	0.04 *	0.04 *
WBT	2.0	3,200	445	470	0.16	0.17
WBR	0.0	0	68	68	0.04	0.04
N/S Critical Movements					0.26	0.26
E/W Critical Movements					0.48	0.50
Clearance Interval					0.10	0.10
ICU					0.84	0.86
Level of Service (LOS)					D	D

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: 40th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Cumulative
TIME PERIOD: PM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	113	223	79	82	272	65	57	784	80	103	990	127
Project Trips	0	0	0	0	0	0	0	47	0	0	80	0
GEOMETRY	L	TT	R	L	TR		L	T TR		L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	113	113	0.07 *	0.07 *
NBT	2.0	3,200	223	223	0.07	0.07
NBR	1.0	1,600	79	79	0.05	0.05
SBL	1.0	1,600	82	82	0.05	0.05
SBT	1.0	1,600	272	272	0.21 *	0.21 *
SBR	0.0	0	65	65	0.00	0.00
EBL	1.0	1,600	57	57	0.04 *	0.04 *
EBT	2.0	3,200	784	831	0.27	0.28
EBR	0.0	0	80	80	0.00	0.00
WBL	1.0	1,600	103	103	0.06	0.06
WBT	1.0	1,600	990	1,070	0.62 *	0.67 *
WBR	1.0	1,600	127	127	0.08	0.08
N/S Critical Movements					0.28	0.28
E/W Critical Movements					0.66	0.71
Clearance Interval					0.10	0.10
ICU					1.04	1.09
Level of Service (LOS)					F	F

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5 **MITIGATED**
NORTH/SOUTH STREET: 40th St. W
EAST/WEST STREET: Avenue K
SCENARIO: Cumulative
TIME PERIOD: PM Peak Hour
COUNT DATE: 3/8/16
WORK ORDER #: 2064109000

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	113	223	79	82	272	65	57	784	80	103	990	127
Project Trips	0	0	0	0	0	0	0	47	0	0	80	0
GEOMETRY	L	TT	R	L	TR		L	T TR		L	**T TR**	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Cumu+Project
NBL	1.0	1,600	113	113	0.07 *	0.07 *
NBT	2.0	3,200	223	223	0.07	0.07
NBR	1.0	1,600	79	79	0.05	0.05
SBL	1.0	1,600	82	82	0.05	0.05
SBT	1.0	1,600	272	272	0.21 *	0.21 *
SBR	0.0	0	65	65	0.00	0.00
EBL	1.0	1,600	57	57	0.04 *	0.04 *
EBT	2.0	3,200	784	831	0.27	0.28
EBR	0.0	0	80	80	0.00	0.00
WBL	1.0	1,600	103	103	0.06	0.06
WBT	2.0	3,200	990	1,070	0.35 *	0.37 *
WBR	0.0	0	127	127	0.08	0.08
N/S Critical Movements					0.28	0.28
E/W Critical Movements					0.39	0.41
Clearance Interval					0.10	0.10
ICU					0.77	0.79
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio