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Appendix E

This appendix contains all supporting worksheets and materials relating to capacity analysis for the existing conditions. Table E-1 summarizes the LOS and delay at each intersection. Stick diagrams depicting the volumes used as inputs for the capacity analysis are provided in Figures E-1 and E-2. Synchro HCM signalized reports are given to support calculations at signalized intersections and HCS+ reports are given for all unsignalized intersections.

Queue storage calculations employing the PennDOT method are provided. The volumes shown in these worksheets are PCE (Passenger Car Equivalent) volumes which are factored up to account for the presence of heavy vehicles. The maximum hourly left turn volumes were used to determine the necessary storage.

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Table E-1 – LOS and Average Delay (sec/veh): Existing Conditions

Int No	PennDOT	County	Municipality	Intersection	Existing LOS (Delay)	
					AM	PM
1	3-0	Columbia	South Centre	S.R. 11 and S.R. 2028	B (14.2)	B (17.5)
2			Briar Creek	S.R. 11 and Briar Creek Plaza Driveways	A (7.6)	B (15.5)
3			Berwick	S.R. 11 (Front Street) and Eaton Street*	A (1.0)	A (1.6)
4				S.R. 11 (Front Street) and Poplar Street	C (23.6)	**F (86.8)**
5				S.R. 11 (Front Street) and Orchard Street	B (15.2)	C (24.6)
6				S.R. 11 (Front Street) and S.R. 93 (Orange Street)	B (10.6)	B (18.7)
7				S.R. 11 (Second Street) and LaSalle Street	A (9.7)	B (11)
8				S.R. 11 (Second Street) and Oak Street	A (6.4)	A (7.7)
9				S.R. 11 (Second Street) and Mulberry Street	B (11.5)	A (7.5)
10				S.R. 11 (Front Street) and Mulberry Street	A (6.6)	B (11.6)
11				S.R. 1025 (Market Street) and Third Street	B (14.8)	B (14.1)
12				S.R. 11 (Second Street) and Market Street	C (23.3)	B (18)
13				S.R. 11 (Front Street) and Market Street	B (18.5)	C (20.8)
14				S.R. 11 (Second Street) and Pine Street	A (6.8)	B (10.5)
15	4-0	Luzerne	Nescopeck	S.R. 93 (Third Street) and S.R. 339 (Broad Street)	B (13.2)	B (11.8)
16				S.R. 93 (Third Street) and Dewey Street	A (4.7)	A (3.7)
17			Salem Township	S.R. 11 and Bell Bend Site Entrance*		
18				S.R. 11 and SSES Site Entrance*	A (4.2)	A (3.3)
19			Shickshinny	S.R. 11 (S. Main Street) and S.R. 239	A (8.7)	B (11)
20				S.R. 11 (Main Street) and S.R. 239 (Union Street)	B (15)	B (15.8)
21			Nanticoke	S.R. 11 and S.R. 29 (Mill Street)	C (21.5)	C (24.5)
22				S.R. 11 and County Bridge	C (32.4)	C (20)
23				S.R. 11 (E. Poplar Street) and S.R. 29*	A (2.6)	C (19.5)

Note 1: * implies this is a stop controlled intersection. The intersection LOS was calculated based on the weighted average of approach delays as specified in Reference [3].
Note 2: The cells with LOS D or worse are highlighted.

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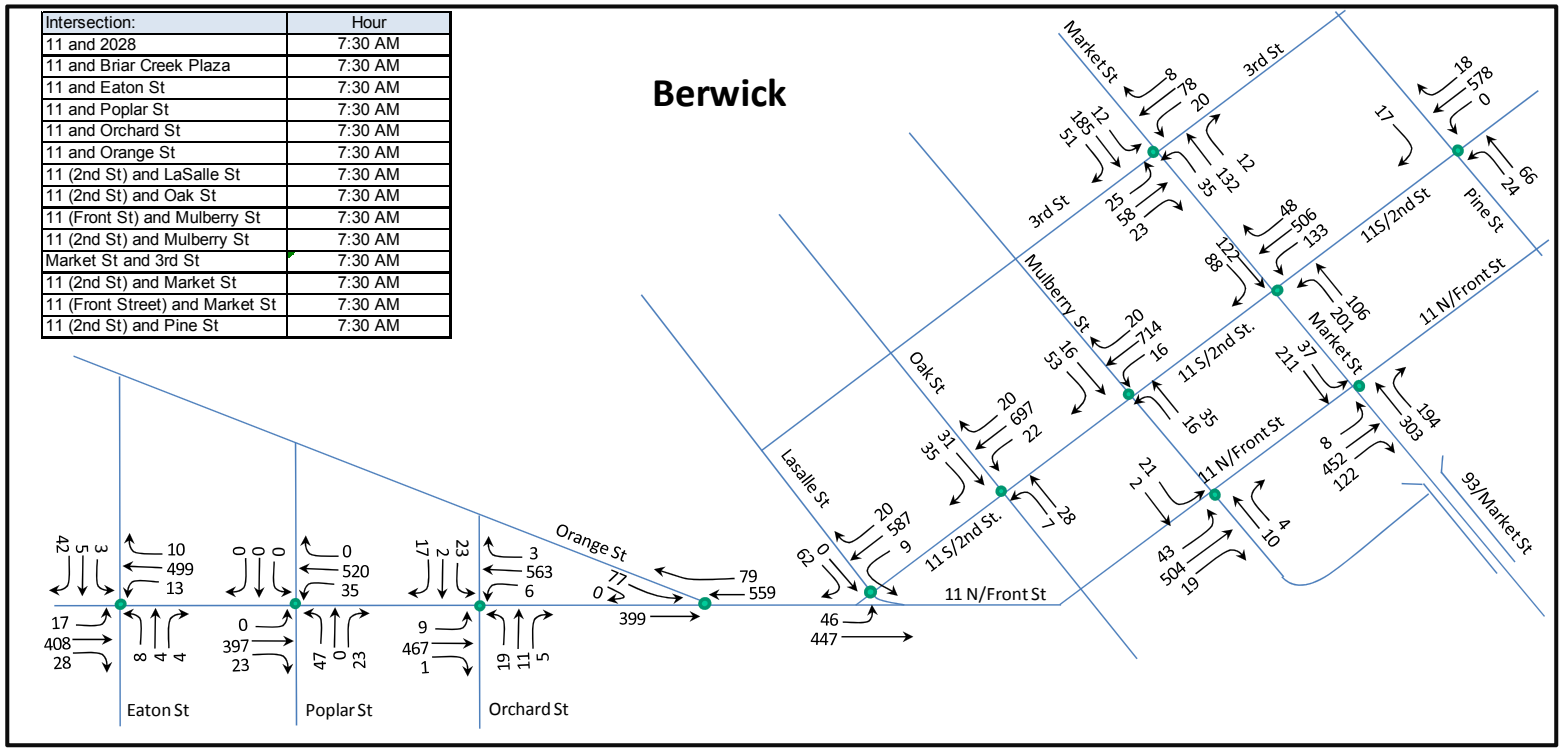
Intersection:	Hour
11 and 2028	7:30 AM
11 and Briar Creek Plaza	7:30 AM
11 and Eaton St	7:30 AM
11 and Poplar St	7:30 AM
11 and Orchard St	7:30 AM
11 and Orange St	7:30 AM
11 (2nd St) and LaSalle St	7:30 AM
11 (2nd St) and Oak St	7:30 AM
11 (Front St) and Mulberry St	7:30 AM
11 (2nd St) and Mulberry St	7:30 AM
Market St and 3rd St	7:30 AM
11 (2nd St) and Market St	7:30 AM
11 (Front Street) and Market St	7:30 AM
11 (2nd St) and Pine St	7:30 AM



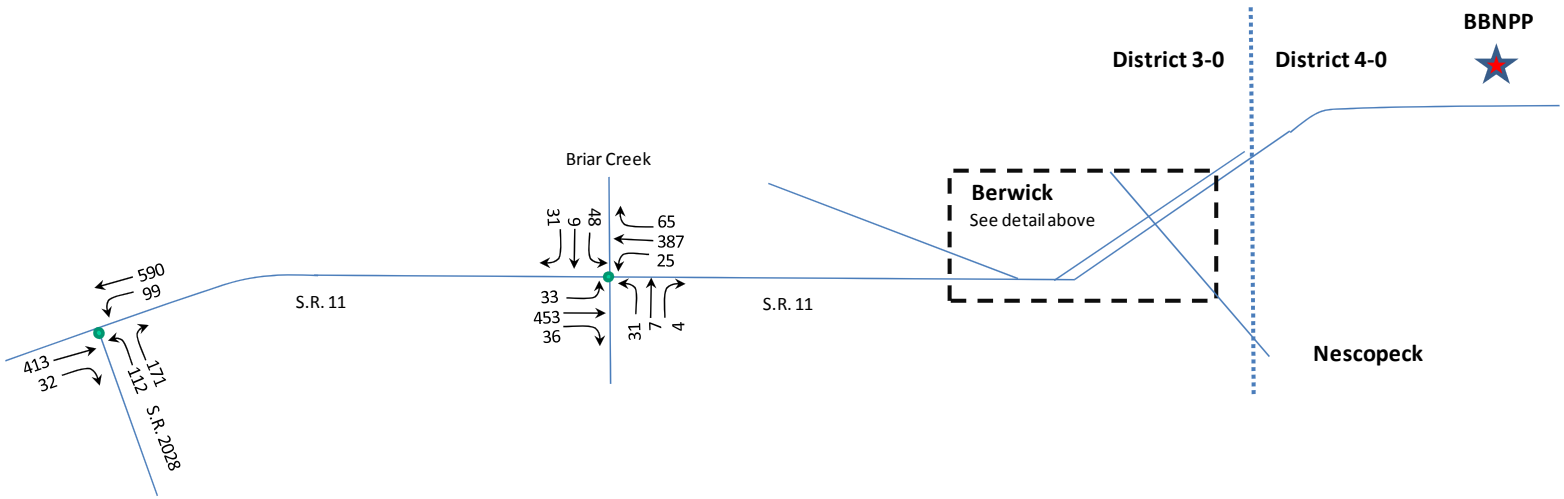


Figure E-1 – Existing AM Peak Hour Volumes

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Intersection:	Hour
93 (3rd St) and 339 (Broad St)	7:30 AM
93 (3rd St) and Dewey St	7:30 AM
11 and Bell Bend Entrance	
11 and SSES Entrance	6:00 AM
11 and 239	6:00 AM
11 and 239 (Union St)	7:00 AM
11 and 29 (Mill St)	7:00 AM
11 and County Bridge	7:00 AM
11 (E. Poplar St) and 29	7:00 AM

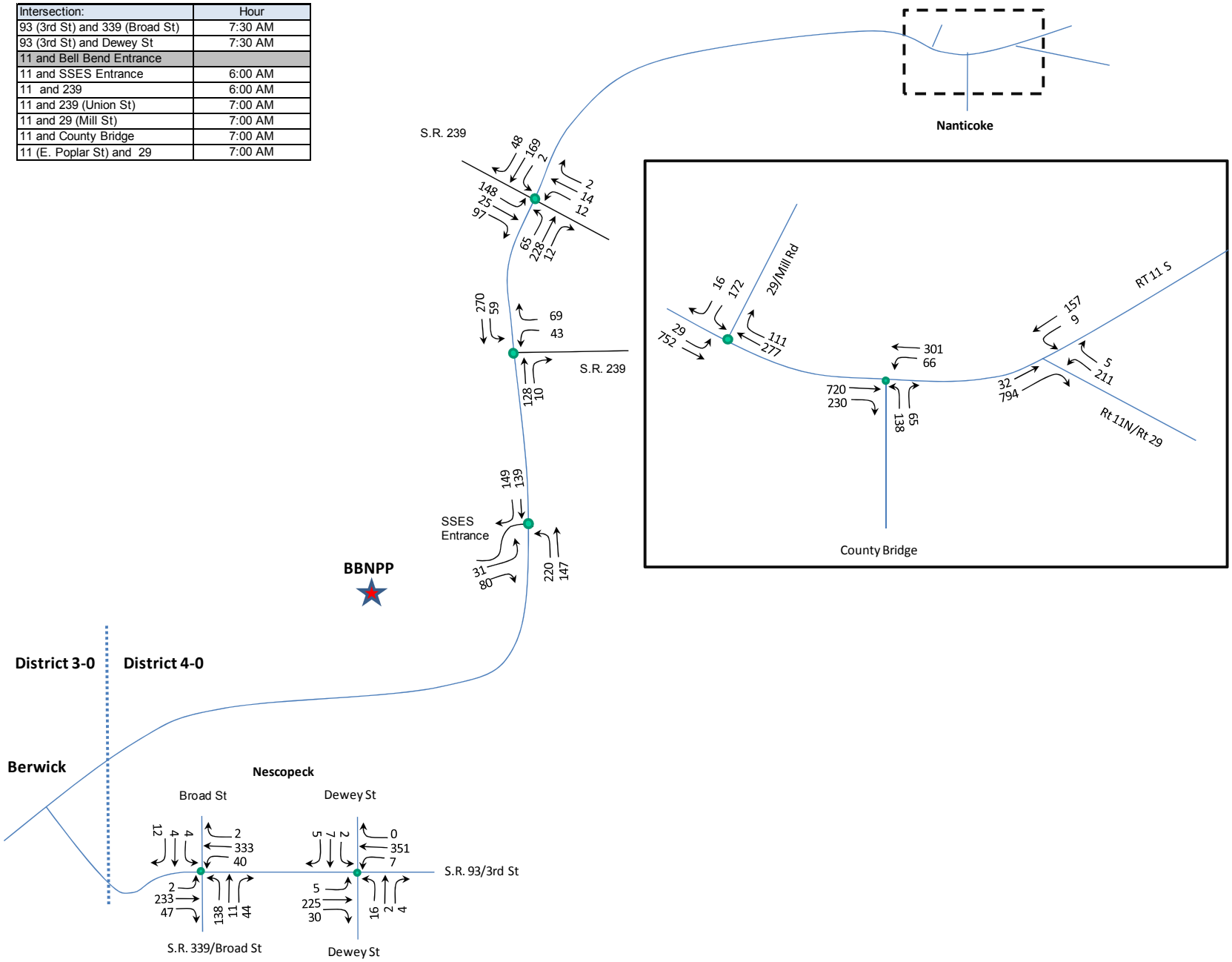

Figure E-1 – Existing AM Peak Hour Volumes

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Intersection:	Hour
11 and 2028	3:45 PM
11 and Briar Creek Plaza	3:45 PM
11 and Eaton St	3:45 PM
11 and Poplar St	3:45 PM
11 and Orchard St	3:45 PM
11 and Orange St	3:45 PM
11 (2nd St) and LaSalle St	3:45 PM
11 (2nd St) and Oak St	3:45 PM
11 (Front St) and Mulberry St	3:45 PM
11 (2nd St) and Mulberry St	3:45 PM
Market St and 3rd St	3:45 PM
11 (2nd St) and Market St	3:45 PM
11 (Front Street) and Market St	3:45 PM
11 (2nd St) and Pine St	3:45 PM

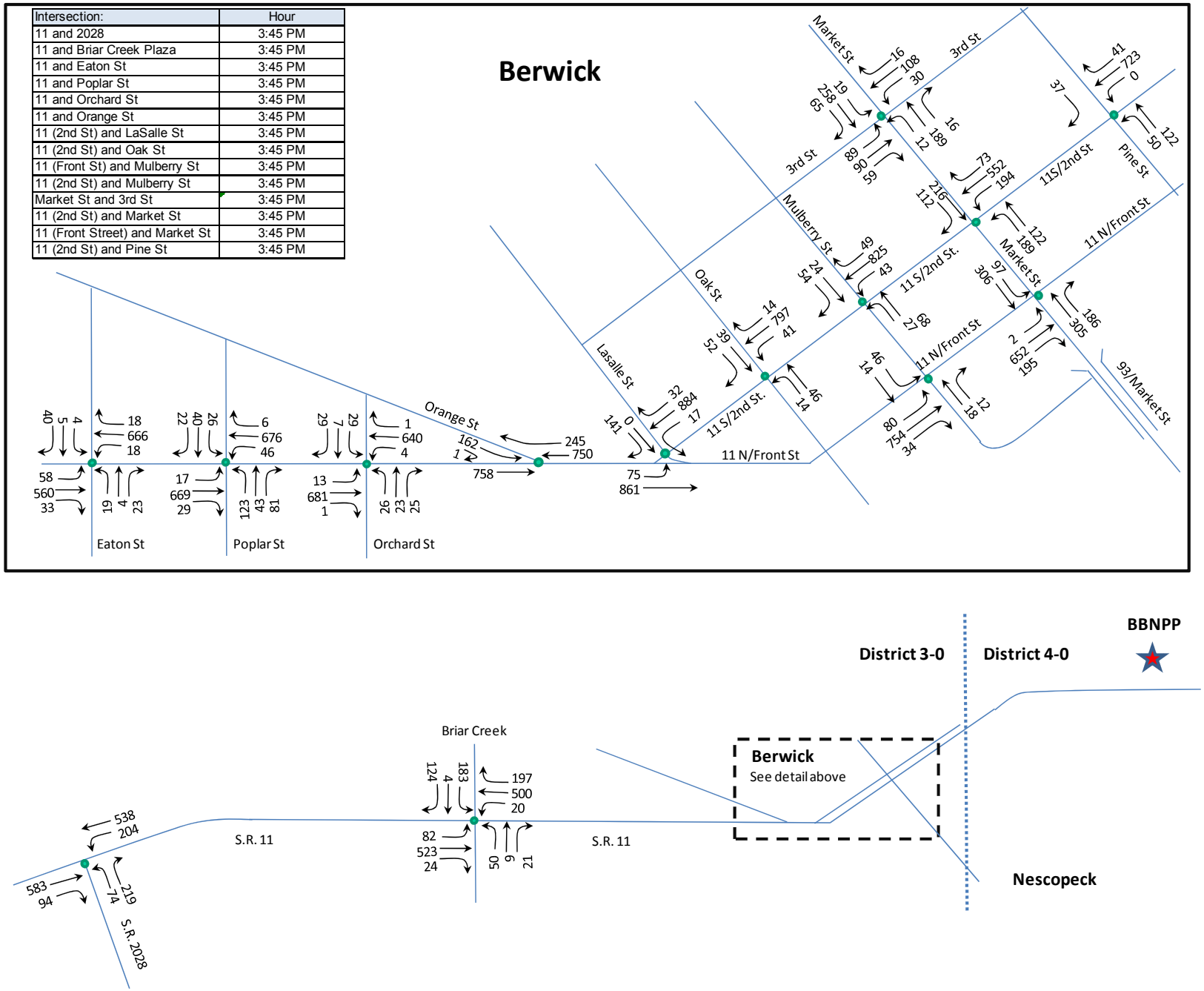

Figure E-2 – Existing PM Peak Hour Volumes

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Intersection:	Hour
93 (3rd St) and 339 (Broad St)	3:45 PM
93 (3rd St) and Dewey St	3:45 PM
11 and Bell Bend Entrance	
11 and SSES Entrance	4:45 PM
11 and 239	3:30 PM
11 and 239 (Union St)	4:30 PM
11 and 29 (Mill St)	4:30 PM
11 and County Bridge	4:30 PM
11 (E. Poplar St) and 29	4:30 PM

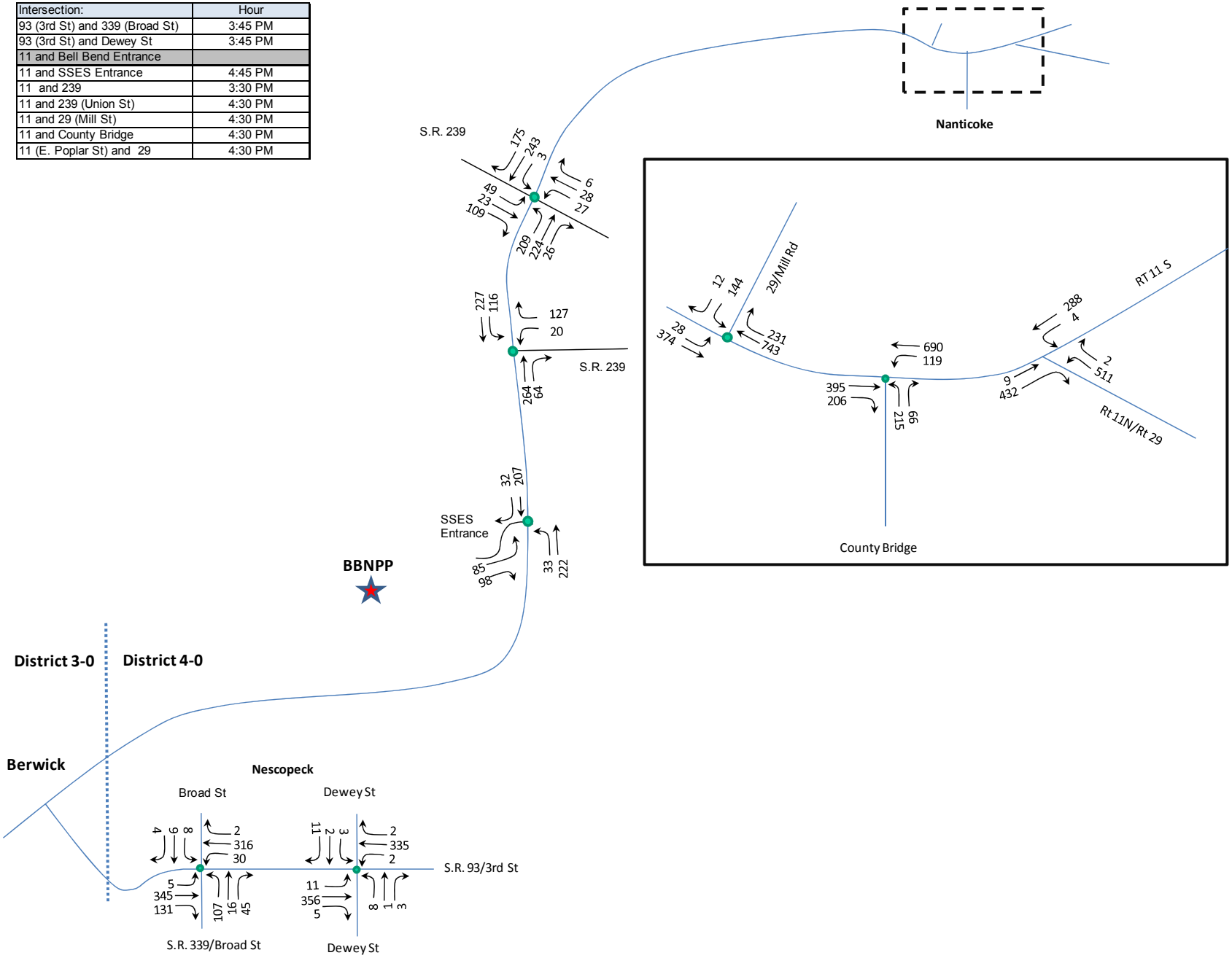

Figure E-2 – Existing PM Peak Hour Volumes

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and S.R. 2028
Scenario: 2010, Existing
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	122	735	17%	135	4.6	200	125	75	275	275	165
SBL	PM	217	1194	18%	135	8.1	350	125	75	425	425	165
Speed (MPH)	45			>10%		Condition:	B or C*					
WBL	AM	117	295	39%	135	4.4	200	#N/A	#N/A	#N/A	200	275
WBL	PM	94	323	29%	135	3.5	175	#N/A	#N/A	#N/A	175	275
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and Briar Creek Plaza Driveways
Scenario: 2010, Existing
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	38	518	7%	99	1.0	100	#N/A	#N/A	#N/A	100	175
NBL	PM	101	818	12%	99	2.8	150	#N/A	#N/A	#N/A	150	175
Speed (MPH)	35			>10%		Condition:	A					
SBL	AM	40	483	8%	99	1.1	100	#N/A	#N/A	#N/A	100	135
SBL	PM	20	744	3%	99	0.5	75	#N/A	#N/A	#N/A	75	135
Speed (MPH)	35			<=10%		Condition:	A					
EBL	AM	51	91	56%	99	1.4	100	#N/A	#N/A	#N/A	100	175
EBL	PM	192	299	64%	99	5.3	250	#N/A	#N/A	#N/A	250	175
Speed (MPH)	30			>10%		Condition:	A					
WBL	AM	42	54	79%	99	1.1	100	#N/A	#N/A	#N/A	100	75
WBL	PM	51	79	65%	99	1.4	100	#N/A	#N/A	#N/A	100	75
Speed (MPH)	30			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Eaton Street
Scenario: 2010, Existing
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	23	480	5%	60	0.4	75	#N/A	#N/A	#N/A	75	150
NBL	PM	60	772	8%	60	1.0	100	#N/A	#N/A	#N/A	100	150
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	13	545	2%	60	0.2	75	#N/A	#N/A	#N/A	75	150
SBL	PM	60	692	9%	60	1.0	75	#N/A	#N/A	#N/A	75	150
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Poplar Street
Scenario: 2010, Existing
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	0	0	#DIV/0!	70	0.0	75	#N/A	#N/A	#N/A	75	75
NBL	PM	21	711	3%	70	0.4	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	53	581	9%	70	1.0	100	#N/A	#N/A	#N/A	100	105
SBL	PM	71	735	10%	70	1.4	100	#N/A	#N/A	#N/A	100	105
Speed (MPH)	35			<=10%		Condition:	A					
WBL	AM	62	101	61%	70	1.2	100	#N/A	#N/A	#N/A	100	250
WBL	PM	128	252	51%	70	2.5	150	#N/A	#N/A	#N/A	150	250
Speed (MPH)	30			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Orchard Street
Scenario: 2010, Existing
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	11	505	2%	70	0.2	75	#N/A	#N/A	#N/A	75	75
NBL	PM	15	719	2%	70	0.3	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	8	584	1%	70	0.2	75	#N/A	#N/A	#N/A	75	75
SBL	PM	10	671	1%	70	0.2	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and LaSalle Street
Scenario: 2010, Existing
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	55	473	12%	70	1.1	100	#N/A	#N/A	#N/A	100	100
NBL	PM	86	980	9%	70	1.7	100	#N/A	#N/A	#N/A	100	100
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	10	613	2%	70	0.2	75	#N/A	#N/A	#N/A	75	100
SBL	PM	18	948	2%	70	0.4	75	#N/A	#N/A	#N/A	75	100
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 1025 (Market Street) and Third Street
Scenario: 2010, Existing
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
EBL	AM	13	288	5%	75	0.3	75	#N/A	#N/A	#N/A	75	90
EBL	PM	23	352	7%	80	0.5	75	#N/A	#N/A	#N/A	75	90
Speed (MPH)	25			<=10%		Condition:	A					
WBL	AM	38	173	22%	75	0.8	75	#N/A	#N/A	#N/A	75	175
WBL	PM	27	217	12%	80	0.6	75	#N/A	#N/A	#N/A	75	175
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and Market Street
Scenario: 2010, Existing
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	142	714	20%	75	3.0	150	#N/A	#N/A	#N/A	150	100
SBL	PM	214	882	24%	80	4.7	200	#N/A	#N/A	#N/A	200	100
Speed (MPH)	35			>10%		Condition:	A					
WBL	AM	220	324	68%	75	4.6	200	#N/A	#N/A	#N/A	200	170
WBL	PM	241	345	70%	80	5.3	250	#N/A	#N/A	#N/A	250	170
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and Pine Street
Scenario: 2010, Existing
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
WBL	AM	24	92	26%	75	0.5	75	#N/A	#N/A	#N/A	75	175
WBL	PM	61	195	31%	80	1.4	100	#N/A	#N/A	#N/A	100	175
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and SSES Site Entrance
Scenario: 2010, Existing
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	220	388	57%	90	5.5	250	235	114	364	364	200
NBL	PM	42	531	8%	90	1.1	100	235	114	214	235	200
Speed (MPH)	55			>10%		Condition:	B or C*					
EBL	AM	31	111	28%	90	0.8	75	#N/A	#N/A	#N/A	75	450
EBL	PM	85	183	46%	90	2.1	150	#N/A	#N/A	#N/A	150	450
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Main Street) and S.R. 239 (Union Street)
Scenario: 2010, Existing
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	83	275	30%	75	1.7	100	#N/A	#N/A	#N/A	100	150
NBL	PM	214	464	46%	75	4.5	200	#N/A	#N/A	#N/A	200	150
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and S.R. 29 (Mill Street)
Scenario: 2010, Existing
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	38	848	4%	90	1.0	75	#N/A	#N/A	#N/A	75	100
NBL	PM	30	424	7%	90	0.8	75	#N/A	#N/A	#N/A	75	100
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and County Bridge
Scenario: 2010, Existing
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	91	384	24%	148	3.7	175	#N/A	#N/A	#N/A	175	200
SBL	PM	127	793	16%	108	3.8	175	#N/A	#N/A	#N/A	175	200
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (E. Poplar Street) and S.R. 29
Scenario: 2010, Existing
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	35	846	4%	90	0.9	75	#N/A	#N/A	#N/A	75	300
NBL	PM	21	481	4%	90	0.5	75	#N/A	#N/A	#N/A	75	300
Speed (MPH)	35			<=10%		Condition:	A					
WBL	AM	220	227	97%	90	5.5	250	#N/A	#N/A	#N/A	250	300
WBL	PM	542	542	100%	90	13.6	500	#N/A	#N/A	#N/A	500	300
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 7:30 AM
Intersection: S.R. 11 and Eaton St.
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2010
Project ID: 2010, Existing, AM
East/West Street: Eaton St.
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	17	408	28	13	499	10
Peak-Hour Factor, PHF	0.85	0.95	0.64	0.65	0.94	0.50
Hourly Flow Rate, HFR	19	429	43	20	530	20
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	TWLTL			/ 9		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	8	4	4	3	5	42
Peak Hour Factor, PHF	0.50	0.50	0.50	0.75	0.42	0.70
Hourly Flow Rate, HFR	16	8	8	4	11	60
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0	1	0	0	1	1
Configuration		LTR		LT	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR		LT		R
v (vph)	19	20		32		15		60
C(m) (vph)	1030	1100		447		469		546
v/c	0.02	0.02		0.07		0.03		0.11
95% queue length	0.06	0.06		0.23		0.10		0.37
Control Delay	8.6	8.3		13.7		12.9		12.4
LOS	A	A		B		B		B
Approach Delay				13.7			12.5	
Approach LOS				B			B	

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HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C
Agency/Co.:
Date Performed:
Analysis Time Period: 3:45 PM
Intersection: S.R. 11 and Eaton St.
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2010
Project ID: 2010, Existing, PM
East/West Street: Eaton St.
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	58	560	33	18	666	18
Peak-Hour Factor, PHF	0.85	0.90	0.69	0.64	0.93	0.75
Hourly Flow Rate, HFR	68	622	47	28	716	24
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	TWLTL			/ 9		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	19	4	23	4	5	40
Peak Hour Factor, PHF	0.68	0.50	0.41	1.00	0.63	0.71
Hourly Flow Rate, HFR	27	8	56	4	7	56
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0	1	0	0	1	1
Configuration		LTR		LT	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR		LT		R
v (vph)	68	28		91		11		56
C(m) (vph)	876	931		356		304		427
v/c	0.08	0.03		0.26		0.04		0.13
95% queue length	0.25	0.09		1.00		0.11		0.45
Control Delay	9.5	9.0		18.5		17.3		14.7
LOS	A	A		C		C		B
Approach Delay				18.5			15.1	
Approach LOS				C			C	

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HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C
Agency/Co.:
Date Performed:
Analysis Time Period: 6:00 AM
Intersection: S.R. 11 and SSES Entrance
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2010
Project ID: 2010, Existing, AM
East/West Street: SSES Entrance
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	220	147			139	149
Peak-Hour Factor, PHF	0.87	1.00			0.79	0.78
Hourly Flow Rate, HFR	252	147			175	191
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	TWLTL			/ 9		
RT Channelized?						
Lanes	1	1			1	0
Configuration	L	T				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				31		80
Peak Hour Factor, PHF				0.60		0.56
Hourly Flow Rate, HFR				51		142
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	252					51		142
C(m) (vph)	1204					411		774
v/c	0.21					0.12		0.18
95% queue length	0.79					0.42		0.67
Control Delay	8.8					15.0-		10.7
LOS	A					B		B
Approach Delay							11.8	
Approach LOS							B	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 4:45 PM
Intersection: S.R. 11 and SSES Entrance
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2010
Project ID: 2010, Existing, PM
East/West Street: SSES Entrance
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	33	222			207	32
Peak-Hour Factor, PHF	0.69	0.79			0.92	0.73
Hourly Flow Rate, HFR	47	281			224	43
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	TWLTL		/ 9			
RT Channelized?						
Lanes	1	1			1	0
Configuration	L	T				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				85		98
Peak Hour Factor, PHF				0.78		0.79
Hourly Flow Rate, HFR				108		124
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	47					108		124
C(m) (vph)	1308					668		798
v/c	0.04					0.16		0.16
95% queue length	0.11					0.57		0.55
Control Delay	7.9					11.4		10.3
LOS	A					B		B
Approach Delay							10.8	
Approach LOS							B	

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HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 7:00 AM
Intersection: S.R. 11 and S.R. 29
Jurisdiction: Nanticoke, PA
Units: U. S. Customary
Analysis Year: 2010
Project ID: 2010, Existing, AM
East/West Street: S.R. 29
North/South Street: S.R. 11 (Poplar St.)
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume					0	
Peak-Hour Factor, PHF					1.00	
Hourly Flow Rate, HFR					0	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes					1	
Configuration					T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume			32	211		
Peak Hour Factor, PHF			0.58	0.79		
Hourly Flow Rate, HFR			55	267		
Percent Heavy Vehicles			0	0		
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes		1		1		
Configuration		R		L		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config					R	L		
v (vph)					55	267		
C(m) (vph)					1091	937		
v/c					0.05	0.28		
95% queue length					0.16	1.18		
Control Delay					8.5	10.4		
LOS					A	B		
Approach Delay				8.5			10.4	
Approach LOS				A			B	

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HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 4:30 PM
Intersection: S.R. 11 and S.R. 29
Jurisdiction: Nanticoke, PA
Units: U. S. Customary
Analysis Year: 2010
Project ID: 2010, Existing, PM
East/West Street: S.R. 29
North/South Street: S.R. 11 (Poplar St.)
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume					288	
Peak-Hour Factor, PHF					0.90	
Hourly Flow Rate, HFR					320	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes					1	
Configuration					T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume			9	511		
Peak Hour Factor, PHF			0.56	0.87		
Hourly Flow Rate, HFR			16	587		
Percent Heavy Vehicles			0	0		
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes		1		1		
Configuration		R		L		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config					R	L		
v (vph)					16	587		
C(m) (vph)					1091	620		
v/c					0.01	0.95		
95% queue length					0.04	12.92		
Control Delay					8.3	50.0-		
LOS					A	E		
Approach Delay				8.3			50.0-	
Approach LOS				A			E	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	1	1	1	1	0	0	0	0	1	2	1
Volume (vph)	0	122	88	201	106	0	0	0	0	133	506	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00					1.00	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		1792	1599	1787	1863					1736	3539	1615
Flt Permitted		1.00	1.00	0.60	1.00					0.95	1.00	1.00
Satd. Flow (perm)		1792	1599	1128	1863					1736	3539	1615
Peak-hour factor, PHF	1.00	0.90	0.88	0.82	0.70	1.00	1.00	1.00	1.00	0.83	0.78	0.80
Adj. Flow (vph)	0	136	100	245	151	0	0	0	0	160	649	60
RTOR Reduction (vph)	0	0	66	0	0	0	0	0	0	0	0	36
Lane Group Flow (vph)	0	136	34	245	151	0	0	0	0	160	649	24
Heavy Vehicles (%)	0%	6%	1%	1%	2%	0%	0%	0%	0%	4%	2%	0%
Turn Type			Perm	pm+pt						Split		Prot
Protected Phases		4		3	8					2	2	2
Permitted Phases			4	8								
Actuated Green, G (s)		25.5	25.5	35.5	35.5					30.0	30.0	30.0
Effective Green, g (s)		25.5	25.5	35.5	35.5					30.0	30.0	30.0
Actuated g/C Ratio		0.34	0.34	0.47	0.47					0.40	0.40	0.40
Clearance Time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Grp Cap (vph)		609	544	595	882					694	1416	646
v/s Ratio Prot		0.08		c0.04	0.08					0.09	c0.18	0.01
v/s Ratio Perm			0.02	c0.16								
v/c Ratio		0.22	0.06	0.41	0.17					0.23	0.46	0.04
Uniform Delay, d1		17.7	16.7	12.1	11.3					14.9	16.5	13.7
Progression Factor		1.55	3.05	2.93	2.67					0.82	0.84	0.68
Incremental Delay, d2		0.8	0.2	1.4	0.3					0.8	1.0	0.1
Delay (s)		28.2	51.2	37.0	30.5					13.0	14.9	9.5
Level of Service		C	D	D	C					B	B	A
Approach Delay (s)		37.9			34.5			0.0			14.2	
Approach LOS		D			C			A			B	

Intersection Summary			
HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	2>	0	0	0	0	0	1	1	1	1	0
Volume (vph)	0	452	122	0	0	0	0	303	194	37	211	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			1%	
Total Lost time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Util. Factor		0.95						1.00	1.00	1.00	1.00	
Frt		0.97						1.00	0.85	1.00	1.00	
Flt Protected		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3408						1872	1607	1633	1835	
Flt Permitted		1.00						1.00	1.00	0.28	1.00	
Satd. Flow (perm)		3408						1872	1607	486	1835	
Peak-hour factor, PHF	1.00	0.91	0.87	1.00	1.00	1.00	1.00	0.78	0.66	0.77	0.80	1.00
Adj. Flow (vph)	0	497	140	0	0	0	0	388	294	48	264	0
RTOR Reduction (vph)	0	34	0	0	0	0	0	0	182	0	0	0
Lane Group Flow (vph)	0	603	0	0	0	0	0	388	112	48	264	0
Heavy Vehicles (%)	0%	2%	4%	0%	0%	0%	0%	2%	1%	10%	3%	0%
Turn Type									Perm	D.P+P		
Protected Phases		1						3		2	4	
Permitted Phases									3	3		
Actuated Green, G (s)		34.0						21.0	21.0	28.0	31.0	
Effective Green, g (s)		34.0						21.0	21.0	28.0	31.0	
Actuated g/C Ratio		0.45						0.28	0.28	0.37	0.41	
Clearance Time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		1545						524	450	288	758	
v/s Ratio Prot		c0.18						c0.21		0.02	c0.14	
v/s Ratio Perm									0.07	0.05		
v/c Ratio		0.39						0.74	0.25	0.17	0.35	
Uniform Delay, d1		13.6						24.5	20.9	15.9	15.1	
Progression Factor		0.74						1.00	1.00	0.67	0.71	
Incremental Delay, d2		0.7						9.1	1.3	1.2	1.2	
Delay (s)		10.8						33.6	22.2	11.8	11.9	
Level of Service		B						C	C	B	B	
Approach Delay (s)		10.8			0.0			28.7			11.9	
Approach LOS		B			A			C			B	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	43	68	128	10	59	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Total Lost time (s)	5.2		5.4	5.4	5.4	5.4
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.93		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1682		1845	1615	1761	1854
Flt Permitted	0.98		1.00	1.00	0.50	1.00
Satd. Flow (perm)	1682		1845	1615	929	1854
Peak-hour factor, PHF	0.57	0.85	0.86	0.62	0.74	0.78
Adj. Flow (vph)	75	80	149	16	80	346
RTOR Reduction (vph)	48	0	0	10	0	0
Lane Group Flow (vph)	107	0	149	6	80	346
Heavy Vehicles (%)	0%	5%	3%	0%	3%	3%
Turn Type				Perm	pm+pt	
Protected Phases	4		6		5	2
Permitted Phases				6	2	
Actuated Green, G (s)	8.2		16.8	16.8	26.3	26.3
Effective Green, g (s)	8.2		16.8	16.8	26.3	26.3
Actuated g/C Ratio	0.18		0.37	0.37	0.58	0.58
Clearance Time (s)	5.2		5.4	5.4	5.4	5.4
Vehicle Extension (s)	5.0		5.0	5.0	3.0	5.0
Lane Grp Cap (vph)	306		687	602	617	1081
v/s Ratio Prot	c0.06		0.08		0.01	c0.19
v/s Ratio Perm				0.00	0.06	
v/c Ratio	0.35		0.22	0.01	0.13	0.32
Uniform Delay, d1	16.1		9.7	8.9	4.5	4.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4		0.3	0.0	0.1	0.4
Delay (s)	17.6		10.0	8.9	4.5	5.2
Level of Service	B		A	A	A	A
Approach Delay (s)	17.6		9.9			5.1
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	45.1	Sum of lost time (s)	10.6
Intersection Capacity Utilization	34.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	0	<1>	0
Volume (vph)	148	25	96	12	14	2	64	227	12	2	169	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			1%	
Total Lost time (s)		5.0			5.0		5.0	5.0			5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.95			0.97		1.00	0.99			0.96	
Flt Protected		0.97			0.98		0.95	1.00			1.00	
Satd. Flow (prot)		1544			1545		1616	1621			1473	
Flt Permitted		0.81			0.84		0.41	1.00			0.99	
Satd. Flow (perm)		1283			1330		700	1621			1458	
Peak-hour factor, PHF	0.92	0.69	0.96	0.75	0.88	0.25	0.64	0.83	0.60	0.25	0.89	0.52
Adj. Flow (vph)	161	36	100	16	16	8	100	273	20	8	190	92
RTOR Reduction (vph)	0	24	0	0	6	0	0	4	0	0	25	0
Lane Group Flow (vph)	0	273	0	0	34	0	100	289	0	0	265	0
Heavy Vehicles (%)	2%	8%	1%	0%	14%	0%	0%	3%	16%	0%	11%	10%
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		16.4			16.4		27.6	27.6			17.1	
Effective Green, g (s)		16.4			16.4		27.6	27.6			17.1	
Actuated g/C Ratio		0.30			0.30		0.51	0.51			0.32	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		390			404		451	829			462	
v/s Ratio Prot							0.02	c0.18				
v/s Ratio Perm		c0.21			0.03		0.09				c0.18	
v/c Ratio		0.70			0.09		0.22	0.35			0.57	
Uniform Delay, d1		16.6			13.4		7.9	7.9			15.4	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		5.6			0.1		0.2	0.3			1.7	
Delay (s)		22.2			13.5		8.2	8.1			17.1	
Level of Service		C			B		A	A			B	
Approach Delay (s)		22.2			13.5			8.1			17.1	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	0	<1	1	0	<1>	0
Volume (vph)	0	396	23	34	519	0	46	0	23	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		3.0	5.0			4.0	4.0			
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00			
Frpb, ped/bikes		1.00		1.00	1.00			1.00	1.00			
Flpb, ped/bikes		1.00		1.00	1.00			0.99	1.00			
Frt		0.99		1.00	1.00			1.00	0.85			
Flt Protected		1.00		0.95	1.00			0.95	1.00			
Satd. Flow (prot)		1786		1626	1845			1694	1335			
Flt Permitted		1.00		0.95	1.00			0.76	1.00			
Satd. Flow (perm)		1786		1626	1845			1350	1335			
Peak-hour factor, PHF	1.00	0.85	0.64	0.71	0.88	1.00	0.57	1.00	0.64	1.00	1.00	1.00
Adj. Flow (vph)	0	466	36	48	590	0	81	0	36	0	0	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	498	0	48	590	0	0	81	36	0	0	0
Confl. Peds. (#/hr)							3					
Heavy Vehicles (%)	0%	5%	8%	11%	3%	0%	6%	0%	21%	0%	0%	0%
Turn Type	Perm			Prot			Perm		Perm	Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2						8		8	4		
Actuated Green, G (s)		23.0		14.5	40.5			20.5	20.5			
Effective Green, g (s)		23.0		14.5	40.5			20.5	20.5			
Actuated g/C Ratio		0.33		0.21	0.58			0.29	0.29			
Clearance Time (s)		5.0		3.0	5.0			4.0	4.0			
Lane Grp Cap (vph)		587		337	1067			395	391			
v/s Ratio Prot		c0.28		0.03	c0.32							
v/s Ratio Perm								c0.06	0.03			
v/c Ratio		0.85		0.14	0.55			0.21	0.09			
Uniform Delay, d1		21.9		22.7	9.1			18.6	18.0			
Progression Factor		1.00		0.37	1.52			1.00	1.00			
Incremental Delay, d2		14.2		0.5	1.1			1.2	0.5			
Delay (s)		36.1		8.7	15.0			19.8	18.5			
Level of Service		D		A	B			B	B			
Approach Delay (s)		36.1			14.5			19.4			0.0	
Approach LOS		D			B			B			A	

Intersection Summary			
HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	1	1	0	1	0
Volume (vph)	0	398	559	0	77	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		-1%	0%		0%	
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1801	1845		1787	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1801	1845		1787	
Peak-hour factor, PHF	1.00	0.89	0.84	0.93	0.68	1.00
Adj. Flow (vph)	0	447	665	0	113	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	447	665	0	113	0
Heavy Vehicles (%)	0%	6%	3%	2%	1%	0%
Turn Type						
Protected Phases		2	6		8	
Permitted Phases						
Actuated Green, G (s)		41.0	41.0		21.0	
Effective Green, g (s)		41.0	41.0		21.0	
Actuated g/C Ratio		0.59	0.59		0.30	
Clearance Time (s)		4.0	4.0		4.0	
Lane Grp Cap (vph)		1055	1081		536	
v/s Ratio Prot		0.25	c0.36		c0.06	
v/s Ratio Perm						
v/c Ratio		0.42	0.62		0.21	
Uniform Delay, d1		8.0	9.4		18.3	
Progression Factor		1.55	0.51		1.00	
Incremental Delay, d2		1.0	2.5		0.9	
Delay (s)		13.4	7.3		19.2	
Level of Service		B	A		B	
Approach Delay (s)		13.4	7.3		19.2	
Approach LOS		B	A		B	

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations	1	0	0	1	2>	0	0	1	0	0
Volume (vph)	45	0	0	9	586	20	0	61	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0			4.0		
Lane Util. Factor	1.00			1.00	0.95			1.00		
Frt	1.00			1.00	0.99			0.86		
Flt Protected	0.95			0.95	1.00			1.00		
Satd. Flow (prot)	1805			1805	3517			1627		
Flt Permitted	0.95			0.95	1.00			1.00		
Satd. Flow (perm)	1805			1805	3517			1627		
Peak-hour factor, PHF	0.54	0.90	1.00	0.75	0.84	0.56	1.00	0.76	0.92	0.92
Adj. Flow (vph)	83	0	0	12	698	36	0	80	0	0
RTOR Reduction (vph)	0	0	0	5	5	0	0	56	0	0
Lane Group Flow (vph)	83	0	0	7	729	0	0	24	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	1%	2%	2%
Turn Type	Prot			custom				custom		
Protected Phases	8			1	1			8		
Permitted Phases				1				8		
Actuated Green, G (s)	21.0			41.0	41.0			21.0		
Effective Green, g (s)	21.0			41.0	41.0			21.0		
Actuated g/C Ratio	0.30			0.59	0.59			0.30		
Clearance Time (s)	4.0			4.0	4.0			4.0		
Lane Grp Cap (vph)	542			1057	2060			488		
v/s Ratio Prot	c0.05			0.00	c0.21			0.01		
v/s Ratio Perm										
v/c Ratio	0.15			0.01	0.35			0.05		
Uniform Delay, d1	18.0			6.0	7.6			17.4		
Progression Factor	0.89			1.00	1.00			1.00		
Incremental Delay, d2	0.6			0.0	0.5			0.2		
Delay (s)	16.6			6.0	8.1			17.6		
Level of Service	B			A	A			B		
Approach Delay (s)		16.6			8.0		17.6		0.0	
Approach LOS		B			A		B		A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	27.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	2>	0	1	1	0	0	0	1
Volume (vph)	0	0	0	0	578	18	24	66	0	0	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			1%	
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		1.00	1.00				1.00
Frt					0.99		1.00	1.00				0.86
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					3491		1796	1872				1635
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					3491		1796	1872				1635
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	0.72	0.64	0.67	0.79	1.00	1.00	1.00	0.71
Adj. Flow (vph)	0	0	0	0	803	28	36	84	0	0	0	24
RTOR Reduction (vph)	0	0	0	0	2	0	32	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	829	0	4	84	0	0	0	24
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	1%	0%	0%	0%	0%
Turn Type							Perm					custom
Protected Phases					1			2				
Permitted Phases							2					2
Actuated Green, G (s)					59.4		7.6	7.6				7.6
Effective Green, g (s)					59.4		7.6	7.6				7.6
Actuated g/C Ratio					0.79		0.10	0.10				0.10
Clearance Time (s)					4.0		4.0	4.0				4.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					2765		182	190				166
v/s Ratio Prot					c0.24			c0.04				
v/s Ratio Perm							0.00					0.01
v/c Ratio					0.30		0.02	0.44				0.14
Uniform Delay, d1					2.1		30.3	31.7				30.7
Progression Factor					0.98		1.00	1.00				1.00
Incremental Delay, d2					0.3		0.0	1.6				0.4
Delay (s)					2.4		30.4	33.3				31.1
Level of Service					A		C	C				C
Approach Delay (s)		0.0			2.4			32.5			31.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	0	1	1	0	0	<1>	0	0	<1>	0
Volume (vph)	9	467	1	6	563	3	19	11	5	23	2	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1805	1795		1805	1842			1812			1768	
Flt Permitted	0.13	1.00		0.30	1.00			0.98			0.97	
Satd. Flow (perm)	253	1795		574	1842			1812			1768	
Peak-hour factor, PHF	0.56	0.92	0.25	0.38	0.82	0.38	0.68	0.46	0.42	0.52	0.25	0.71
Adj. Flow (vph)	16	508	4	16	687	8	28	24	12	44	8	24
RTOR Reduction (vph)	0	0	0	0	0	0	0	10	0	0	20	0
Lane Group Flow (vph)	16	512	0	16	695	0	0	54	0	0	56	0
Heavy Vehicles (%)	0%	5%	100%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Split			Split		
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	30.0	30.0		30.0	30.0			12.5			12.5	
Effective Green, g (s)	30.0	30.0		30.0	30.0			12.5			12.5	
Actuated g/C Ratio	0.43	0.43		0.43	0.43			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	108	769		246	789			324			316	
v/s Ratio Prot		0.29			c0.38			c0.03			c0.03	
v/s Ratio Perm	0.06			0.03								
v/c Ratio	0.15	0.67		0.07	0.88			0.17			0.18	
Uniform Delay, d1	12.2	16.0		11.8	18.4			24.3			24.4	
Progression Factor	0.28	0.28		0.45	0.43			1.00			1.00	
Incremental Delay, d2	1.8	2.9		0.4	11.4			1.1			1.2	
Delay (s)	5.2	7.3		5.7	19.3			25.5			25.6	
Level of Service	A	A		A	B			C			C	
Approach Delay (s)		7.3			19.0			25.5			25.6	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	22	697	20	7	28	0	0	31	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			1%			-1%	
Total Lost time (s)					6.0			5.0			5.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3535			1662			1685	
Flt Permitted					1.00			0.87			1.00	
Satd. Flow (perm)					3535			1471			1685	
Peak-hour factor, PHF	1.00	1.00	1.00	0.69	0.86	0.83	0.44	0.70	1.00	1.00	0.65	0.88
Adj. Flow (vph)	0	0	0	32	810	24	16	40	0	0	48	40
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	35	0
Lane Group Flow (vph)	0	0	0	0	864	0	0	56	0	0	53	0
Heavy Vehicles (%)	0%	0%	0%	4%	2%	0%	0%	17%	0%	0%	0%	14%
Turn Type				Perm			Perm					
Protected Phases					1			2			2	
Permitted Phases				1			2					
Actuated Green, G (s)					32.9			6.2			6.2	
Effective Green, g (s)					32.9			6.2			6.2	
Actuated g/C Ratio					0.66			0.12			0.12	
Clearance Time (s)					6.0			5.0			5.0	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2321			182			209	
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.24			c0.04				
v/c Ratio					0.37			0.31			0.25	
Uniform Delay, d1					3.9			20.0			19.9	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.1			1.0			0.6	
Delay (s)					4.0			21.0			20.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			4.0			21.0			20.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	50.1	Sum of lost time (s)	11.0
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	1	1>	0
Volume (vph)	25	58	23	20	78	8	35	132	12	12	185	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.99		1.00	0.98		1.00	0.97	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786			1858		1805	1854		1805	1844	
Flt Permitted		0.91			0.92		0.55	1.00		0.64	1.00	
Satd. Flow (perm)		1650			1736		1043	1854		1211	1844	
Peak-hour factor, PHF	0.78	0.91	0.72	0.62	0.78	0.67	0.80	0.77	0.60	0.50	0.76	0.85
Adj. Flow (vph)	32	64	32	32	100	12	44	171	20	24	243	60
RTOR Reduction (vph)	0	16	0	0	4	0	0	6	0	0	12	0
Lane Group Flow (vph)	0	112	0	0	140	0	44	185	0	24	291	0
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2	2		1			1	1	
Actuated Green, G (s)		22.0			22.0		45.0	45.0		45.0	45.0	
Effective Green, g (s)		22.0			22.0		45.0	45.0		45.0	45.0	
Actuated g/C Ratio		0.29			0.29		0.60	0.60		0.60	0.60	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		484			509		626	1112		727	1106	
v/s Ratio Prot								0.10			c0.16	
v/s Ratio Perm		0.07			c0.08		0.04			0.02		
v/c Ratio		0.23			0.27		0.07	0.17		0.03	0.26	
Uniform Delay, d1		20.1			20.4		6.3	6.7		6.1	7.1	
Progression Factor		1.00			1.00		2.37	2.57		1.00	1.00	
Incremental Delay, d2		1.1			1.3		0.2	0.3		0.1	0.6	
Delay (s)		21.2			21.7		15.1	17.5		6.2	7.7	
Level of Service		C			C		B	B		A	A	
Approach Delay (s)		21.2			21.7			17.0			7.6	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	16	714	20	16	35	0	0	16	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			-4%	
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.90	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3553			1800			1739	
Flt Permitted					1.00			0.91			1.00	
Satd. Flow (perm)					3553			1659			1739	
Peak-hour factor, PHF	1.00	1.00	1.00	0.50	0.78	0.62	0.80	0.73	1.00	1.00	0.67	0.70
Adj. Flow (vph)	0	0	0	32	915	32	20	48	0	0	24	76
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	62	0
Lane Group Flow (vph)	0	0	0	0	976	0	0	68	0	0	38	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	12%	0%	0%	0%	0%	0%
Turn Type				Split			Perm					
Protected Phases				1	1			2			2	
Permitted Phases							2					
Actuated Green, G (s)					53.0			14.0			14.0	
Effective Green, g (s)					53.0			14.0			14.0	
Actuated g/C Ratio					0.71			0.19			0.19	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					2511			310			325	
v/s Ratio Prot					c0.27						0.02	
v/s Ratio Perm								c0.04				
v/c Ratio					0.39			0.22			0.12	
Uniform Delay, d1					4.4			25.9			25.4	
Progression Factor					1.97			0.84			1.00	
Incremental Delay, d2					0.4			1.6			0.7	
Delay (s)					9.2			23.4			26.1	
Level of Service					A			C			C	
Approach Delay (s)		0.0			9.2			23.4			26.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<2>	0	0	0	0	0	1>	0	0	<1	0
Volume (vph)	43	504	19	0	0	0	0	10	4	21	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			1%			-1%	
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.95			1.00	
Flt Protected		1.00						1.00			0.96	
Satd. Flow (prot)		3427						1693			1828	
Flt Permitted		1.00						1.00			0.80	
Satd. Flow (perm)		3427						1693			1533	
Peak-hour factor, PHF	0.72	0.91	0.68	1.00	1.00	1.00	1.00	0.62	0.50	0.66	0.50	1.00
Adj. Flow (vph)	60	554	28	0	0	0	0	16	8	32	4	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	638	0	0	0	0	0	18	0	0	36	0
Heavy Vehicles (%)	2%	4%	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%
Turn Type	Split									Perm		
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)		51.0						16.0			16.0	
Effective Green, g (s)		51.0						16.0			16.0	
Actuated g/C Ratio		0.68						0.21			0.21	
Clearance Time (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		2330						361			327	
v/s Ratio Prot		c0.19						0.01				
v/s Ratio Perm											c0.02	
v/c Ratio		0.27						0.05			0.11	
Uniform Delay, d1		4.7						23.5			23.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.3						0.3			0.7	
Delay (s)		5.0						23.7			24.3	
Level of Service		A						C			C	
Approach Delay (s)		5.0			0.0			23.7			24.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Volume (vph)	413	32	99	590	112	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1792	1404	1736	1827	1770	1583
Flt Permitted	1.00	1.00	0.29	1.00	0.95	1.00
Satd. Flow (perm)	1792	1404	538	1827	1770	1583
Peak-hour factor, PHF	0.85	0.57	0.77	0.78	0.85	0.84
Adj. Flow (vph)	486	56	129	756	132	204
RTOR Reduction (vph)	0	26	0	0	0	0
Lane Group Flow (vph)	486	30	129	756	132	204
Heavy Vehicles (%)	6%	15%	4%	4%	2%	2%
Turn Type		Perm	pm+pt			Prot
Protected Phases	4		3	8	2	2
Permitted Phases		4	8			
Actuated Green, G (s)	24.1	24.1	35.3	35.3	14.3	14.3
Effective Green, g (s)	24.1	24.1	35.3	35.3	14.3	14.3
Actuated g/C Ratio	0.40	0.40	0.59	0.59	0.24	0.24
Clearance Time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	719	563	467	1073	421	377
v/s Ratio Prot	0.27		0.03	c0.41	0.07	c0.13
v/s Ratio Perm		0.02	0.13			
v/c Ratio	0.68	0.05	0.28	0.70	0.31	0.54
Uniform Delay, d1	14.8	11.0	6.7	8.7	18.9	20.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	0.0	0.3	2.1	0.4	1.6
Delay (s)	17.3	11.1	7.0	10.9	19.3	21.6
Level of Service	B	B	A	B	B	C
Approach Delay (s)	16.7			10.3	20.7	
Approach LOS	B			B	C	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	60.1	Sum of lost time (s)	10.5
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	2	233	47	40	333	2	138	11	44	4	4	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			0%	
Total Lost time (s)		6.5			6.5			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.97			0.93	
Flt Protected		1.00			0.99			0.97			0.99	
Satd. Flow (prot)		1772			1837			1709			1750	
Flt Permitted		0.99			0.92			0.77			0.90	
Satd. Flow (perm)		1751			1707			1367			1588	
Peak-hour factor, PHF	0.25	0.94	0.65	0.67	0.74	0.50	0.84	0.69	0.79	0.50	0.50	0.75
Adj. Flow (vph)	8	248	72	60	450	4	164	16	56	8	8	16
RTOR Reduction (vph)	0	14	0	0	0	0	0	20	0	0	12	0
Lane Group Flow (vph)	0	314	0	0	514	0	0	216	0	0	20	0
Heavy Vehicles (%)	0%	4%	4%	5%	3%	0%	2%	0%	11%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		30.2			30.2			13.6			13.6	
Effective Green, g (s)		30.2			30.2			13.6			13.6	
Actuated g/C Ratio		0.54			0.54			0.24			0.24	
Clearance Time (s)		6.5			6.5			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		939			916			330			384	
v/s Ratio Prot												
v/s Ratio Perm		0.18			c0.30			c0.16			0.01	
v/c Ratio		0.33			0.56			0.66			0.05	
Uniform Delay, d1		7.4			8.7			19.2			16.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.0			2.5			4.6			0.1	
Delay (s)		8.3			11.1			23.9			16.5	
Level of Service		A			B			C			B	
Approach Delay (s)		8.3			11.1			23.9			16.5	
Approach LOS		A			B			C			B	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	56.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	5	225	30	7	351	0	16	2	4	2	7	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.96			0.97	
Flt Protected		1.00			1.00			0.97			0.99	
Satd. Flow (prot)		1782			1826			1781			1824	
Flt Permitted		0.98			0.99			1.00			0.95	
Satd. Flow (perm)		1753			1807			1830			1740	
Peak-hour factor, PHF	0.42	0.99	0.50	0.44	0.76	1.00	0.67	0.25	0.33	0.50	0.35	0.62
Adj. Flow (vph)	12	227	60	16	462	0	24	8	12	4	20	8
RTOR Reduction (vph)	0	8	0	0	0	0	0	11	0	0	8	0
Lane Group Flow (vph)	0	291	0	0	478	0	0	33	0	0	24	0
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		36.1			36.1			3.0			3.0	
Effective Green, g (s)		36.1			36.1			3.0			3.0	
Actuated g/C Ratio		0.74			0.74			0.06			0.06	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1289			1329			112			106	
v/s Ratio Prot												
v/s Ratio Perm		0.17			c0.26			c0.02			0.01	
v/c Ratio		0.23			0.36			0.29			0.23	
Uniform Delay, d1		2.1			2.3			22.0			22.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.4			0.8			1.5			1.1	
Delay (s)		2.5			3.1			23.5			23.1	
Level of Service		A			A			C			C	
Approach Delay (s)		2.5			3.1			23.5			23.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	49.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1	1	1	1>	0	1	1	1
Volume (vph)	33	453	36	25	387	65	31	7	4	48	9	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	16	16
Grade (%)		1%			-1%			1%			2%	
Total Lost time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1744	1786		1744	1836	1623	1796	1796		1718	2132	1812
Flt Permitted	0.39	1.00		0.47	1.00	1.00	0.82	1.00		0.82	1.00	1.00
Satd. Flow (perm)	717	1786		864	1836	1623	1543	1796		1476	2132	1812
Peak-hour factor, PHF	0.63	0.94	0.90	0.42	0.83	0.74	0.70	0.44	0.50	0.71	0.56	0.78
Adj. Flow (vph)	52	482	40	60	466	88	44	16	8	68	16	40
RTOR Reduction (vph)	0	2	0	0	0	34	0	7	0	0	0	36
Lane Group Flow (vph)	52	520	0	60	466	54	44	17	0	68	16	4
Heavy Vehicles (%)	3%	5%	0%	4%	4%	0%	0%	0%	0%	4%	0%	0%
Turn Type	pm+pt			Perm		Perm	Perm			Perm		Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	32.8	32.8		25.5	25.5	25.5	4.9	4.9		4.9	4.9	4.9
Effective Green, g (s)	32.8	32.8		25.5	25.5	25.5	4.9	4.9		4.9	4.9	4.9
Actuated g/C Ratio	0.68	0.68		0.53	0.53	0.53	0.10	0.10		0.10	0.10	0.10
Clearance Time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	569	1215		457	971	859	157	183		150	217	184
v/s Ratio Prot	0.01	c0.29			c0.25			0.01			0.01	
v/s Ratio Perm	0.05			0.07		0.03	0.03			c0.05		0.00
v/c Ratio	0.09	0.43		0.13	0.48	0.06	0.28	0.09		0.45	0.07	0.02
Uniform Delay, d1	2.9	3.5		5.7	7.2	5.5	20.0	19.6		20.4	19.6	19.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.2		0.1	0.4	0.0	1.0	0.2		2.2	0.1	0.0
Delay (s)	3.0	3.7		5.9	7.5	5.6	21.0	19.9		22.6	19.7	19.5
Level of Service	A	A		A	A	A	C	B		C	B	B
Approach Delay (s)		3.7			7.1			20.6			21.2	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	48.2	Sum of lost time (s)	15.8
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	0	1>	0	0	<1>	0	0	<1	1
Volume (vph)	29	752	28	7	276	111	6	1	29	172	3	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			0%			-1%	
Total Lost time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.99			0.96			0.89			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.99			0.95	1.00
Satd. Flow (prot)	1497	1836			1730			1541			1804	1531
Flt Permitted	0.48	1.00			0.92			0.99			0.95	1.00
Satd. Flow (perm)	761	1836			1593			1541			1804	1531
Peak-hour factor, PHF	0.91	0.86	0.64	0.58	0.90	0.79	0.75	0.25	0.66	0.80	0.38	0.67
Adj. Flow (vph)	32	874	44	12	307	141	8	4	44	215	8	24
RTOR Reduction (vph)	0	2	0	0	18	0	0	42	0	0	0	13
Lane Group Flow (vph)	32	916	0	0	442	0	0	14	0	0	223	11
Heavy Vehicles (%)	20%	2%	7%	14%	7%	2%	33%	0%	6%	1%	0%	6%
Turn Type	Perm			Perm			Split			Split		Perm
Protected Phases		2			6		8	8		4	4	
Permitted Phases	2	2		6								4
Actuated Green, G (s)	47.0	47.0			47.0			3.6			12.8	12.8
Effective Green, g (s)	47.0	47.0			47.0			3.6			12.8	12.8
Actuated g/C Ratio	0.58	0.58			0.58			0.04			0.16	0.16
Clearance Time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	444	1071			929			69			286	243
v/s Ratio Prot		c0.50						c0.01			c0.12	
v/s Ratio Perm	0.04				0.28							0.01
v/c Ratio	0.07	0.86			0.48			0.20			0.78	0.05
Uniform Delay, d1	7.3	14.0			9.7			37.1			32.5	28.7
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.1	6.8			0.4			1.5			12.6	0.1
Delay (s)	7.4	20.8			10.1			38.6			45.2	28.8
Level of Service	A	C			B			D			D	C
Approach Delay (s)		20.3			10.1			38.6			43.6	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	80.6	Sum of lost time (s)	17.2
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	720	230	66	301	138	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-2%	0%	
Total Lost time (s)	7.0		7.0	7.0	7.0	7.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1798		1823	1881	1805	1599
Flt Permitted	1.00		0.06	1.00	0.95	1.00
Satd. Flow (perm)	1798		121	1881	1805	1599
Peak-hour factor, PHF	0.91	0.78	0.61	0.92	0.68	0.86
Adj. Flow (vph)	791	295	108	327	203	76
RTOR Reduction (vph)	10	0	0	0	0	0
Lane Group Flow (vph)	1076	0	108	327	203	76
Heavy Vehicles (%)	1%	2%	0%	2%	0%	1%
Turn Type			pm+pt			pt+ov
Protected Phases	4		3	8	2	2 3
Permitted Phases			8			
Actuated Green, G (s)	84.3		98.3	98.3	18.4	32.4
Effective Green, g (s)	84.3		98.3	98.3	18.4	32.4
Actuated g/C Ratio	0.64		0.75	0.75	0.14	0.25
Clearance Time (s)	7.0		7.0	7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1160		182	1415	254	396
v/s Ratio Prot	c0.60		c0.03	0.17	c0.11	0.05
v/s Ratio Perm			0.41			
v/c Ratio	0.93		0.59	0.23	0.80	0.19
Uniform Delay, d1	20.5		28.2	4.9	54.4	38.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	12.6		5.1	0.1	16.0	0.2
Delay (s)	33.1		33.3	4.9	70.3	39.0
Level of Service	C		C	A	E	D
Approach Delay (s)	33.1			12.0	61.8	
Approach LOS	C			B	E	

Intersection Summary			
HCM Average Control Delay	32.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	130.7	Sum of lost time (s)	21.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	1	1	1	1	0	0	0	0	1	2	1
Volume (vph)	0	216	112	189	122	0	0	0	0	194	552	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00					1.00	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		1900	1599	1787	1900					1805	3539	1583
Flt Permitted		1.00	1.00	0.44	1.00					0.95	1.00	1.00
Satd. Flow (perm)		1900	1599	822	1900					1805	3539	1583
Peak-hour factor, PHF	1.00	0.83	0.85	0.79	0.71	1.00	1.00	1.00	1.00	0.92	0.88	0.73
Adj. Flow (vph)	0	260	132	239	172	0	0	0	0	211	627	100
RTOR Reduction (vph)	0	0	90	0	0	0	0	0	0	0	0	65
Lane Group Flow (vph)	0	260	42	239	172	0	0	0	0	211	627	35
Heavy Vehicles (%)	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	2%	2%
Turn Type			Perm	pm+pt						Split		Prot
Protected Phases		4		3	8					2	2	2
Permitted Phases			4	8								
Actuated Green, G (s)		25.5	25.5	42.5	42.5					28.0	28.0	28.0
Effective Green, g (s)		25.5	25.5	42.5	42.5					28.0	28.0	28.0
Actuated g/C Ratio		0.32	0.32	0.53	0.53					0.35	0.35	0.35
Clearance Time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Grp Cap (vph)		606	510	606	1009					632	1239	554
v/s Ratio Prot		0.14		c0.07	0.09					0.12	c0.18	0.02
v/s Ratio Perm			0.03	c0.14								
v/c Ratio		0.43	0.08	0.39	0.17					0.33	0.51	0.06
Uniform Delay, d1		21.5	19.1	10.6	9.7					19.1	20.5	17.3
Progression Factor		0.76	0.53	0.10	0.07					1.15	1.17	1.99
Incremental Delay, d2		2.0	0.3	1.7	0.3					1.4	1.4	0.2
Delay (s)		18.5	10.5	2.7	1.0					23.3	25.4	34.6
Level of Service		B	B	A	A					C	C	C
Approach Delay (s)		15.8			2.0			0.0			25.9	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	2>	0	0	0	0	0	1	1	1	1	0
Volume (vph)	0	652	195	0	0	0	0	305	186	97	306	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			1%	
Total Lost time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Util. Factor		0.95						1.00	1.00	1.00	1.00	
Frt		0.96						1.00	0.85	1.00	1.00	
Flt Protected		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3457						1910	1591	1796	1890	
Flt Permitted		1.00						1.00	1.00	0.39	1.00	
Satd. Flow (perm)		3457						1910	1591	746	1890	
Peak-hour factor, PHF	1.00	0.94	0.92	1.00	1.00	1.00	1.00	0.80	0.82	0.71	0.90	1.00
Adj. Flow (vph)	0	694	212	0	0	0	0	381	227	137	340	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	906	0	0	0	0	0	381	227	137	340	0
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%
Turn Type									Perm	D.P+P		
Protected Phases		1						3		2	4	
Permitted Phases									3	3		
Actuated Green, G (s)		29.0						31.0	31.0	38.0	41.0	
Effective Green, g (s)		29.0						31.0	31.0	38.0	41.0	
Actuated g/C Ratio		0.36						0.39	0.39	0.48	0.51	
Clearance Time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		1253						740	617	446	969	
v/s Ratio Prot		c0.26						c0.20		0.03	c0.18	
v/s Ratio Perm									0.14	0.12		
v/c Ratio		0.72						0.51	0.37	0.31	0.35	
Uniform Delay, d1		22.0						18.7	17.5	12.4	11.6	
Progression Factor		0.87						1.00	1.00	1.32	1.48	
Incremental Delay, d2		3.3						2.6	1.7	1.7	0.9	
Delay (s)		22.4						21.3	19.2	18.0	18.1	
Level of Service		C						C	B	B	B	
Approach Delay (s)		22.4			0.0			20.5			18.1	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	20	127	264	63	115	226
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Total Lost time (s)	5.2		5.4	5.4	5.4	5.4
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.89		1.00	0.85	1.00	1.00
Flt Protected	0.99		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1545		1845	1615	1814	1801
Flt Permitted	0.99		1.00	1.00	0.39	1.00
Satd. Flow (perm)	1545		1845	1615	748	1801
Peak-hour factor, PHF	0.56	0.85	0.82	0.79	0.76	0.92
Adj. Flow (vph)	36	149	322	80	151	246
RTOR Reduction (vph)	121	0	0	52	0	0
Lane Group Flow (vph)	64	0	322	28	151	246
Heavy Vehicles (%)	15%	7%	3%	0%	0%	6%
Turn Type				Perm	pm+pt	
Protected Phases	4		6		5	2
Permitted Phases				6	2	
Actuated Green, G (s)	9.6		17.9	17.9	30.6	30.6
Effective Green, g (s)	9.6		17.9	17.9	30.6	30.6
Actuated g/C Ratio	0.19		0.35	0.35	0.60	0.60
Clearance Time (s)	5.2		5.4	5.4	5.4	5.4
Vehicle Extension (s)	5.0		5.0	5.0	3.0	5.0
Lane Grp Cap (vph)	292		650	569	604	1085
v/s Ratio Prot	c0.04		c0.17		0.04	c0.14
v/s Ratio Perm				0.02	0.11	
v/c Ratio	0.22		0.50	0.05	0.25	0.23
Uniform Delay, d1	17.4		12.9	10.8	5.0	4.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8		1.2	0.1	0.2	0.2
Delay (s)	18.2		14.2	10.9	5.2	4.9
Level of Service	B		B	B	A	A
Approach Delay (s)	18.2		13.5			5.0
Approach LOS	B		B			A

Intersection Summary			
HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	50.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	0	<1>	0
Volume (vph)	49	23	108	27	28	6	208	223	26	3	242	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			1%	
Total Lost time (s)		5.0			5.0		5.0	5.0			5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.91			0.98		1.00	0.98			0.94	
Flt Protected		0.99			0.98		0.95	1.00			1.00	
Satd. Flow (prot)		1529			1635		1600	1657			1579	
Flt Permitted		0.91			0.79		0.30	1.00			1.00	
Satd. Flow (perm)		1408			1310		502	1657			1575	
Peak-hour factor, PHF	0.94	0.52	0.63	0.75	0.54	0.50	0.82	0.91	0.81	0.75	0.93	0.78
Adj. Flow (vph)	52	44	171	36	52	12	254	245	32	4	260	224
RTOR Reduction (vph)	0	95	0	0	7	0	0	6	0	0	43	0
Lane Group Flow (vph)	0	172	0	0	93	0	254	271	0	0	445	0
Heavy Vehicles (%)	0%	4%	0%	3%	0%	0%	1%	1%	0%	0%	2%	0%
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		12.0			12.0		33.6	33.6			20.6	
Effective Green, g (s)		12.0			12.0		33.6	33.6			20.6	
Actuated g/C Ratio		0.22			0.22		0.60	0.60			0.37	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		304			283		461	1001			584	
v/s Ratio Prot							c0.08	0.16				
v/s Ratio Perm		c0.12			0.07		0.25				c0.28	
v/c Ratio		0.57			0.33		0.55	0.27			0.76	
Uniform Delay, d1		19.5			18.4		7.5	5.2			15.4	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		2.4			0.7		1.4	0.1			5.8	
Delay (s)		21.9			19.1		8.9	5.4			21.2	
Level of Service		C			B		A	A			C	
Approach Delay (s)		21.9			19.1			7.1			21.2	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	55.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	0	<1	1	0	<1>	0
Volume (vph)	17	668	29	45	675	6	122	42	81	26	39	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		3.0	5.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1805	1832		1703	1840			1827	1599		1792	
Flt Permitted	0.30	1.00		0.95	1.00			0.74	1.00		0.88	
Satd. Flow (perm)	572	1832		1703	1840			1397	1599		1599	
Peak-hour factor, PHF	0.61	0.86	0.81	0.75	0.82	0.38	0.69	0.66	0.83	0.81	0.89	0.61
Adj. Flow (vph)	28	777	36	60	823	16	177	64	98	32	44	36
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	0	24	0
Lane Group Flow (vph)	28	810	0	60	839	0	0	241	98	0	88	0
Confl. Peds. (#/hr)							3					
Heavy Vehicles (%)	0%	3%	3%	6%	3%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm			Prot			Perm		Perm	Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2						8		8	4		
Actuated Green, G (s)	23.0	23.0		14.5	40.5			20.5	20.5		20.5	
Effective Green, g (s)	23.0	23.0		14.5	40.5			20.5	20.5		20.5	
Actuated g/C Ratio	0.33	0.33		0.21	0.58			0.29	0.29		0.29	
Clearance Time (s)	5.0	5.0		3.0	5.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	188	602		353	1065			409	468		468	
v/s Ratio Prot		c0.44		0.04	c0.46							
v/s Ratio Perm	0.05							c0.17	0.06		0.06	
v/c Ratio	0.15	1.35		0.17	0.79			0.59	0.21		0.19	
Uniform Delay, d1	16.6	23.5		22.8	11.4			21.2	18.6		18.5	
Progression Factor	1.00	1.00		0.86	2.08			1.00	1.00		1.00	
Incremental Delay, d2	1.7	166.6		0.7	3.9			6.1	1.0		0.9	
Delay (s)	18.3	190.1		20.3	27.6			27.3	19.7		19.4	
Level of Service	B	F		C	C			C	B		B	
Approach Delay (s)		184.4			27.2			25.1			19.4	
Approach LOS		F			C			C			B	

Intersection Summary			
HCM Average Control Delay	86.8	HCM Level of Service	F
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	1	1	0	1	0
Volume (vph)	0	758	749	0	162	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		-1%	0%		0%	
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1872	1863		1789	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1872	1863		1789	
Peak-hour factor, PHF	1.00	0.87	0.86	0.93	0.83	0.25
Adj. Flow (vph)	0	871	871	0	195	4
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	0	871	871	0	198	0
Heavy Vehicles (%)	0%	2%	2%	2%	1%	0%
Turn Type						
Protected Phases		2	6		8	
Permitted Phases						
Actuated Green, G (s)		41.0	41.0		21.0	
Effective Green, g (s)		41.0	41.0		21.0	
Actuated g/C Ratio		0.59	0.59		0.30	
Clearance Time (s)		4.0	4.0		4.0	
Lane Grp Cap (vph)		1096	1091		537	
v/s Ratio Prot		0.47	c0.47		c0.11	
v/s Ratio Perm						
v/c Ratio		0.79	0.80		0.37	
Uniform Delay, d1		11.2	11.3		19.3	
Progression Factor		1.67	0.77		1.00	
Incremental Delay, d2		3.8	5.7		1.9	
Delay (s)		22.6	14.3		21.2	
Level of Service		C	B		C	
Approach Delay (s)		22.6	14.3		21.2	
Approach LOS		C	B		C	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations	1	0	0	1	2>	0	0	1	0	0
Volume (vph)	75	0	0	17	883	32	0	141	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0			4.0		
Lane Util. Factor	1.00			1.00	0.95			1.00		
Frt	1.00			1.00	0.99			0.86		
Flt Protected	0.95			0.95	1.00			1.00		
Satd. Flow (prot)	1805			1805	3552			1627		
Flt Permitted	0.95			0.95	1.00			1.00		
Satd. Flow (perm)	1805			1805	3552			1627		
Peak-hour factor, PHF	0.88	0.90	1.00	0.61	0.92	0.73	1.00	0.67	0.92	0.92
Adj. Flow (vph)	85	0	0	28	960	44	0	210	0	0
RTOR Reduction (vph)	0	0	0	12	5	0	0	88	0	0
Lane Group Flow (vph)	85	0	0	16	999	0	0	123	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	1%	2%	2%
Turn Type	Prot			custom				custom		
Protected Phases	8			1	1			8		
Permitted Phases				1				8		
Actuated Green, G (s)	21.0			41.0	41.0			21.0		
Effective Green, g (s)	21.0			41.0	41.0			21.0		
Actuated g/C Ratio	0.30			0.59	0.59			0.30		
Clearance Time (s)	4.0			4.0	4.0			4.0		
Lane Grp Cap (vph)	542			1057	2080			488		
v/s Ratio Prot	0.05			0.01	c0.28			c0.08		
v/s Ratio Perm										
v/c Ratio	0.16			0.02	0.48			0.25		
Uniform Delay, d1	18.0			6.1	8.4			18.5		
Progression Factor	0.69			1.00	1.00			1.00		
Incremental Delay, d2	0.5			0.0	0.8			1.2		
Delay (s)	12.9			6.1	9.2			19.8		
Level of Service	B			A	A			B		
Approach Delay (s)		12.9			9.1		19.8		0.0	
Approach LOS		B			A		B		A	

Intersection Summary			
HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	2>	0	1	1	0	0	0	1
Volume (vph)	0	0	0	0	723	41	50	122	0	0	0	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			1%	
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		1.00	1.00				1.00
Frt					0.99		1.00	1.00				0.86
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					3539		1796	1890				1635
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					3539		1796	1890				1635
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	0.86	0.64	0.78	0.74	1.00	1.00	1.00	0.71
Adj. Flow (vph)	0	0	0	0	841	64	64	165	0	0	0	52
RTOR Reduction (vph)	0	0	0	0	6	0	54	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	899	0	10	165	0	0	0	52
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type							Perm					custom
Protected Phases					1			2				
Permitted Phases							2					2
Actuated Green, G (s)					59.9		12.1	12.1				12.1
Effective Green, g (s)					59.9		12.1	12.1				12.1
Actuated g/C Ratio					0.75		0.15	0.15				0.15
Clearance Time (s)					4.0		4.0	4.0				4.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					2650		272	286				247
v/s Ratio Prot					c0.25			c0.09				
v/s Ratio Perm							0.01					0.03
v/c Ratio					0.34		0.04	0.58				0.21
Uniform Delay, d1					3.4		29.0	31.6				29.8
Progression Factor					0.97		1.00	1.00				1.00
Incremental Delay, d2					0.3		0.1	2.8				0.4
Delay (s)					3.6		29.0	34.4				30.2
Level of Service					A		C	C				C
Approach Delay (s)		0.0			3.6			32.9			30.2	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	0	1	1	0	0	<1>	0	0	<1>	0
Volume (vph)	13	681	1	4	640	1	26	23	25	29	7	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.94			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1687	1861		1805	1843			1762			1752	
Flt Permitted	0.13	1.00		0.13	1.00			0.98			0.98	
Satd. Flow (perm)	237	1861		253	1843			1762			1752	
Peak-hour factor, PHF	0.81	0.96	0.25	1.00	0.90	0.25	0.59	0.64	0.42	0.72	0.44	0.66
Adj. Flow (vph)	16	709	4	4	711	4	44	36	60	40	16	44
RTOR Reduction (vph)	0	0	0	0	0	0	0	39	0	0	36	0
Lane Group Flow (vph)	16	713	0	4	715	0	0	101	0	0	64	0
Heavy Vehicles (%)	7%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Split			Split		
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	30.0	30.0		30.0	30.0			12.5			12.5	
Effective Green, g (s)	30.0	30.0		30.0	30.0			12.5			12.5	
Actuated g/C Ratio	0.43	0.43		0.43	0.43			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	102	798		108	790			315			313	
v/s Ratio Prot		0.38			c0.39			c0.06			c0.04	
v/s Ratio Perm	0.07			0.02								
v/c Ratio	0.16	0.89		0.04	0.91			0.32			0.20	
Uniform Delay, d1	12.3	18.5		11.6	18.7			25.1			24.5	
Progression Factor	1.72	1.51		0.72	0.46			1.00			1.00	
Incremental Delay, d2	0.3	1.6		0.4	10.2			2.7			1.5	
Delay (s)	21.4	29.7		8.7	18.8			27.7			26.0	
Level of Service	C	C		A	B			C			C	
Approach Delay (s)		29.5			18.8			27.7			26.0	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	41	796	14	14	46	0	0	39	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			1%			-1%	
Total Lost time (s)					6.0			5.0			5.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.93	
Flt Protected					1.00			0.98			1.00	
Satd. Flow (prot)					3538			1741			1734	
Flt Permitted					1.00			0.85			1.00	
Satd. Flow (perm)					3538			1510			1734	
Peak-hour factor, PHF	1.00	1.00	1.00	0.68	0.93	0.88	0.44	0.64	1.00	1.00	0.70	0.87
Adj. Flow (vph)	0	0	0	60	856	16	32	72	0	0	56	60
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	51	0
Lane Group Flow (vph)	0	0	0	0	931	0	0	104	0	0	65	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	7%	0%	10%	0%	0%	5%	0%
Turn Type				Perm			Perm					
Protected Phases					1			2			2	
Permitted Phases				1			2					
Actuated Green, G (s)					33.0			7.4			7.4	
Effective Green, g (s)					33.0			7.4			7.4	
Actuated g/C Ratio					0.64			0.14			0.14	
Clearance Time (s)					6.0			5.0			5.0	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2271			217			250	
v/s Ratio Prot											0.04	
v/s Ratio Perm					0.26			c0.07				
v/c Ratio					0.41			0.48			0.26	
Uniform Delay, d1					4.5			20.2			19.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.1			1.7			0.6	
Delay (s)					4.6			21.9			20.1	
Level of Service					A			C			C	
Approach Delay (s)		0.0			4.6			21.9			20.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	51.4	Sum of lost time (s)	11.0
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	1	1>	0
Volume (vph)	89	90	59	30	108	16	12	189	16	19	258	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.98		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1778			1848		1805	1876		1805	1819	
Flt Permitted		0.83			0.91		0.43	1.00		0.57	1.00	
Satd. Flow (perm)		1509			1697		814	1876		1079	1819	
Peak-hour factor, PHF	0.89	0.83	0.78	0.83	0.87	0.67	0.50	0.88	0.80	0.53	0.91	0.74
Adj. Flow (vph)	100	108	76	36	124	24	24	215	20	36	284	88
RTOR Reduction (vph)	0	17	0	0	7	0	0	4	0	0	14	0
Lane Group Flow (vph)	0	268	0	0	177	0	24	231	0	36	358	0
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2	2		1			1	1	
Actuated Green, G (s)		36.0			36.0		36.0	36.0		36.0	36.0	
Effective Green, g (s)		36.0			36.0		36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.45			0.45		0.45	0.45		0.45	0.45	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		679			764		366	844		486	819	
v/s Ratio Prot								0.12			c0.20	
v/s Ratio Perm		c0.18			0.10		0.03			0.03		
v/c Ratio		0.39			0.23		0.07	0.27		0.07	0.44	
Uniform Delay, d1		14.7			13.5		12.5	13.8		12.5	15.1	
Progression Factor		1.00			1.00		0.59	0.50		1.00	1.00	
Incremental Delay, d2		1.7			0.7		0.3	0.8		0.3	1.7	
Delay (s)		16.4			14.2		7.7	7.7		12.8	16.8	
Level of Service		B			B		A	A		B	B	
Approach Delay (s)		16.4			14.2			7.7			16.4	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	43	824	49	27	68	0	0	24	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			-4%	
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					0.99			1.00			0.90	
Flt Protected					1.00			0.98			1.00	
Satd. Flow (prot)					3535			1853			1730	
Flt Permitted					1.00			0.86			1.00	
Satd. Flow (perm)					3535			1625			1730	
Peak-hour factor, PHF	1.00	1.00	1.00	0.63	0.94	0.82	0.56	0.94	1.00	1.00	0.86	0.75
Adj. Flow (vph)	0	0	0	68	877	60	48	72	0	0	28	72
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	55	0
Lane Group Flow (vph)	0	0	0	0	999	0	0	120	0	0	45	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	4%	0%
Turn Type				Split			Perm					
Protected Phases				1	1			2			2	
Permitted Phases							2					
Actuated Green, G (s)					53.0			19.0			19.0	
Effective Green, g (s)					53.0			19.0			19.0	
Actuated g/C Ratio					0.66			0.24			0.24	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					2342			386			411	
v/s Ratio Prot					c0.28						0.03	
v/s Ratio Perm								c0.07				
v/c Ratio					0.43			0.31			0.11	
Uniform Delay, d1					6.4			25.1			23.9	
Progression Factor					0.50			0.94			1.00	
Incremental Delay, d2					0.5			2.0			0.5	
Delay (s)					3.7			25.6			24.4	
Level of Service					A			C			C	
Approach Delay (s)		0.0			3.7			25.6			24.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<2>	0	0	0	0	0	1>	0	0	<1	0
Volume (vph)	80	754	34	0	0	0	0	18	12	46	14	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			1%			-1%	
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.94			1.00	
Flt Protected		1.00						1.00			0.96	
Satd. Flow (prot)		3521						1781			1810	
Flt Permitted		1.00						1.00			0.78	
Satd. Flow (perm)		3521						1781			1469	
Peak-hour factor, PHF	0.95	0.86	0.71	1.00	1.00	1.00	1.00	0.56	0.50	0.68	0.70	1.00
Adj. Flow (vph)	84	877	48	0	0	0	0	32	24	68	20	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	17	0	0	0	0
Lane Group Flow (vph)	0	1004	0	0	0	0	0	40	0	0	88	0
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%
Turn Type	Split									Perm		
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)		47.0						25.0			25.0	
Effective Green, g (s)		47.0						25.0			25.0	
Actuated g/C Ratio		0.59						0.31			0.31	
Clearance Time (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		2069						557			459	
v/s Ratio Prot		c0.29						0.02				
v/s Ratio Perm											c0.06	
v/c Ratio		0.49						0.07			0.19	
Uniform Delay, d1		9.5						19.3			20.1	
Progression Factor		1.00						1.00			0.98	
Incremental Delay, d2		0.8						0.2			0.9	
Delay (s)		10.3						19.6			20.5	
Level of Service		B						B			C	
Approach Delay (s)		10.3			0.0			19.6			20.5	
Approach LOS		B			A			B			C	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Volume (vph)	583	94	204	538	74	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1599	1752	1845	1787	1583
Flt Permitted	1.00	1.00	0.19	1.00	0.95	1.00
Satd. Flow (perm)	1845	1599	347	1845	1787	1583
Peak-hour factor, PHF	0.90	0.78	0.93	0.91	0.77	0.90
Adj. Flow (vph)	648	121	219	591	96	243
RTOR Reduction (vph)	0	38	0	0	0	0
Lane Group Flow (vph)	648	83	219	591	96	243
Heavy Vehicles (%)	3%	1%	3%	3%	1%	2%
Turn Type		Perm	pm+pt			Prot
Protected Phases	4		3	8	2	2
Permitted Phases		4	8			
Actuated Green, G (s)	36.5	36.5	50.1	50.1	19.4	19.4
Effective Green, g (s)	36.5	36.5	50.1	50.1	19.4	19.4
Actuated g/C Ratio	0.46	0.46	0.63	0.63	0.24	0.24
Clearance Time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	842	730	393	1155	433	384
v/s Ratio Prot	c0.35		c0.07	0.32	0.05	c0.15
v/s Ratio Perm		0.05	0.28			
v/c Ratio	0.77	0.11	0.56	0.51	0.22	0.63
Uniform Delay, d1	18.2	12.5	10.6	8.2	24.3	27.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.3	0.1	1.7	0.4	0.3	3.4
Delay (s)	22.5	12.5	12.3	8.6	24.5	30.5
Level of Service	C	B	B	A	C	C
Approach Delay (s)	20.9			9.6	28.8	
Approach LOS	C			A	C	

Intersection Summary			
HCM Average Control Delay	17.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.1
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	5	345	131	30	316	2	107	16	45	8	9	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			0%	
Total Lost time (s)		6.5			6.5			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.97			0.98	
Flt Protected		1.00			1.00			0.97			0.98	
Satd. Flow (prot)		1832			1855			1781			1812	
Flt Permitted		0.99			0.92			0.80			0.84	
Satd. Flow (perm)		1815			1721			1460			1549	
Peak-hour factor, PHF	0.42	0.85	0.91	0.83	0.89	0.50	0.89	0.40	0.94	0.40	0.56	0.50
Adj. Flow (vph)	12	406	144	36	355	4	120	40	48	20	16	8
RTOR Reduction (vph)	0	17	0	0	0	0	0	19	0	0	6	0
Lane Group Flow (vph)	0	545	0	0	395	0	0	189	0	0	38	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	50%	0%	0%	2%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		30.2			30.2			12.1			12.1	
Effective Green, g (s)		30.2			30.2			12.1			12.1	
Actuated g/C Ratio		0.55			0.55			0.22			0.22	
Clearance Time (s)		6.5			6.5			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1000			948			322			342	
v/s Ratio Prot												
v/s Ratio Perm		c0.30			0.23			c0.13			0.02	
v/c Ratio		0.54			0.42			0.59			0.11	
Uniform Delay, d1		7.9			7.2			19.1			17.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.1			1.3			2.7			0.1	
Delay (s)		10.0			8.5			21.8			17.2	
Level of Service		B			A			C			B	
Approach Delay (s)		10.0			8.5			21.8			17.2	
Approach LOS		B			A			C			B	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	11	356	5	2	335	2	8	1	3	3	2	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.97			0.93	
Flt Protected		1.00			1.00			0.97			0.99	
Satd. Flow (prot)		1865			1859			1795			1750	
Flt Permitted		0.99			0.99			1.00			1.00	
Satd. Flow (perm)		1848			1847			1849			1772	
Peak-hour factor, PHF	0.92	0.86	0.62	0.25	0.90	0.50	0.67	0.25	0.75	0.38	0.25	0.69
Adj. Flow (vph)	12	414	8	8	372	4	12	4	4	8	8	16
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	16	0
Lane Group Flow (vph)	0	434	0	0	384	0	0	16	0	0	16	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		39.0			39.0			1.5			1.5	
Effective Green, g (s)		39.0			39.0			1.5			1.5	
Actuated g/C Ratio		0.77			0.77			0.03			0.03	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1427			1426			55			53	
v/s Ratio Prot												
v/s Ratio Perm		c0.23			0.21			0.01			c0.01	
v/c Ratio		0.30			0.27			0.29			0.31	
Uniform Delay, d1		1.7			1.7			24.0			24.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			0.5			3.0			3.3	
Delay (s)		2.3			2.1			26.9			27.3	
Level of Service		A			A			C			C	
Approach Delay (s)		2.3			2.1			26.9			27.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1	1	1	1>	0	1	1	1
Volume (vph)	82	523	24	20	500	197	50	9	21	183	4	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	16	16
Grade (%)		1%			-1%			1%			2%	
Total Lost time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1796	1807		1814	1854	1623	1796	1701		1787	2132	1812
Flt Permitted	0.24	1.00		0.44	1.00	1.00	0.75	1.00		0.73	1.00	1.00
Satd. Flow (perm)	446	1807		849	1854	1623	1422	1701		1365	2132	1812
Peak-hour factor, PHF	0.71	0.95	0.75	0.71	0.93	0.95	0.69	0.56	0.66	0.80	0.50	0.69
Adj. Flow (vph)	115	551	32	28	538	207	72	16	32	229	8	180
RTOR Reduction (vph)	0	2	0	0	0	87	0	23	0	0	0	131
Lane Group Flow (vph)	115	581	0	28	538	120	72	25	0	229	8	49
Heavy Vehicles (%)	0%	4%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt			Perm		Perm	Perm			Perm		Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	37.2	37.2		26.7	26.7	26.7	18.0	18.0		18.0	18.0	18.0
Effective Green, g (s)	37.2	37.2		26.7	26.7	26.7	18.0	18.0		18.0	18.0	18.0
Actuated g/C Ratio	0.57	0.57		0.41	0.41	0.41	0.27	0.27		0.27	0.27	0.27
Clearance Time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	396	1023		345	753	660	390	466		374	584	496
v/s Ratio Prot	0.03	c0.32			c0.29			0.01			0.00	
v/s Ratio Perm	0.13			0.03		0.07	0.05			c0.17		0.03
v/c Ratio	0.29	0.57		0.08	0.71	0.18	0.18	0.05		0.61	0.01	0.10
Uniform Delay, d1	8.5	9.1		12.0	16.3	12.5	18.2	17.6		20.8	17.4	17.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	0.7		0.1	3.2	0.1	0.2	0.0		3.0	0.0	0.1
Delay (s)	8.9	9.8		12.1	19.5	12.6	18.5	17.6		23.8	17.4	17.9
Level of Service	A	A		B	B	B	B	B		C	B	B
Approach Delay (s)		9.7			17.4			18.1			21.1	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	15.8
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	0	1>	0	0	<1>	0	0	<1	1
Volume (vph)	28	374	11	8	743	230	11	1	8	144	4	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			0%			-1%	
Total Lost time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.99			0.97			0.94			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)	1796	1845			1812			1747			1772	1399
Flt Permitted	0.25	1.00			0.99			0.98			0.95	1.00
Satd. Flow (perm)	464	1845			1798			1747			1772	1399
Peak-hour factor, PHF	0.64	0.88	0.69	0.50	0.93	0.91	0.69	0.25	0.50	0.90	0.50	0.60
Adj. Flow (vph)	44	425	16	16	799	253	16	4	16	160	8	20
RTOR Reduction (vph)	0	1	0	0	11	0	0	15	0	0	0	15
Lane Group Flow (vph)	44	440	0	0	1057	0	0	21	0	0	168	5
Heavy Vehicles (%)	0%	2%	0%	12%	2%	1%	0%	0%	0%	3%	0%	16%
Turn Type	Perm			Perm			Split			Split		Perm
Protected Phases		2			6		8	8		4	4	
Permitted Phases	2	2		6								4
Actuated Green, G (s)	56.9	56.9			56.9			4.0			11.8	11.8
Effective Green, g (s)	56.9	56.9			56.9			4.0			11.8	11.8
Actuated g/C Ratio	0.63	0.63			0.63			0.04			0.13	0.13
Clearance Time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	294	1168			1138			78			233	184
v/s Ratio Prot		0.24						c0.01			c0.09	
v/s Ratio Perm	0.09				c0.59							0.00
v/c Ratio	0.15	0.38			0.93			0.27			0.72	0.03
Uniform Delay, d1	6.7	8.0			14.7			41.5			37.5	34.1
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.2	0.2			12.8			1.8			10.5	0.1
Delay (s)	6.9	8.2			27.5			43.4			47.9	34.1
Level of Service	A	A			C			D			D	C
Approach Delay (s)		8.0			27.5			43.4			46.5	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	17.2
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	395	206	119	690	215	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-2%	0%	
Total Lost time (s)	7.0		7.0	7.0	7.0	7.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770		1823	1900	1805	1615
Flt Permitted	1.00		0.16	1.00	0.95	1.00
Satd. Flow (perm)	1770		299	1900	1805	1615
Peak-hour factor, PHF	0.95	0.79	0.90	0.89	0.83	0.82
Adj. Flow (vph)	416	261	132	775	259	80
RTOR Reduction (vph)	25	0	0	0	0	0
Lane Group Flow (vph)	652	0	132	775	259	80
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Turn Type			pm+pt			pt+ov
Protected Phases	4		3	8	2	2 3
Permitted Phases			8			
Actuated Green, G (s)	36.5		50.6	50.6	16.5	30.6
Effective Green, g (s)	36.5		50.6	50.6	16.5	30.6
Actuated g/C Ratio	0.45		0.62	0.62	0.20	0.38
Clearance Time (s)	7.0		7.0	7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	797		320	1185	367	609
v/s Ratio Prot	c0.37		0.04	c0.41	c0.14	0.05
v/s Ratio Perm			0.22			
v/c Ratio	0.82		0.41	0.65	0.71	0.13
Uniform Delay, d1	19.4		11.5	9.7	30.0	16.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	6.6		0.9	1.3	6.1	0.1
Delay (s)	26.0		12.4	11.0	36.1	16.6
Level of Service	C		B	B	D	B
Approach Delay (s)	26.0			11.2	31.5	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	81.1	Sum of lost time (s)	21.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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Appendix F
PennDOT Growth Rate Tables

Controlled Document

Growth Factors for July 2009 to July 2010

County	Urban Interstate	Rural Interstate	Urban Non-Interstate	Rural Non-Interstate
ADAMS	*	*	1.99	0.86
ALLEGHENY	1.36	*	0.00	0.58
ARMSTRONG	1.56	*	0.73	0.63
BEAVER	1.51	2.32	0.29	0.64
BEDFORD	*	2.37	*	0.64
BERKS	1.54	2.19	0.68	0.65
BLAIR	0.86	1.65	0.00	0.40
BRADFORD	1.34	*	0.38	0.51
BUCKS	2.31	2.40	2.24	0.87
BUTLER	2.39	2.54	2.34	0.92
CAMBRIA	0.01	*	0.00	0.08
CAMERON	*	*	*	0.26
CARBON	1.92	2.89	0.48	0.80
CENTRE	2.46	2.84	2.07	0.97
CHESTER	2.43	2.76	2.05	0.94
CLARION	1.92	2.41	1.02	0.73
CLEARFIELD	*	2.74	0.94	0.82
CLINTON	0.88	1.44	0.09	0.37
COLUMBIA	1.47	1.96	0.77	0.60
CRAWFORD	0.86	1.73	0.00	0.40
CUMBERLAND	2.80	2.71	3.20	1.06
DAUPHIN	1.74	2.35	0.84	0.71
DELAWARE	1.37	*	0.21	0.56
ELK	*	*	0.10	0.49
ERIE	1.28	2.02	0.20	0.55
FAYETTE	1.48	*	0.33	0.63
FOREST	*	*	*	0.59
FRANKLIN	2.01	2.01	1.94	0.73
FULTON	*	2.54	*	0.78
GREENE	1.30	1.91	0.37	0.54
HUNTINGDON	*	2.44	0.49	0.69
INDIANA	1.64	*	0.51	0.61
JEFFERSON	*	1.87	0.42	.5.
JUNIATA	*	*	*	0.72
LACKAWANNA	1.11	1.85	0.00	0.47
LANCASTER	2.04	2.37	1.54	0.79
LAWRENCE	1.35	1.96	0.39	0.55
LEBANON	*	2.05	1.15	0.66
LEHIGH	1.75	2.32	0.94	0.71
LUZERNE	0.95	1.68	0.00	0.42
LYCOMING	1.22	1.95	0.04	0.51
MCKEAN	1.10	*	0.00	0.46
MERCER	0.83	1.54	0.00	0.36
MIFFLIN	1.23	*	0.17	0.53
MONROE	2.75	2.96	3.00	1.11
MONTGOMERY	1.55	2.00	0.89	0.62
MONTOUR	*	2.57	1.38	0.82
NORTHAMPTON	1.88	*	1.50	0.76
NORTHUMBERLAND	0.77	1.49	0.00	0.34
PERRY	*	*	2.57	0.81
PHILADELPHIA	0.82	*	0.00	*
PIKE	*	3.16	*	1.16
POTTER	*	*	*	0.69
SCHUYLKILL	*	1.58	0.02	0.41
SNYDER	1.73	*	1.24	0.70
SOMERSET	1.19	1.86	0.15	0.50
SULLIVAN	*	*	*	0.64
SUSQUEHANNA	1.67	2.16	0.88	0.66
TIOGA	*	*	*	0.50
UNION	*	2.47	1.88	0.85
VENANGO	1.08	1.74	0.00	0.44
WARREN	*	*	0.16	0.47
WASHINGTON	1.59	2.33	0.41	0.65
WAYNE	*	2.56	1.98	0.89
WESTMORELAND	1.45	2.24	0.16	0.60
WYOMING	*	*	0.41	0.42
YORK	2.12	2.47	1.69	0.83

* = Functional Class Doesn't Exist in County

Questions? Please contact Joe Piper at the Bureau of Planning and Research, 717-214-8687 or josephpipe@state.pa.us

NOTE: The projected growth factors are derived using historical VMT (Vehicle Miles Traveled) data (1996 to 2007), as well as Woods and Poole demographic and economic data. The factors should not be used to project traffic beyond a 20-year period. Please be aware that these factors are estimates, and unforeseen events (opening of shopping centers, fast food franchises, gas stations, etc) could cause growth to change over time.

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Appendix G
Capacity Analysis – Future No-Build Conditions

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Appendix G

This appendix contains all supporting worksheets and materials relating to capacity analysis for the future no-build conditions. Table G-1 summarizes the LOS and delay at each intersection. Stick diagrams depicting the volumes used as inputs for the capacity analysis are provided in Figures G-1 and G-2. HCM signalized reports are given to support calculations at signalized intersections and HCS+ reports are given for all unsignalized intersections.

Queue storage calculations employing the PennDOT method are provided. The volumes shown in these worksheets are PCE (Passenger Car Equivalent) volumes which are factored up to account for the presence of heavy vehicles. The maximum hourly left turn volumes were used to determine the necessary storage.

Table G-1 – Future No-Build LOS (Delay)

Int No	*PennDOT*	*County*	*Municipality*	*Intersection*	*Without Outage*		*With Outage*	
					AM	*PM*	*AM*	*PM*
1	3-0	Columbia	South Center	S.R. 11 and S.R. 2028	B (14.2)	B (19.4)	B (14.9)	C (23.1)
2			Briar Creek	S.R. 11 and Briar Creek Plaza Driveways	A (6.6)	B (14.2)	A (6.6)	C (20.9)
3			Berwick	S.R. 11 (Front Street) and Eaton Street	A (1.1)	A (1.8)	A (1.1)	A (2.3)
4				S.R. 11 (Front Street) and Poplar Street	C (20)	**D (38.9)**	C (27)	**D (40)**
5				S.R. 11 (Front Street) and Orchard Street	A (6.5)	B (15.1)	A (6.7)	B (17.7)
6				S.R. 11 (Front Street) and S.R. 93 (Orange Street)	A (5.8)	A (9.9)	A (5.9)	B (11)
7				S.R. 11 (Second Street) and LaSalle Street	B (11.7)	B (13.6)	B (11.8)	B (14.1)
8				S.R. 11 (Second Street) and Oak Street	A (6.2)	A (8)	A (6.2)	A (8)
9				S.R. 11 (Second Street) and Mulberry Street	A (4.8)	A (5.7)	A (4.8)	A (5.7)
10				S.R. 11 (Front Street) and Mulberry Street	A (6)	A (7.9)	A (6.1)	A (8)
11				S.R. 1025 (Market Street) and Third Street	A (9.6)	B (12.9)	A (9.6)	B (12.8)
12				S.R. 11 (Second Street) and Market Street	A (9.5)	B (11.6)	A (9.7)	B (11.7)
13				S.R. 11 (Front Street) and Market Street	B (13.7)	B (15.3)	B (14.2)	B (15.3)
14				S.R. 11 (Second Street) and Pine Street	A (6)	A (8.7)	A (6)	A (8.6)
15	4-0	Luzerne	Nescopeck	S.R. 93 (Third Street) and S.R. 339 (Broad Street)	B (13.9)	B (12.2)	B (14.1)	B (12.3)
16				S.R. 93 (Third Street) and Dewey Street	A (4.6)	A (3.7)	A (4.6)	A (3.7)
17			Salem Township	S.R. 11 and Bell Bend Site Entrance				
18				S.R. 11 and SSES Site Entrance	A (4.4)	A (3.8)	E (47.1)	A (5.2)
19			Shickshinny	S.R. 11 (S. Main Street) and S.R. 239	A (8.1)	A (9.1)	A (7.8)	A (9.4)
20				S.R. 11 (Main Street) and S.R. 239 (Union Street)	B (13.6)	B (15.3)	B (14.7)	B (15.5)
21			Nanticoke	S.R. 11 and S.R. 29 (Mill Street)	C (23.4)	C (25.8)	C (23.6)	C (26.3)
22				S.R. 11 and County Bridge	**D (48.9)**	C (23.6)	**D (49.5)**	C (24.2)
23				S.R. 11 (E. Poplar Street) and S.R. 29	A (2.7)	**D (27.7)**	A (2.9)	**D (30.3)**

Note 1: The cells with LOS D or worse are highlighted.

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Int =	Intersection Name:	Hour
1	11 and 2028	7:30 AM
2	11 and Briar Creek Plaza	7:30 AM
3	11 and Eaton St	7:30 AM
4	11 and Poplar St	7:30 AM
5	11 and Orchard St	7:30 AM
6	11 and Orange St	7:30 AM
7	11 (2nd St) and LaSalle St	7:30 AM
8	11 (2nd St) and Oak St	7:30 AM
9	11 (2nd St) and Mulberry St	7:30 AM
10	11 (Front St) and Mulberry St	7:30 AM
11	Market St and 3rd St	7:30 AM
12	11 (2nd St) and Market St	7:30 AM
13	11 (Front Street) and Market St	7:30 AM
14	11 (2nd St) and Pine St	7:30 AM

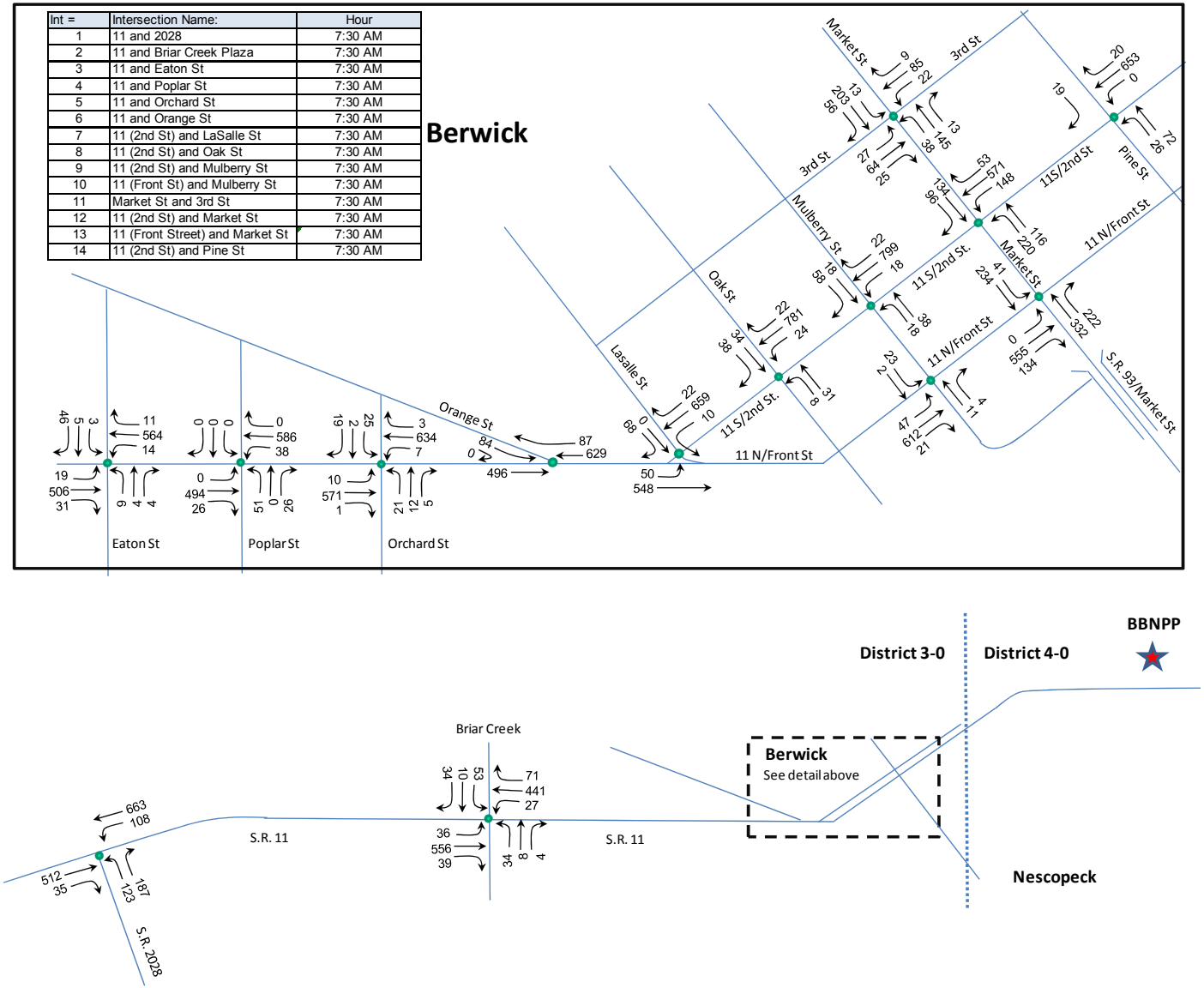

Figure G-1 – Future No-Build, 2022 (with Outage) AM Peak Hour Volumes

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Int #	Intersection:	Hour
15	93 (3rd St) and 339 (Broad St)	7:30 AM
16	93 (3rd St) and Dewey St	7:30 AM
17	11 and Bell Bend Entrance	
18	11 and SSES Entrance	6:00 AM
19	11 and 239	6:00 AM
20	11 and 239 (Union St)	7:00 AM
21	11 and 29 (Mill St)	7:00 AM
22	11 and County Bridge	7:00 AM
23	11 (E. Poplar St) and 29	7:00 AM

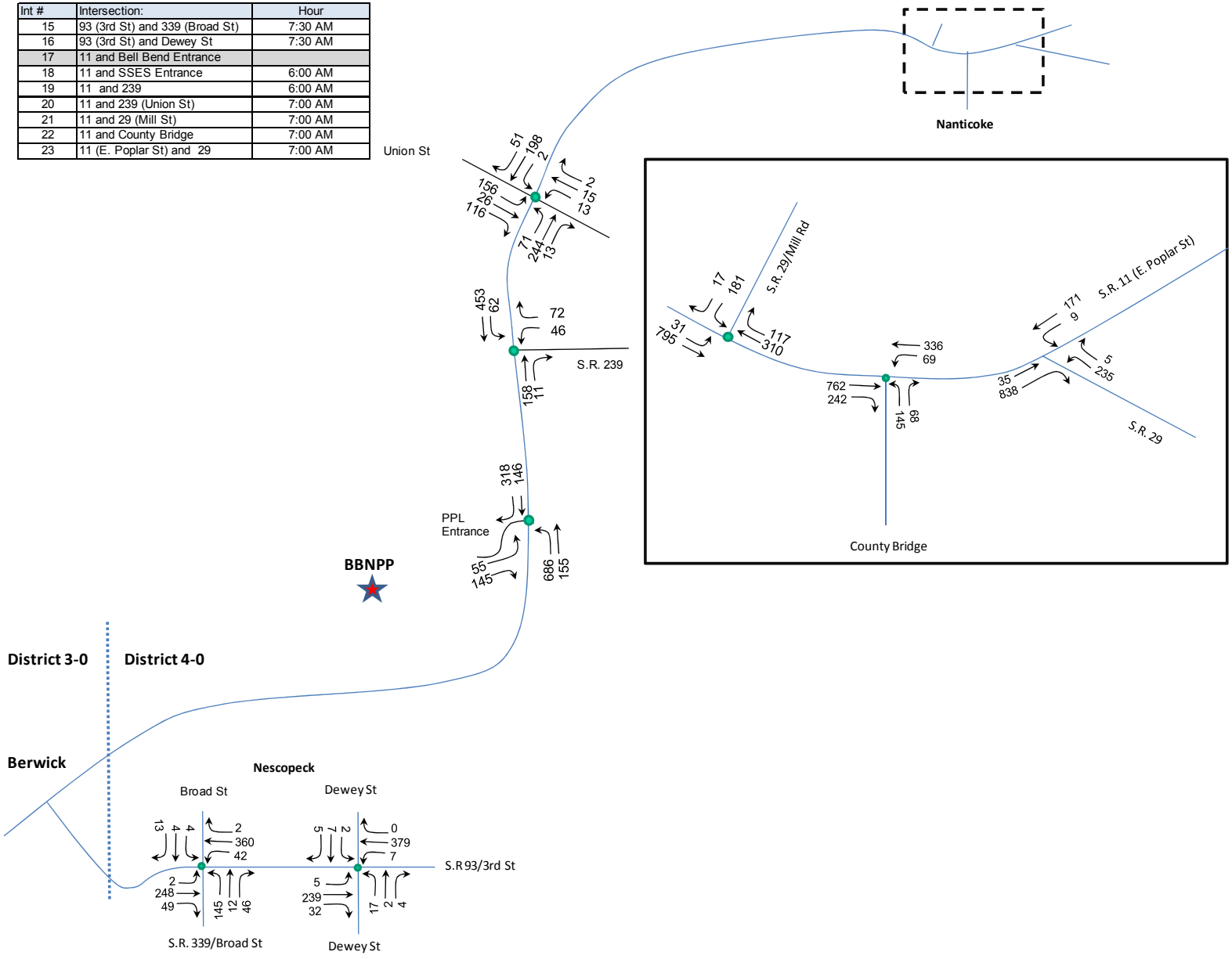

Figure G-1 – Future No-Build, 2022 (with Outage) AM Peak Hour Volumes

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Int #	Intersection Name:	Hour
1	11 and 2028	3:45 PM
2	11 and Briar Creek Plaza	3:45 PM
3	11 and Eaton St	3:45 PM
4	11 and Poplar St	3:45 PM
5	11 and Orchard St	3:45 PM
6	11 and Orange St	3:45 PM
7	11 (2nd St) and LaSalle St	3:45 PM
8	11 (2nd St) and Oak St	3:45 PM
9	11 (2nd St) and Mulberry St	3:45 PM
10	11 (Front St) and Mulberry St	3:45 PM
11	Market St and 3rd St	3:45 PM
12	11 (2nd St) and Market St	3:45 PM
13	11 (Front Street) and Market St	3:45 PM
14	11 (2nd St) and Pine St	3:45 PM

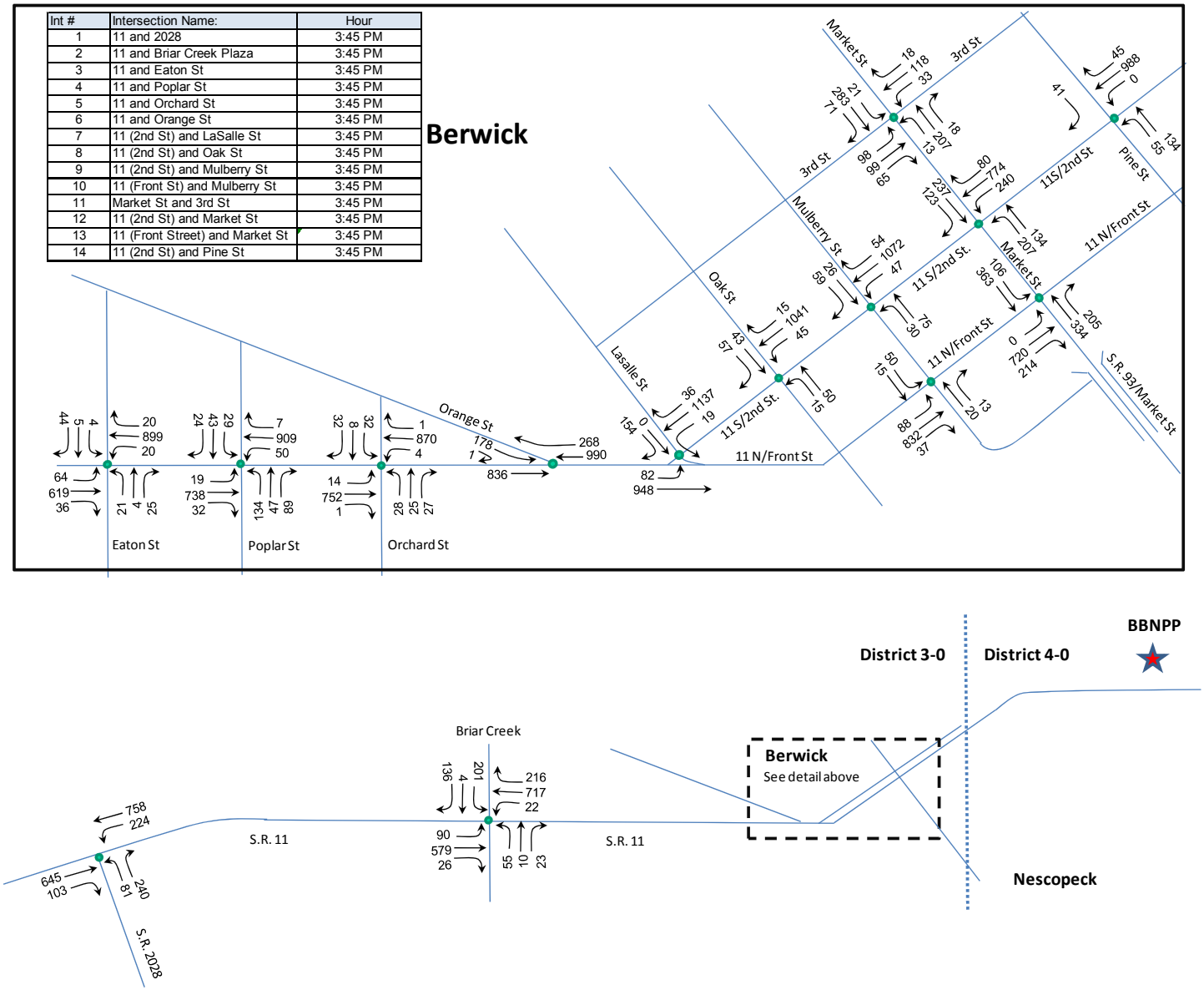

Figure G-2 – Future No-Build, 2022 (with Outage) PM Peak Hour Volumes

Controlled Document

Int #	Intersection:	Hour
15	93 (3rd St) and 339 (Broad St)	3:45 PM
16	93 (3rd St) and Dewey St	3:45 PM
17	11 and Bell Bend Entrance	
18	11 and SSES Entrance	4:45 PM
19	11 and 239	3:30 PM
20	11 and 239 (Union St)	4:30 PM
21	11 and 29 (Mill St)	4:30 PM
22	11 and County Bridge	4:30 PM
23	11 (E. Poplar St) and 29	4:30 PM

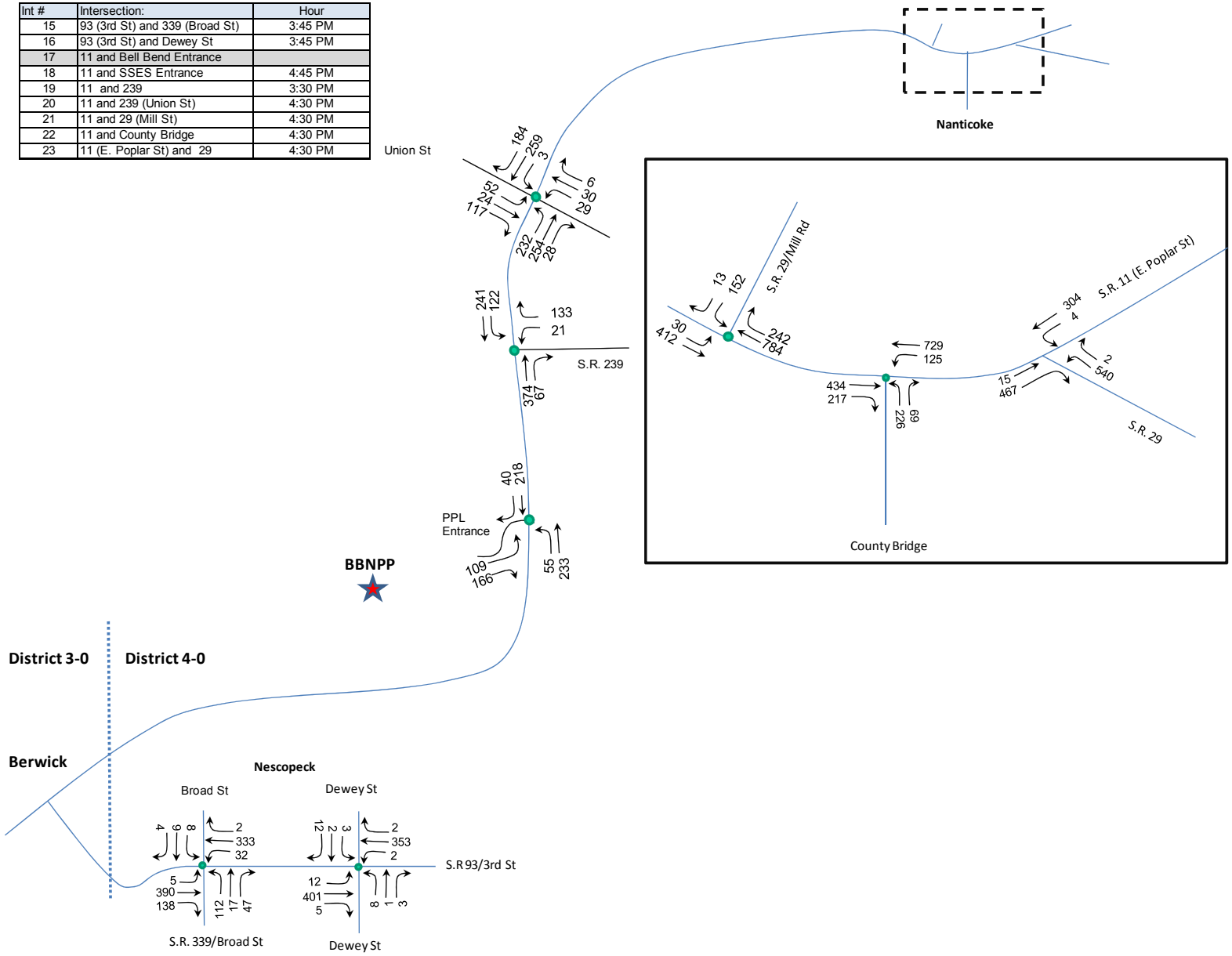

Figure G-2 – Future No-Build, 2022 (with Outage) PM Peak Hour Volumes

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and S.R. 2028
Scenario: 2021, No-Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	133	803	17%	60	2.2	150	125	75	225	225	165
SBL	PM	237	1305	18%	60	4.0	175	125	75	250	250	165
Speed (MPH)	45			>10%		Condition:	B or C*					
WBL	AM	127	323	39%	60	2.1	150	#N/A	#N/A	#N/A	150	275
WBL	PM	103	353	29%	60	1.7	100	#N/A	#N/A	#N/A	100	275
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and Briar Creek Plaza Driveways
Scenario: 2021, No-Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	42	566	7%	45	0.5	75	#N/A	#N/A	#N/A	75	175
NBL	PM	110	893	12%	80	2.5	150	#N/A	#N/A	#N/A	150	175
Speed (MPH)	35			>10%		Condition:	A					
SBL	AM	43	528	8%	45	0.5	75	#N/A	#N/A	#N/A	75	135
SBL	PM	22	814	3%	80	0.5	75	#N/A	#N/A	#N/A	75	135
Speed (MPH)	35			<=10%		Condition:	A					
EBL	AM	56	100	56%	45	0.7	75	#N/A	#N/A	#N/A	75	175
EBL	PM	210	327	64%	80	4.7	200	#N/A	#N/A	#N/A	200	175
Speed (MPH)	30			>10%		Condition:	A					
WBL	AM	46	59	79%	45	0.6	75	#N/A	#N/A	#N/A	75	75
WBL	PM	56	86	65%	80	1.2	100	#N/A	#N/A	#N/A	100	75
Speed (MPH)	30			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Eaton Street
Scenario: 2021, No-Build
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	25	525	5%	60	0.4	75	#N/A	#N/A	#N/A	75	150
NBL	PM	66	844	8%	60	1.1	100	#N/A	#N/A	#N/A	100	150
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	14	619	2%	60	0.2	75	#N/A	#N/A	#N/A	75	150
SBL	PM	65	756	9%	60	1.1	100	#N/A	#N/A	#N/A	100	150
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Poplar Street
Scenario: 2021, No-Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	0	0	#DIV/0!	75	0.0	75	#N/A	#N/A	#N/A	75	75
NBL	PM	23	777	3%	90	0.6	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	58	636	9%	75	1.2	100	#N/A	#N/A	#N/A	100	105
SBL	PM	77	804	10%	90	1.9	100	#N/A	#N/A	#N/A	100	105
Speed (MPH)	35			<=10%		Condition:	A					
WBL	AM	68	110	61%	75	1.4	100	#N/A	#N/A	#N/A	100	250
WBL	PM	140	275	51%	90	3.5	175	#N/A	#N/A	#N/A	175	250
Speed (MPH)	30			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Orchard Street
Scenario: 2021, No-Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	12	552	2%	75	0.3	75	#N/A	#N/A	#N/A	75	75
NBL	PM	16	795	2%	90	0.4	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	9	638	1%	75	0.2	75	#N/A	#N/A	#N/A	75	75
SBL	PM	10	733	1%	90	0.3	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and LaSalle Street
Scenario: 2021, No-Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	60	517	12%	65	1.1	100	#N/A	#N/A	#N/A	100	100
NBL	PM	94	1071	9%	90	2.4	150	#N/A	#N/A	#N/A	150	100
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	11	670	2%	65	0.2	75	#N/A	#N/A	#N/A	75	100
SBL	PM	20	1036	2%	90	0.5	75	#N/A	#N/A	#N/A	75	100
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 1025 (Market Street) and Third Street
Scenario: 2021, No-Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
EBL	AM	14	315	5%	60	0.2	75	#N/A	#N/A	#N/A	75	90
EBL	PM	25	384	7%	60	0.4	75	#N/A	#N/A	#N/A	75	90
Speed (MPH)	25			<=10%		Condition:	A					
WBL	AM	41	189	22%	60	0.7	75	#N/A	#N/A	#N/A	75	175
WBL	PM	29	237	12%	60	0.5	75	#N/A	#N/A	#N/A	75	175
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and Market Street
Scenario: 2021, No-Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	155	781	20%	60	2.6	150	#N/A	#N/A	#N/A	150	100
SBL	PM	233	963	24%	60	3.9	175	#N/A	#N/A	#N/A	175	100
Speed (MPH)	35			>10%		Condition:	A					
WBL	AM	241	354	68%	60	4.0	200	#N/A	#N/A	#N/A	200	170
WBL	PM	263	377	70%	60	4.4	200	#N/A	#N/A	#N/A	200	170
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and Pine Street
Scenario: 2021, No-Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
WBL	AM	26	100	26%	60	0.4	75	#N/A	#N/A	#N/A	75	175
WBL	PM	67	213	31%	60	1.1	100	#N/A	#N/A	#N/A	100	175
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and SSES Site Entrance
Scenario: 2021, No-Build
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	220	396	55%	90	5.5	250	235	114	364	364	200
NBL	PM	42	555	8%	90	1.1	100	235	114	214	235	200
Speed (MPH)	55			>10%		Condition:	B or C*					
EBL	AM	31	111	28%	90	0.8	75	#N/A	#N/A	#N/A	75	450
EBL	PM	85	183	46%	90	2.1	150	#N/A	#N/A	#N/A	150	450
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Main Street) and S.R. 239 (Union Street)
Scenario: 2021, No-Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	87	289	30%	55	1.3	100	#N/A	#N/A	#N/A	100	150
NBL	PM	224	487	46%	60	3.7	175	#N/A	#N/A	#N/A	175	150
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and S.R. 29 (Mill Street)
Scenario: 2021, No-Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	40	891	4%	80	0.9	75	#N/A	#N/A	#N/A	75	100
NBL	PM	32	445	7%	90	0.8	75	#N/A	#N/A	#N/A	75	100
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and County Bridge
Scenario: 2021, No-Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	96	403	24%	100	2.7	150	#N/A	#N/A	#N/A	150	200
SBL	PM	133	832	16%	70	2.6	150	#N/A	#N/A	#N/A	150	200
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (E. Poplar Street) and S.R. 29
Scenario: 2021, No-Build
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	37	888	4%	90	0.9	75	#N/A	#N/A	#N/A	75	300
NBL	PM	22	505	4%	90	0.6	75	#N/A	#N/A	#N/A	75	300
Speed (MPH)	35			<=10%		Condition:	A					
WBL	AM	231	238	97%	90	5.8	250	#N/A	#N/A	#N/A	250	300
WBL	PM	569	569	100%	90	14.2	525	#N/A	#N/A	#N/A	525	300
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and S.R. 2028
Scenario: 2022, No-Build, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	133	818	16%	60	2.2	150	125	75	225	225	165
SBL	PM	238	1536	15%	60	4.0	175	125	75	250	250	165
Speed (MPH)	45			>10%		Condition:	B or C*					
WBL	AM	128	323	39%	60	2.1	150	#N/A	#N/A	#N/A	150	275
WBL	PM	103	353	29%	60	1.7	100	#N/A	#N/A	#N/A	100	275
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and Briar Creek Plaza Driveways
Scenario: 2022, No-Build, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	42	647	6%	45	0.5	75	#N/A	#N/A	#N/A	75	175
NBL	PM	111	914	12%	80	2.5	150	#N/A	#N/A	#N/A	150	175
Speed (MPH)	35			>10%		Condition:	A					
SBL	AM	43	543	8%	45	0.5	75	#N/A	#N/A	#N/A	75	135
SBL	PM	22	1103	2%	80	0.5	75	#N/A	#N/A	#N/A	75	135
Speed (MPH)	35			<=10%		Condition:	A					
EBL	AM	56	100	56%	45	0.7	75	#N/A	#N/A	#N/A	75	175
EBL	PM	210	328	64%	80	4.7	200	#N/A	#N/A	#N/A	200	175
Speed (MPH)	30			>10%		Condition:	A					
WBL	AM	46	59	79%	45	0.6	75	#N/A	#N/A	#N/A	75	75
WBL	PM	56	87	65%	80	1.2	100	#N/A	#N/A	#N/A	100	75
Speed (MPH)	30			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Eaton Street
Scenario: 2022, No-Build, with Outage
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	25	605	4%	60	0.4	75	#N/A	#N/A	#N/A	75	150
NBL	PM	66	850	8%	60	1.1	100	#N/A	#N/A	#N/A	100	150
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	14	601	2%	60	0.2	75	#N/A	#N/A	#N/A	75	150
SBL	PM	65	799	8%	60	1.1	100	#N/A	#N/A	#N/A	100	150
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Poplar Street
Scenario: 2022, No-Build, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	0	143	0%	75	0.0	75	#N/A	#N/A	#N/A	75	75
NBL	PM	23	785	3%	90	0.6	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	58	655	9%	75	1.2	100	#N/A	#N/A	#N/A	100	105
SBL	PM	77	1152	7%	90	1.9	100	#N/A	#N/A	#N/A	100	105
Speed (MPH)	35			<=10%		Condition:	A					
WBL	AM	68	111	61%	75	1.4	100	#N/A	#N/A	#N/A	100	250
WBL	PM	141	276	51%	90	3.5	175	#N/A	#N/A	#N/A	175	250
Speed (MPH)	30			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Orchard Street
Scenario: 2022, No-Build, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	12	602	2%	75	0.3	75	#N/A	#N/A	#N/A	75	75
NBL	PM	16	802	2%	90	0.4	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	9	660	1%	75	0.2	75	#N/A	#N/A	#N/A	75	75
SBL	PM	10	827	1%	90	0.3	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and LaSalle Street
Scenario: 2022, No-Build, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	60	839	7%	65	1.1	100	#N/A	#N/A	#N/A	100	100
NBL	PM	94	1088	9%	90	2.4	150	#N/A	#N/A	#N/A	150	100
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	11	690	2%	65	0.2	75	#N/A	#N/A	#N/A	75	100
SBL	PM	20	1130	2%	90	0.5	75	#N/A	#N/A	#N/A	75	100
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 1025 (Market Street) and Third Street
Scenario: 2022, No-Build, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
EBL	AM	14	316	5%	60	0.2	75	#N/A	#N/A	#N/A	75	90
EBL	PM	25	385	7%	60	0.4	75	#N/A	#N/A	#N/A	75	90
Speed (MPH)	25			<=10%		Condition:	A					
WBL	AM	41	190	22%	60	0.7	75	#N/A	#N/A	#N/A	75	175
WBL	PM	29	237	12%	60	0.5	75	#N/A	#N/A	#N/A	75	175
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and Market Street
Scenario: 2022, No-Build, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	158	802	20%	60	2.6	150	#N/A	#N/A	#N/A	150	100
SBL	PM	281	1357	21%	60	4.7	200	#N/A	#N/A	#N/A	200	100
Speed (MPH)	35			>10%		Condition:	A					
WBL	AM	241	355	68%	60	4.0	200	#N/A	#N/A	#N/A	200	170
WBL	PM	264	378	70%	60	4.4	200	#N/A	#N/A	#N/A	200	170
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and Pine Street
Scenario: 2022, No-Build, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
WBL	AM	26	100	26%	60	0.4	75	#N/A	#N/A	#N/A	75	175
WBL	PM	67	214	31%	60	1.1	100	#N/A	#N/A	#N/A	100	175
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and SSES Site Entrance
Scenario: 2022, No-Build, with Outage
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	686	863	80%	90	17.2	625	235	114	739	739	200
NBL	PM	69	582	12%	90	1.7	100	235	114	214	235	200
Speed (MPH)	55			>10%		Condition:	B or C*					
EBL	AM	55	199	27%	90	1.4	100	#N/A	#N/A	#N/A	100	450
EBL	PM	204	714	29%	90	5.1	250	#N/A	#N/A	#N/A	250	450
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Main Street) and S.R. 239 (Union Street)
Scenario: 2022, No-Build, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	90	295	30%	55	1.4	100	#N/A	#N/A	#N/A	100	150
NBL	PM	246	591	42%	60	4.1	200	#N/A	#N/A	#N/A	200	150
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and S.R. 29 (Mill Street)
Scenario: 2022, No-Build, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	40	897	4%	80	0.9	75	#N/A	#N/A	#N/A	75	100
NBL	PM	32	460	7%	90	0.8	75	#N/A	#N/A	#N/A	75	100
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and County Bridge
Scenario: 2022, No-Build, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	96	418	23%	100	2.7	150	#N/A	#N/A	#N/A	150	200
SBL	PM	133	839	16%	70	2.6	150	#N/A	#N/A	#N/A	150	200
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (E. Poplar Street) and S.R. 29
Scenario: 2022, No-Build, with Outage
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	38	894	4%	90	1.0	75	#N/A	#N/A	#N/A	75	300
NBL	PM	44	581	8%	90	1.1	100	#N/A	#N/A	#N/A	100	300
Speed (MPH)	35			<=10%		Condition:	A					
WBL	AM	245	252	97%	90	6.1	275	#N/A	#N/A	#N/A	275	300
WBL	PM	571	571	100%	90	14.3	525	#N/A	#N/A	#N/A	525	300
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C
Agency/Co.:
Date Performed:
Analysis Time Period: 7:30 AM
Intersection: S.R. 11 and Eaton St.
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2021
Project ID: 2021, No-Build, AM
East/West Street: Eaton St.
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	19	446	31	14	546	11
Peak-Hour Factor, PHF	0.85	0.95	0.64	0.65	1.00	0.50
Hourly Flow Rate, HFR	22	469	48	21	546	22
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	TWLTL			/ 9		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	9	4	4	3	5	46
Peak Hour Factor, PHF	0.50	0.50	0.50	0.75	0.42	0.70
Hourly Flow Rate, HFR	18	8	8	4	11	65
Percent Heavy Vehicles	25	0	0	0	0	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0	1	0	0	1	1
Configuration		LTR		LT	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR		LT		R
v (vph)	22	21		34		15		65
C(m) (vph)	1014	1059		397		449		524
v/c	0.02	0.02		0.09		0.03		0.12
95% queue length	0.07	0.06		0.28		0.10		0.42
Control Delay	8.6	8.5		14.9		13.3		12.8
LOS	A	A		B		B		B
Approach Delay				14.9			12.9	
Approach LOS				B			B	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C
Agency/Co.:
Date Performed:
Analysis Time Period: 3:45 PM
Intersection: S.R. 11 and Eaton St.
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2021
Project ID: 2021, No-Build, PM
East/West Street: Eaton St.
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	64	612	36	20	728	20
Peak-Hour Factor, PHF	0.85	0.90	0.69	0.64	1.00	0.75
Hourly Flow Rate, HFR	75	680	52	31	728	26
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	TWLTL			/ 9		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	21	4	25	4	5	44
Peak Hour Factor, PHF	0.68	0.50	0.41	1.00	0.63	0.71
Hourly Flow Rate, HFR	30	8	60	4	7	61
Percent Heavy Vehicles	5	0	0	25	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0	1	0	0	1	1
Configuration		LTR		LT	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR		LT		R
v (vph)	75	31		98		11		61
C(m) (vph)	865	882		321		255		420
v/c	0.09	0.04		0.31		0.04		0.15
95% queue length	0.28	0.11		1.26		0.13		0.50
Control Delay	9.6	9.2		21.1		19.8		15.0+
LOS	A	A		C		C		C
Approach Delay				21.1			15.7	
Approach LOS				C			C	

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HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 6:00 AM
Intersection: S.R. 11 and SSES Entrance
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2021
Project ID: 2021, No-Build, AM
East/West Street: SSES Entrance
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	220	154			146	149
Peak-Hour Factor, PHF	0.87	0.85			0.79	0.78
Hourly Flow Rate, HFR	252	181			184	191
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						No
Lanes	1	1			1	1
Configuration	L	T			T	R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				31		80
Peak Hour Factor, PHF				0.60		0.56
Hourly Flow Rate, HFR				51		142
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1	1	
Configuration				L	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	252					51		142
C(m) (vph)	1195					256		864
v/c	0.21					0.20		0.16
95% queue length	0.80					0.73		0.59
Control Delay	8.8					22.5		10.0-
LOS	A					C		A
Approach Delay							13.3	
Approach LOS							B	

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HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed: 5/31/2010
Analysis Time Period: 4:45 PM
Intersection: S.R. 11 and SSES Entrance
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2021
Project ID: 2021, No-Build, PM
East/West Street: SSES Entrance
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	33	233			217	32
Peak-Hour Factor, PHF	0.69	0.79			0.92	1.00
Hourly Flow Rate, HFR	47	294			235	32
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						No
Lanes	1	1			1	1
Configuration	L	T			T	R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				85		98
Peak Hour Factor, PHF				0.79		0.79
Hourly Flow Rate, HFR				107		124
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1	1	
Configuration				L	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	47					107		124
C(m) (vph)	1308					437		809
v/c	0.04					0.24		0.15
95% queue length	0.11					0.95		0.54
Control Delay	7.9					15.9		10.3
LOS	A					C		B
Approach Delay							12.9	
Approach LOS							B	

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HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 7:00 AM
Intersection: S.R. 11 and S.R. 29
Jurisdiction: Nanticoke, PA
Units: U. S. Customary
Analysis Year: 2021
Project ID: 2021, No-Build, AM
East/West Street: S.R. 29
North/South Street: S.R. 11 (Poplar St.)
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume					165	
Peak-Hour Factor, PHF					0.79	
Hourly Flow Rate, HFR					208	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes					1	
Configuration					T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume			34	222		
Peak Hour Factor, PHF			0.57	0.79		
Hourly Flow Rate, HFR			59	281		
Percent Heavy Vehicles			0	3		
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes		1		1		
Configuration		R		L		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config					R	L		
v (vph)					59	281		
C(m) (vph)					1091	675		
v/c					0.05	0.42		
95% queue length					0.17	2.05		
Control Delay					8.5	14.1		
LOS					A	B		
Approach Delay				8.5			14.1	
Approach LOS				A			B	

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HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 4:30 PM
Intersection: S.R. 11 and S.R. 29
Jurisdiction: Nanticoke, PA
Units: U. S. Customary
Analysis Year: 2021
Project ID: 2021, No-Build, PM
East/West Street: S.R. 29
North/South Street: S.R. 11 (Poplar St.)
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume					302	
Peak-Hour Factor, PHF					0.90	
Hourly Flow Rate, HFR					335	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes					1	
Configuration					T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume			9	537		
Peak Hour Factor, PHF			0.56	0.87		
Hourly Flow Rate, HFR			16	617		
Percent Heavy Vehicles			0	0		
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes		1		1		
Configuration		R		L		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config					R	L		
v (vph)					16	617		
C(m) (vph)					1091	606		
v/c					0.01	1.02		
95% queue length					0.04	15.91		
Control Delay					8.3	67.4		
LOS					A	F		
Approach Delay				8.3			67.4	
Approach LOS				A			F	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C
Agency/Co.:
Date Performed:
Analysis Time Period: 7:30 AM
Intersection: S.R. 11 and Eaton St.
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2022
Project ID: 2022, No-Build, with Outage, AM
East/West Street: Eaton St.
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	19	506	31	14	564	11
Peak-Hour Factor, PHF	0.85	0.92	0.64	0.65	0.93	0.50
Hourly Flow Rate, HFR	22	549	48	21	606	22
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	TWLTL			/ 9		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	9	4	4	3	5	46
Peak Hour Factor, PHF	0.50	0.50	0.50	0.75	0.42	0.70
Hourly Flow Rate, HFR	18	8	8	4	11	65
Percent Heavy Vehicles	25	0	0	0	0	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0	1	0	0	1	1
Configuration		LTR		LT	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR		LT		R
v (vph)	22	21		34		15		65
C(m) (vph)	964	989		361		412		484
v/c	0.02	0.02		0.09		0.04		0.13
95% queue length	0.07	0.07		0.31		0.11		0.46
Control Delay	8.8	8.7		16.0		14.1		13.6
LOS	A	A		C		B		B
Approach Delay				16.0			13.7	
Approach LOS				C			B	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C
Agency/Co.:
Date Performed:
Analysis Time Period: 3:45 PM
Intersection: S.R. 11 and Eaton St.
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2022
Project ID: 2022, No-Build, with Outage, PM
East/West Street: Eaton St.
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	64	619	36	20	899	20
Peak-Hour Factor, PHF	0.85	0.90	0.69	0.64	0.86	0.75
Hourly Flow Rate, HFR	75	687	52	31	1045	26
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	TWLTL			/ 9		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	21	4	25	4	5	44
Peak Hour Factor, PHF	0.68	0.50	0.41	1.00	0.63	0.71
Hourly Flow Rate, HFR	30	8	60	4	7	61
Percent Heavy Vehicles	5	0	0	25	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0	1	0	0	1	1
Configuration		LTR		LT	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR		LT		R
v (vph)	75	31		98		11		61
C(m) (vph)	658	876		202		226		276
v/c	0.11	0.04		0.49		0.05		0.22
95% queue length	0.38	0.11		2.39		0.15		0.83
Control Delay	11.2	9.3		38.5		21.7		21.7
LOS	B	A		E		C		C
Approach Delay				38.5			21.7	
Approach LOS				E			C	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 7:00 AM
Intersection: S.R. 11 and SSES Entrance
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2022
Project ID: 2022, No-Build, with Outage, AM
East/West Street: SSES Entrance
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	686	155			146	318
Peak-Hour Factor, PHF	0.96	0.85			0.79	1.00
Hourly Flow Rate, HFR	714	182			184	318
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						No
Lanes	1	1			1	1
Configuration	L	T			T	R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				55		145
Peak Hour Factor, PHF				0.72		0.69
Hourly Flow Rate, HFR				76		210
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	714					76		210
C(m) (vph)	1073					30		864
v/c	0.67					2.53		0.24
95% queue length	5.33					8.94		0.95
Control Delay	14.8					975.8		10.5
LOS	B					F		B
Approach Delay							267.0	
Approach LOS							F	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed: 5/31/2010
Analysis Time Period: 4:45 PM
Intersection: S.R. 11 and SSES Entrance
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2022
Project ID: 2022, No-Build, with Outage, PM
East/West Street: SSES Entrance
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	55	233			218	40
Peak-Hour Factor, PHF	0.73	0.79			0.92	1.00
Hourly Flow Rate, HFR	75	294			236	40
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						No
Lanes	1	1			1	1
Configuration	L	T			T	R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				109		166
Peak Hour Factor, PHF				0.87		0.80
Hourly Flow Rate, HFR				125		207
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1	1	
Configuration				L	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	75					125		207
C(m) (vph)	1299					396		808
v/c	0.06					0.32		0.26
95% queue length	0.18					1.33		1.02
Control Delay	7.9					18.2		11.0
LOS	A					C		B
Approach Delay							13.7	
Approach LOS							B	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 7:00 AM
Intersection: S.R. 11 and S.R. 29
Jurisdiction: Nanticoke, PA
Units: U. S. Customary
Analysis Year: 2022
Project ID: 2022, No-Build, with Outage, AM
East/West Street: S.R. 29
North/South Street: S.R. 11 (Poplar St.)
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume					171	
Peak-Hour Factor, PHF					0.79	
Hourly Flow Rate, HFR					216	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes					1	
Configuration					T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume			35	235		
Peak Hour Factor, PHF			0.58	0.80		
Hourly Flow Rate, HFR			60	293		
Percent Heavy Vehicles			0	3		
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes		1		1		
Configuration		R		L		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config					R	L		
v (vph)					60	293		
C(m) (vph)					1091	667		
v/c					0.05	0.44		
95% queue length					0.17	2.24		
Control Delay					8.5	14.6		
LOS					A	B		
Approach Delay				8.5			14.6	
Approach LOS				A			B	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 4:30 PM
Intersection: S.R. 11 and S.R. 29
Jurisdiction: Nanticoke, PA
Units: U. S. Customary
Analysis Year: 2022
Project ID: 2022, No-Build, with Outage, PM
East/West Street: S.R. 29
North/South Street: S.R. 11 (Poplar St.)
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume					304	
Peak-Hour Factor, PHF					0.90	
Hourly Flow Rate, HFR					337	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes					1	
Configuration					T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume			15	540		
Peak Hour Factor, PHF			0.60	0.87		
Hourly Flow Rate, HFR			24	620		
Percent Heavy Vehicles			0	0		
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes		1		1		
Configuration		R		L		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config					R	L		
v (vph)					24	620		
C(m) (vph)					1091	596		
v/c					0.02	1.04		
95% queue length					0.07	16.82		
Control Delay					8.4	74.0		
LOS					A	F		
Approach Delay				8.4			74.0	
Approach LOS				A			F	

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	1	1	1	1	0	0	0	0	1	2	1
Volume (vph)	0	133	96	219	115	0	0	0	0	145	553	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00					1.00	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		1792	1599	1787	1863					1736	3539	1615
Flt Permitted		1.00	1.00	0.66	1.00					0.95	1.00	1.00
Satd. Flow (perm)		1792	1599	1247	1863					1736	3539	1615
Peak-hour factor, PHF	1.00	0.90	0.88	0.82	0.70	1.00	1.00	1.00	1.00	0.83	0.78	0.80
Adj. Flow (vph)	0	148	109	267	164	0	0	0	0	175	709	65
RTOR Reduction (vph)	0	0	79	0	0	0	0	0	0	0	0	41
Lane Group Flow (vph)	0	148	30	267	164	0	0	0	0	175	709	24
Heavy Vehicles (%)	0%	6%	1%	1%	2%	0%	0%	0%	0%	4%	2%	0%
Turn Type			Perm	pm+pt						Split		Prot
Protected Phases		4		3	8					2	2	2
Permitted Phases			4	8								
Actuated Green, G (s)		16.5	16.5	30.0	28.5					22.0	22.0	22.0
Effective Green, g (s)		16.5	16.5	30.0	28.5					22.0	22.0	22.0
Actuated g/C Ratio		0.28	0.28	0.50	0.48					0.37	0.37	0.37
Clearance Time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Grp Cap (vph)		493	440	705	885					637	1298	592
v/s Ratio Prot		0.08		c0.06	0.09					0.10	c0.20	0.01
v/s Ratio Perm			0.02	c0.13								
v/c Ratio		0.30	0.07	0.38	0.19					0.27	0.55	0.04
Uniform Delay, d1		17.2	16.1	9.5	9.1					13.4	15.0	12.2
Progression Factor		0.75	0.45	0.02	0.02					0.79	0.80	0.65
Incremental Delay, d2		1.5	0.3	1.2	0.4					1.0	1.6	0.1
Delay (s)		14.3	7.5	1.4	0.5					11.6	13.6	8.1
Level of Service		B	A	A	A					B	B	A
Approach Delay (s)		11.4			1.0			0.0			12.8	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	2>	0	0	0	0	0	1	1	1	1	0
Volume (vph)	0	494	133	0	0	0	0	331	212	40	230	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			1%	
Total Lost time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Util. Factor		0.95						1.00	1.00	1.00	1.00	
Frt		0.97						1.00	0.85	1.00	1.00	
Flt Protected		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3408						1872	1607	1633	1835	
Flt Permitted		1.00						1.00	1.00	0.36	1.00	
Satd. Flow (perm)		3408						1872	1607	615	1835	
Peak-hour factor, PHF	1.00	0.91	0.87	1.00	1.00	1.00	1.00	0.78	0.66	0.77	0.80	1.00
Adj. Flow (vph)	0	543	153	0	0	0	0	424	321	52	288	0
RTOR Reduction (vph)	0	43	0	0	0	0	0	0	146	0	0	0
Lane Group Flow (vph)	0	653	0	0	0	0	0	424	175	52	288	0
Heavy Vehicles (%)	0%	2%	4%	0%	0%	0%	0%	2%	1%	10%	3%	0%
Turn Type									Perm	D.P+P		
Protected Phases		1						3		2	4	
Permitted Phases									3	3		
Actuated Green, G (s)		22.0						22.0	22.0	25.0	28.0	
Effective Green, g (s)		22.0						22.0	22.0	25.0	28.0	
Actuated g/C Ratio		0.37						0.37	0.37	0.42	0.47	
Clearance Time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		1250						686	589	307	856	
v/s Ratio Prot		c0.19						c0.23		0.01	c0.16	
v/s Ratio Perm									0.11	0.06		
v/c Ratio		0.52						0.62	0.30	0.17	0.34	
Uniform Delay, d1		14.9						15.6	13.5	10.9	10.1	
Progression Factor		0.74						1.00	1.00	0.67	0.64	
Incremental Delay, d2		1.5						4.1	1.3	1.2	1.0	
Delay (s)		12.5						19.7	14.8	8.5	7.5	
Level of Service		B						B	B	A	A	
Approach Delay (s)		12.5			0.0			17.6			7.7	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	45	71	134	10	62	283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Total Lost time (s)	5.2		5.4	5.4	5.4	5.4
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.93		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1683		1845	1615	1761	1854
Flt Permitted	0.98		1.00	1.00	0.49	1.00
Satd. Flow (perm)	1683		1845	1615	913	1854
Peak-hour factor, PHF	0.57	0.85	0.86	0.62	0.74	0.78
Adj. Flow (vph)	79	84	156	16	84	363
RTOR Reduction (vph)	74	0	0	9	0	0
Lane Group Flow (vph)	89	0	156	7	84	363
Heavy Vehicles (%)	0%	5%	3%	0%	3%	3%
Turn Type				Perm	pm+pt	
Protected Phases	4		6		5	2
Permitted Phases				6	2	
Actuated Green, G (s)	4.6		16.1	16.1	24.3	24.3
Effective Green, g (s)	4.6		16.1	16.1	24.3	24.3
Actuated g/C Ratio	0.12		0.41	0.41	0.62	0.62
Clearance Time (s)	5.2		5.4	5.4	5.4	5.4
Vehicle Extension (s)	5.0		5.0	5.0	3.0	5.0
Lane Grp Cap (vph)	196		752	658	622	1141
v/s Ratio Prot	c0.05		0.08		0.01	c0.20
v/s Ratio Perm				0.00	0.07	
v/c Ratio	0.45		0.21	0.01	0.14	0.32
Uniform Delay, d1	16.3		7.6	7.0	3.5	3.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	3.4		0.3	0.0	0.1	0.3
Delay (s)	19.7		7.9	7.0	3.6	4.0
Level of Service	B		A	A	A	A
Approach Delay (s)	19.7		7.8			3.9
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	39.5	Sum of lost time (s)	10.6
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	0	<1>	0
Volume (vph)	155	26	101	12	14	2	67	239	12	2	177	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			1%	
Total Lost time (s)		5.0			5.0		5.0	5.0			5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.95			0.97		1.00	0.99			0.96	
Flt Protected		0.97			0.98		0.95	1.00			1.00	
Satd. Flow (prot)		1544			1545		1616	1623			1473	
Flt Permitted		0.81			0.83		0.42	1.00			0.99	
Satd. Flow (perm)		1284			1313		718	1623			1458	
Peak-hour factor, PHF	0.92	0.69	0.96	0.75	0.88	0.25	0.64	0.83	0.60	0.25	0.89	0.52
Adj. Flow (vph)	168	38	105	16	16	8	105	288	20	8	199	96
RTOR Reduction (vph)	0	35	0	0	6	0	0	5	0	0	30	0
Lane Group Flow (vph)	0	276	0	0	34	0	105	303	0	0	273	0
Heavy Vehicles (%)	2%	8%	1%	0%	14%	0%	0%	3%	16%	0%	11%	10%
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		14.1			14.1		22.7	22.7			15.6	
Effective Green, g (s)		14.1			14.1		22.7	22.7			15.6	
Actuated g/C Ratio		0.30			0.30		0.49	0.49			0.33	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		387			396		389	787			486	
v/s Ratio Prot							0.01	c0.19				
v/s Ratio Perm		c0.22			0.03		0.12				c0.19	
v/c Ratio		0.71			0.09		0.27	0.39			0.56	
Uniform Delay, d1		14.6			11.7		7.6	7.6			12.8	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		6.1			0.1		0.4	0.3			1.5	
Delay (s)		20.7			11.8		8.0	7.9			14.3	
Level of Service		C			B		A	A			B	
Approach Delay (s)		20.7			11.8			8.0			14.3	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	46.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	0	<1	1	0	<1>	0
Volume (vph)	0	433	25	37	567	0	51	0	25	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		3.0	5.0			4.0	4.0			
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00			
Frpb, ped/bikes		1.00		1.00	1.00			1.00	1.00			
Flpb, ped/bikes		1.00		1.00	1.00			0.99	1.00			
Frt		0.99		1.00	1.00			1.00	0.85			
Flt Protected		1.00		0.95	1.00			0.95	1.00			
Satd. Flow (prot)		1787		1626	1845			1693	1335			
Flt Permitted		1.00		0.95	1.00			0.76	1.00			
Satd. Flow (perm)		1787		1626	1845			1350	1335			
Peak-hour factor, PHF	1.00	0.85	0.64	0.71	0.88	1.00	0.57	1.00	0.64	1.00	1.00	1.00
Adj. Flow (vph)	0	509	39	52	644	0	89	0	39	0	0	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	544	0	52	644	0	0	89	39	0	0	0
Confl. Peds. (#/hr)							3					
Heavy Vehicles (%)	0%	5%	8%	11%	3%	0%	6%	0%	21%	0%	0%	0%
Turn Type	Perm			Prot			Perm		Perm	Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2						8		8	4		
Actuated Green, G (s)		27.0		16.0	46.0			20.0	20.0			
Effective Green, g (s)		27.0		16.0	46.0			20.0	20.0			
Actuated g/C Ratio		0.36		0.21	0.61			0.27	0.27			
Clearance Time (s)		5.0		3.0	5.0			4.0	4.0			
Lane Grp Cap (vph)		643		347	1132			360	356			
v/s Ratio Prot		c0.30		0.03	c0.35							
v/s Ratio Perm								c0.07	0.03			
v/c Ratio		0.85		0.15	0.57			0.25	0.11			
Uniform Delay, d1		22.1		24.0	8.6			21.6	20.8			
Progression Factor		1.00		0.64	0.62			1.00	1.00			
Incremental Delay, d2		13.0		0.7	1.6			1.6	0.6			
Delay (s)		35.1		16.1	6.9			23.2	21.4			
Level of Service		D		B	A			C	C			
Approach Delay (s)		35.1			7.6			22.7			0.0	
Approach LOS		D			A			C			A	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	1	1	0	1	0
Volume (vph)	0	435	611	0	84	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		-1%	0%		0%	
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1801	1845		1787	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1801	1845		1787	
Peak-hour factor, PHF	1.00	0.89	0.84	0.93	0.68	1.00
Adj. Flow (vph)	0	489	727	0	124	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	489	727	0	124	0
Heavy Vehicles (%)	0%	6%	3%	2%	1%	0%
Turn Type						
Protected Phases		2	6		8	
Permitted Phases						
Actuated Green, G (s)		54.0	54.0		13.0	
Effective Green, g (s)		54.0	54.0		13.0	
Actuated g/C Ratio		0.72	0.72		0.17	
Clearance Time (s)		4.0	4.0		4.0	
Lane Grp Cap (vph)		1297	1328		310	
v/s Ratio Prot		0.27	c0.39		c0.07	
v/s Ratio Perm						
v/c Ratio		0.38	0.55		0.40	
Uniform Delay, d1		4.0	4.9		27.5	
Progression Factor		0.35	0.49		1.00	
Incremental Delay, d2		0.7	1.5		3.8	
Delay (s)		2.1	3.9		31.4	
Level of Service		A	A		C	
Approach Delay (s)		2.1	3.9		31.4	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations	1	0	0	1	2>	0	0	1	0	0
Volume (vph)	49	0	0	9	641	22	0	67	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0			4.0		
Lane Util. Factor	1.00			1.00	0.95			1.00		
Frt	1.00			1.00	0.99			0.86		
Flt Protected	0.95			0.95	1.00			1.00		
Satd. Flow (prot)	1805			1805	3517			1627		
Flt Permitted	0.95			0.95	1.00			1.00		
Satd. Flow (perm)	1805			1805	3517			1627		
Peak-hour factor, PHF	0.54	0.90	1.00	0.75	0.84	0.56	1.00	0.76	0.92	0.92
Adj. Flow (vph)	91	0	0	12	763	39	0	88	0	0
RTOR Reduction (vph)	0	0	0	5	5	0	0	59	0	0
Lane Group Flow (vph)	91	0	0	7	797	0	0	29	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	1%	2%	2%
Turn Type	Prot			custom				custom		
Protected Phases	8			1	1			8		
Permitted Phases				1				8		
Actuated Green, G (s)	25.0			42.0	42.0			25.0		
Effective Green, g (s)	25.0			42.0	42.0			25.0		
Actuated g/C Ratio	0.33			0.56	0.56			0.33		
Clearance Time (s)	4.0			4.0	4.0			4.0		
Lane Grp Cap (vph)	602			1011	1970			542		
v/s Ratio Prot	c0.05			0.00	c0.23			0.02		
v/s Ratio Perm										
v/c Ratio	0.15			0.01	0.40			0.05		
Uniform Delay, d1	17.6			7.3	9.4			17.0		
Progression Factor	1.22			1.00	1.00			1.00		
Incremental Delay, d2	0.5			0.0	0.6			0.2		
Delay (s)	21.9			7.3	10.0			17.2		
Level of Service	C			A	B			B		
Approach Delay (s)		21.9			10.0		17.2		0.0	
Approach LOS		C			A		B		A	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	29.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	2>	0	1	1	0	0	0	1
Volume (vph)	0	0	0	0	632	19	26	72	0	0	0	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			1%	
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		1.00	1.00				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					3491		1796	1872				1635
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					3491		1796	1872				1635
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	0.72	0.64	0.67	0.79	1.00	1.00	1.00	0.71
Adj. Flow (vph)	0	0	0	0	878	30	39	91	0	0	0	25
RTOR Reduction (vph)	0	0	0	0	3	0	34	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	905	0	5	91	0	0	0	25
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	1%	0%	0%	0%	0%
Turn Type							Perm					custom
Protected Phases					1			2				
Permitted Phases							2					2
Actuated Green, G (s)					44.8		7.2	7.2				7.2
Effective Green, g (s)					44.8		7.2	7.2				7.2
Actuated g/C Ratio					0.75		0.12	0.12				0.12
Clearance Time (s)					4.0		4.0	4.0				4.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					2607		216	225				196
v/s Ratio Prot					c0.26			c0.05				
v/s Ratio Perm							0.00					0.02
v/c Ratio					0.35		0.02	0.40				0.13
Uniform Delay, d1					2.6		23.3	24.4				23.6
Progression Factor					0.96		1.00	1.00				1.00
Incremental Delay, d2					0.4		0.0	1.2				0.3
Delay (s)					2.9		23.3	25.6				23.9
Level of Service					A		C	C				C
Approach Delay (s)		0.0			2.9			24.9			23.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	0	1	1	0	0	<1>	0	0	<1>	0
Volume (vph)	9	510	1	6	615	3	20	12	5	25	2	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.98			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1805	1796		1805	1842			1815			1768	
Flt Permitted	0.27	1.00		0.39	1.00			0.98			0.97	
Satd. Flow (perm)	514	1796		747	1842			1815			1768	
Peak-hour factor, PHF	0.56	0.92	0.25	0.38	0.82	0.38	0.68	0.46	0.42	0.52	0.25	0.71
Adj. Flow (vph)	16	554	4	16	750	8	29	26	12	48	8	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	10	0	0	21	0
Lane Group Flow (vph)	16	558	0	16	758	0	0	57	0	0	60	0
Heavy Vehicles (%)	0%	5%	100%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Split			Split		
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	49.0	49.0		49.0	49.0			5.0			6.0	
Effective Green, g (s)	49.0	49.0		49.0	49.0			5.0			6.0	
Actuated g/C Ratio	0.65	0.65		0.65	0.65			0.07			0.08	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	336	1173		488	1203			121			141	
v/s Ratio Prot		0.31			c0.41			c0.03			c0.03	
v/s Ratio Perm	0.03			0.02								
v/c Ratio	0.05	0.48		0.03	0.63			0.47			0.42	
Uniform Delay, d1	4.7	6.5		4.6	7.7			33.7			32.9	
Progression Factor	0.05	0.15		0.13	0.10			1.00			1.00	
Incremental Delay, d2	0.2	0.9		0.1	2.2			12.5			9.1	
Delay (s)	0.4	1.8		0.7	3.0			46.2			41.9	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		1.8			2.9			46.2			41.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	24	762	21	7	30	0	0	33	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			1%			-1%	
Total Lost time (s)					6.0			5.0			5.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3536			1660			1684	
Flt Permitted					1.00			0.88			1.00	
Satd. Flow (perm)					3536			1474			1684	
Peak-hour factor, PHF	1.00	1.00	1.00	0.69	0.86	0.83	0.44	0.70	1.00	1.00	0.65	0.88
Adj. Flow (vph)	0	0	0	35	886	25	16	43	0	0	51	43
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	40	0
Lane Group Flow (vph)	0	0	0	0	942	0	0	59	0	0	54	0
Heavy Vehicles (%)	0%	0%	0%	4%	2%	0%	0%	17%	0%	0%	0%	14%
Turn Type				Perm			Perm					
Protected Phases					1			2			2	
Permitted Phases				1			2					
Actuated Green, G (s)					32.8			3.3			3.3	
Effective Green, g (s)					32.8			3.3			3.3	
Actuated g/C Ratio					0.70			0.07			0.07	
Clearance Time (s)					6.0			5.0			5.0	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2462			103			118	
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.27			c0.04				
v/c Ratio					0.38			0.57			0.46	
Uniform Delay, d1					3.0			21.2			21.0	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.1			7.5			2.8	
Delay (s)					3.1			28.7			23.8	
Level of Service					A			C			C	
Approach Delay (s)		0.0			3.1			28.7			23.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	47.1	Sum of lost time (s)	11.0
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	1	1>	0
Volume (vph)	27	63	25	21	85	8	38	144	13	13	202	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.99		1.00	0.98		1.00	0.97	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786			1860		1805	1853		1805	1844	
Flt Permitted		0.91			0.92		0.52	1.00		0.63	1.00	
Satd. Flow (perm)		1647			1739		989	1853		1191	1844	
Peak-hour factor, PHF	0.78	0.91	0.72	0.62	0.78	0.67	0.80	0.77	0.60	0.50	0.76	0.85
Adj. Flow (vph)	35	69	35	34	109	12	48	187	22	26	266	65
RTOR Reduction (vph)	0	20	0	0	5	0	0	7	0	0	14	0
Lane Group Flow (vph)	0	119	0	0	150	0	48	202	0	26	317	0
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2	2		1			1	1	
Actuated Green, G (s)		20.0			20.0		32.0	32.0		32.0	32.0	
Effective Green, g (s)		20.0			20.0		32.0	32.0		32.0	32.0	
Actuated g/C Ratio		0.33			0.33		0.53	0.53		0.53	0.53	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		549			580		527	988		635	983	
v/s Ratio Prot								0.11			c0.17	
v/s Ratio Perm		0.07			c0.09		0.05			0.02		
v/c Ratio		0.22			0.26		0.09	0.20		0.04	0.32	
Uniform Delay, d1		14.4			14.6		6.9	7.3		6.7	7.9	
Progression Factor		1.00			1.00		0.58	0.54		1.00	1.00	
Incremental Delay, d2		0.9			1.1		0.3	0.5		0.1	0.9	
Delay (s)		15.3			15.7		4.3	4.4		6.8	8.8	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		15.3			15.7			4.4			8.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	17	780	21	17	38	0	0	17	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			-4%	
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.90	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3554			1802			1738	
Flt Permitted					1.00			0.91			1.00	
Satd. Flow (perm)					3554			1664			1738	
Peak-hour factor, PHF	1.00	1.00	1.00	0.50	0.78	0.62	0.80	0.73	1.00	1.00	0.67	0.70
Adj. Flow (vph)	0	0	0	34	1000	34	21	52	0	0	25	81
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	63	0
Lane Group Flow (vph)	0	0	0	0	1064	0	0	73	0	0	43	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	12%	0%	0%	0%	0%	0%
Turn Type				Split			Perm					
Protected Phases				1	1			2			2	
Permitted Phases							2					
Actuated Green, G (s)					39.0			13.0			13.0	
Effective Green, g (s)					39.0			13.0			13.0	
Actuated g/C Ratio					0.65			0.22			0.22	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					2310			361			377	
v/s Ratio Prot					c0.30						0.02	
v/s Ratio Perm								c0.04				
v/c Ratio					0.46			0.20			0.11	
Uniform Delay, d1					5.2			19.3			18.9	
Progression Factor					0.37			0.82			1.00	
Incremental Delay, d2					0.6			1.2			0.6	
Delay (s)					2.5			17.0			19.5	
Level of Service					A			B			B	
Approach Delay (s)		0.0			2.5			17.0			19.5	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<2>	0	0	0	0	0	1>	0	0	<1	0
Volume (vph)	47	551	20	0	0	0	0	10	4	22	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			1%			-1%	
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.95			1.00	
Flt Protected		1.00						1.00			0.96	
Satd. Flow (prot)		3428						1693			1828	
Flt Permitted		1.00						1.00			0.80	
Satd. Flow (perm)		3428						1693			1524	
Peak-hour factor, PHF	0.72	0.91	0.68	1.00	1.00	1.00	1.00	0.62	0.50	0.66	0.50	1.00
Adj. Flow (vph)	65	605	29	0	0	0	0	16	8	33	4	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	694	0	0	0	0	0	18	0	0	37	0
Heavy Vehicles (%)	2%	4%	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%
Turn Type	Split									Perm		
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)		39.0						13.0			13.0	
Effective Green, g (s)		39.0						13.0			13.0	
Actuated g/C Ratio		0.65						0.22			0.22	
Clearance Time (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		2228						367			330	
v/s Ratio Prot		c0.20						0.01				
v/s Ratio Perm											c0.02	
v/c Ratio		0.31						0.05			0.11	
Uniform Delay, d1		4.6						18.6			18.9	
Progression Factor		1.00						1.00			0.89	
Incremental Delay, d2		0.4						0.2			0.7	
Delay (s)		5.0						18.9			17.4	
Level of Service		A						B			B	
Approach Delay (s)		5.0			0.0			18.9			17.4	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Volume (vph)	451	34	108	645	122	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1792	1404	1736	1827	1770	1583
Flt Permitted	1.00	1.00	0.29	1.00	0.95	1.00
Satd. Flow (perm)	1792	1404	524	1827	1770	1583
Peak-hour factor, PHF	0.85	0.57	0.77	0.78	0.85	0.84
Adj. Flow (vph)	531	60	140	827	144	223
RTOR Reduction (vph)	0	34	0	0	0	0
Lane Group Flow (vph)	531	26	140	827	144	223
Heavy Vehicles (%)	6%	15%	4%	4%	2%	2%
Turn Type		Perm	pm+pt			Prot
Protected Phases	4		3	8	2	2
Permitted Phases		4	8			
Actuated Green, G (s)	21.7	21.7	28.6	28.6	11.6	11.6
Effective Green, g (s)	21.7	21.7	28.6	28.6	11.6	11.6
Actuated g/C Ratio	0.43	0.43	0.56	0.56	0.23	0.23
Clearance Time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	767	601	374	1031	405	362
v/s Ratio Prot	0.30		0.02	c0.45	0.08	c0.14
v/s Ratio Perm		0.02	0.19			
v/c Ratio	0.69	0.04	0.37	0.80	0.36	0.62
Uniform Delay, d1	11.8	8.4	6.4	8.8	16.4	17.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.7	0.0	0.6	4.6	0.5	3.1
Delay (s)	14.5	8.5	7.0	13.4	17.0	20.7
Level of Service	B	A	A	B	B	C
Approach Delay (s)	13.9			12.5	19.2	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	50.7	Sum of lost time (s)	10.5
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	2	244	49	42	349	2	144	11	46	4	4	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			0%	
Total Lost time (s)		6.5			6.5			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.97			0.93	
Flt Protected		1.00			0.99			0.97			0.99	
Satd. Flow (prot)		1773			1837			1709			1750	
Flt Permitted		0.99			0.92			0.77			0.90	
Satd. Flow (perm)		1751			1701			1365			1588	
Peak-hour factor, PHF	0.25	0.94	0.65	0.67	0.74	0.50	0.84	0.69	0.79	0.50	0.50	0.75
Adj. Flow (vph)	8	260	75	63	472	4	171	16	58	8	8	16
RTOR Reduction (vph)	0	16	0	0	0	0	0	19	0	0	12	0
Lane Group Flow (vph)	0	327	0	0	539	0	0	226	0	0	20	0
Heavy Vehicles (%)	0%	4%	4%	5%	3%	0%	2%	0%	11%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		31.6			31.6			13.2			13.2	
Effective Green, g (s)		31.6			31.6			13.2			13.2	
Actuated g/C Ratio		0.55			0.55			0.23			0.23	
Clearance Time (s)		6.5			6.5			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		966			938			314			366	
v/s Ratio Prot												
v/s Ratio Perm		0.19			c0.32			c0.17			0.01	
v/c Ratio		0.34			0.57			0.72			0.05	
Uniform Delay, d1		7.1			8.4			20.3			17.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.0			2.6			7.7			0.1	
Delay (s)		8.0			11.0			28.0			17.2	
Level of Service		A			B			C			B	
Approach Delay (s)		8.0			11.0			28.0			17.2	
Approach LOS		A			B			C			B	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	57.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	5	236	31	7	368	0	16	2	4	2	7	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.96			0.97	
Flt Protected		1.00			1.00			0.97			0.99	
Satd. Flow (prot)		1782			1826			1781			1824	
Flt Permitted		0.98			0.99			1.00			0.95	
Satd. Flow (perm)		1753			1808			1830			1740	
Peak-hour factor, PHF	0.42	0.99	0.50	0.44	0.76	1.00	0.67	0.25	0.33	0.50	0.35	0.62
Adj. Flow (vph)	12	238	62	16	484	0	24	8	12	4	20	8
RTOR Reduction (vph)	0	13	0	0	0	0	0	11	0	0	8	0
Lane Group Flow (vph)	0	299	0	0	500	0	0	33	0	0	24	0
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		40.0			40.0			2.4			2.4	
Effective Green, g (s)		40.0			40.0			2.4			2.4	
Actuated g/C Ratio		0.76			0.76			0.05			0.05	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1338			1380			84			80	
v/s Ratio Prot												
v/s Ratio Perm		0.17			c0.28			c0.02			0.01	
v/c Ratio		0.22			0.36			0.39			0.30	
Uniform Delay, d1		1.8			2.0			24.3			24.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.4			0.7			3.0			2.2	
Delay (s)		2.2			2.8			27.2			26.3	
Level of Service		A			A			C			C	
Approach Delay (s)		2.2			2.8			27.2			26.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	52.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1	1	1	1>	0	1	1	1
Volume (vph)	36	495	39	27	423	71	33	7	4	52	9	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	16	16
Grade (%)		1%			-1%			1%			2%	
Total Lost time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1744	1787		1744	1836	1623	1796	1796		1718	2132	1812
Flt Permitted	0.38	1.00		0.45	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Satd. Flow (perm)	699	1787		826	1836	1623	1890	1796		1809	2132	1812
Peak-hour factor, PHF	0.63	0.94	0.90	0.42	0.83	0.74	0.70	0.44	0.50	0.71	0.56	0.78
Adj. Flow (vph)	57	527	43	64	510	96	47	16	8	73	16	42
RTOR Reduction (vph)	0	6	0	0	0	42	0	7	0	0	0	39
Lane Group Flow (vph)	57	564	0	64	510	54	47	17	0	73	16	3
Heavy Vehicles (%)	3%	5%	0%	4%	4%	0%	0%	0%	0%	4%	0%	0%
Turn Type	pm+pt			Perm		Perm	Perm			Perm		Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	28.5	28.5		24.0	24.0	24.0	3.4	3.4		3.4	3.4	3.4
Effective Green, g (s)	28.5	28.5		24.0	24.0	24.0	3.4	3.4		3.4	3.4	3.4
Actuated g/C Ratio	0.67	0.67		0.57	0.57	0.57	0.08	0.08		0.08	0.08	0.08
Clearance Time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	494	1201		468	1039	919	152	144		145	171	145
v/s Ratio Prot	0.00	c0.32			0.28			0.01			0.01	
v/s Ratio Perm	0.07			0.08		0.03	0.02			c0.04		0.00
v/c Ratio	0.12	0.47		0.14	0.49	0.06	0.31	0.12		0.50	0.09	0.02
Uniform Delay, d1	2.7	3.3		4.3	5.5	4.1	18.4	18.1		18.7	18.1	18.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.3		0.1	0.4	0.0	1.2	0.4		2.7	0.2	0.1
Delay (s)	2.8	3.6		4.5	5.9	4.2	19.6	18.5		21.4	18.3	18.0
Level of Service	A	A		A	A	A	B	B		C	B	B
Approach Delay (s)		3.6			5.5			19.2			20.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	42.4	Sum of lost time (s)	10.5
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	0	1>	0	0	<1>	0	0	<1	1
Volume (vph)	30	789	29	7	290	116	6	1	30	181	3	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			0%			-1%	
Total Lost time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.99			0.96			0.89			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.99			0.95	1.00
Satd. Flow (prot)	1497	1836			1731			1541			1804	1531
Flt Permitted	0.48	1.00			0.87			0.99			0.95	1.00
Satd. Flow (perm)	754	1836			1514			1541			1804	1531
Peak-hour factor, PHF	0.91	0.86	0.64	0.58	0.90	0.79	0.75	0.25	0.66	0.80	0.38	0.67
Adj. Flow (vph)	33	917	45	12	322	147	8	4	45	226	8	24
RTOR Reduction (vph)	0	2	0	0	20	0	0	44	0	0	0	14
Lane Group Flow (vph)	33	960	0	0	461	0	0	13	0	0	234	10
Heavy Vehicles (%)	20%	2%	7%	14%	7%	2%	33%	0%	6%	1%	0%	6%
Turn Type	Perm			Perm			Split			Split		Perm
Protected Phases		2			6		8	8		4	4	
Permitted Phases	2	2		6								4
Actuated Green, G (s)	43.6	43.6			43.6			2.2			11.2	11.2
Effective Green, g (s)	43.6	43.6			43.6			2.2			11.2	11.2
Actuated g/C Ratio	0.59	0.59			0.59			0.03			0.15	0.15
Clearance Time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	443	1079			890			46			272	231
v/s Ratio Prot		c0.52						c0.01			c0.13	
v/s Ratio Perm	0.04				0.30							0.01
v/c Ratio	0.07	0.89			0.52			0.29			0.86	0.05
Uniform Delay, d1	6.6	13.2			9.1			35.2			30.7	26.9
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.1	9.2			0.5			3.5			23.1	0.1
Delay (s)	6.7	22.4			9.6			38.7			53.9	27.0
Level of Service	A	C			A			D			D	C
Approach Delay (s)		21.9			9.6			38.7			51.4	
Approach LOS		C			A			D			D	

Intersection Summary			
HCM Average Control Delay	23.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	74.2	Sum of lost time (s)	17.2
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	756	241	69	316	144	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-2%	0%	
Total Lost time (s)	7.0		7.0	7.0	7.0	7.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1798		1823	1881	1805	1599
Flt Permitted	1.00		0.06	1.00	0.95	1.00
Satd. Flow (perm)	1798		115	1881	1805	1599
Peak-hour factor, PHF	0.91	0.78	0.61	0.92	0.68	0.86
Adj. Flow (vph)	831	309	113	343	212	79
RTOR Reduction (vph)	13	0	0	0	0	0
Lane Group Flow (vph)	1127	0	113	343	212	79
Heavy Vehicles (%)	1%	2%	0%	2%	0%	1%
Turn Type			pm+pt			pt+ov
Protected Phases	4		3	8	2	2 3
Permitted Phases			8			
Actuated Green, G (s)	60.0		73.2	73.2	12.8	26.0
Effective Green, g (s)	60.0		73.2	73.2	12.8	26.0
Actuated g/C Ratio	0.60		0.73	0.73	0.13	0.26
Clearance Time (s)	7.0		7.0	7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1079		190	1377	231	416
v/s Ratio Prot	c0.63		c0.04	0.18	c0.12	0.05
v/s Ratio Perm			0.40			
v/c Ratio	1.04		0.59	0.25	0.92	0.19
Uniform Delay, d1	20.0		24.9	4.4	43.1	28.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	39.7		4.9	0.1	37.1	0.2
Delay (s)	59.7		29.8	4.5	80.2	29.0
Level of Service	E		C	A	F	C
Approach Delay (s)	59.7			10.8	66.3	
Approach LOS	E			B	E	

Intersection Summary			
HCM Average Control Delay	48.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

HCM Signalized Intersection Capacity Analysis

No-Build, 2021

7: Market St. & S.R. 11 (Second St.)

PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	236	122	206	133	0	0	0	0	212	603	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00					1.00	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		1900	1599	1787	1900					1805	3539	1583
Flt Permitted		1.00	1.00	0.48	1.00					0.95	1.00	1.00
Satd. Flow (perm)		1900	1599	910	1900					1805	3539	1583
Peak-hour factor, PHF	1.00	0.83	0.85	0.79	0.71	1.00	1.00	1.00	1.00	0.92	0.88	0.73
Adj. Flow (vph)	0	284	144	261	187	0	0	0	0	230	685	108
RTOR Reduction (vph)	0	0	104	0	0	0	0	0	0	0	0	68
Lane Group Flow (vph)	0	284	40	261	187	0	0	0	0	230	685	40
Heavy Vehicles (%)	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	2%	2%
Turn Type			Perm	pm+pt						Split		Prot
Protected Phases		4		3	8					2	2	2
Permitted Phases			4	8								
Actuated Green, G (s)		16.5	16.5	30.0	28.5					22.0	22.0	22.0
Effective Green, g (s)		16.5	16.5	30.0	28.5					22.0	22.0	22.0
Actuated g/C Ratio		0.28	0.28	0.50	0.48					0.37	0.37	0.37
Clearance Time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Grp Cap (vph)		523	440	587	903					662	1298	580
v/s Ratio Prot		c0.15		c0.07	0.10					0.13	c0.19	0.03
v/s Ratio Perm			0.02	0.16								
v/c Ratio		0.54	0.09	0.44	0.21					0.35	0.53	0.07
Uniform Delay, d1		18.5	16.2	12.4	9.2					13.8	14.9	12.3
Progression Factor		0.79	0.82	0.17	0.06					0.80	0.85	0.77
Incremental Delay, d2		3.6	0.4	1.9	0.4					1.4	1.5	0.2
Delay (s)		18.2	13.7	3.9	1.0					12.4	14.2	9.7
Level of Service		B	B	A	A					B	B	A
Approach Delay (s)		16.7			2.7			0.0			13.3	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	713	213	0	0	0	0	333	203	106	334	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			1%	
Total Lost time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Util. Factor		0.95						1.00	1.00	1.00	1.00	
Frt		0.96						1.00	0.85	1.00	1.00	
Flt Protected		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3457						1910	1591	1796	1890	
Flt Permitted		1.00						1.00	1.00	0.32	1.00	
Satd. Flow (perm)		3457						1910	1591	603	1890	
Peak-hour factor, PHF	1.00	0.94	0.92	1.00	1.00	1.00	1.00	0.80	0.82	0.71	0.90	1.00
Adj. Flow (vph)	0	759	232	0	0	0	0	416	248	149	371	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	991	0	0	0	0	0	416	248	149	371	0
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%
Turn Type									Perm	D.P+P		
Protected Phases		1						3		2	4	
Permitted Phases									3	3		
Actuated Green, G (s)		24.0						19.0	19.0	23.0	26.0	
Effective Green, g (s)		24.0						19.0	19.0	23.0	26.0	
Actuated g/C Ratio		0.40						0.32	0.32	0.38	0.43	
Clearance Time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		1383						605	504	311	819	
v/s Ratio Prot		c0.29						c0.22		0.03	c0.20	
v/s Ratio Perm									0.16	0.15		
v/c Ratio		0.72						0.69	0.49	0.48	0.45	
Uniform Delay, d1		15.1						17.9	16.6	13.0	12.0	
Progression Factor		0.70						1.00	1.00	0.53	0.55	
Incremental Delay, d2		2.9						6.3	3.4	4.7	1.6	
Delay (s)		13.6						24.2	20.0	11.6	8.2	
Level of Service		B						C	C	B	A	
Approach Delay (s)		13.6			0.0			22.6			9.2	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	21	133	277	66	121	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Total Lost time (s)	5.2		5.4	5.4	5.4	5.4
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.89		1.00	0.85	1.00	1.00
Flt Protected	0.99		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1545		1845	1615	1814	1801
Flt Permitted	0.99		1.00	1.00	0.42	1.00
Satd. Flow (perm)	1545		1845	1615	806	1801
Peak-hour factor, PHF	0.56	0.85	0.82	0.79	0.76	0.92
Adj. Flow (vph)	38	156	338	84	159	259
RTOR Reduction (vph)	136	0	0	48	0	0
Lane Group Flow (vph)	58	0	338	36	159	259
Heavy Vehicles (%)	15%	7%	3%	0%	0%	6%
Turn Type				Perm	pm+pt	
Protected Phases	4		6		5	2
Permitted Phases				6	2	
Actuated Green, G (s)	5.8		19.4	19.4	29.0	29.0
Effective Green, g (s)	5.8		19.4	19.4	29.0	29.0
Actuated g/C Ratio	0.13		0.43	0.43	0.64	0.64
Clearance Time (s)	5.2		5.4	5.4	5.4	5.4
Vehicle Extension (s)	5.0		5.0	5.0	3.0	5.0
Lane Grp Cap (vph)	197		788	690	608	1150
v/s Ratio Prot	c0.04		c0.18		0.02	c0.14
v/s Ratio Perm				0.02	0.14	
v/c Ratio	0.29		0.43	0.05	0.26	0.23
Uniform Delay, d1	17.9		9.1	7.6	3.7	3.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7		0.8	0.1	0.2	0.2
Delay (s)	19.7		9.9	7.7	3.9	3.7
Level of Service	B		A	A	A	A
Approach Delay (s)	19.7		9.5			3.8
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	45.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	24	114	28	29	6	219	234	27	3	255	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			1%	
Total Lost time (s)		5.0			5.0		5.0	5.0			5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.91			0.98		1.00	0.98			0.94	
Flt Protected		0.99			0.98		0.95	1.00			1.00	
Satd. Flow (prot)		1529			1636		1600	1658			1579	
Flt Permitted		0.91			0.74		0.29	1.00			1.00	
Satd. Flow (perm)		1406			1226		496	1658			1575	
Peak-hour factor, PHF	0.94	0.52	0.63	0.75	0.54	0.50	0.82	0.91	0.81	0.75	0.93	0.78
Adj. Flow (vph)	54	46	181	37	54	12	267	257	33	4	274	236
RTOR Reduction (vph)	0	109	0	0	8	0	0	8	0	0	58	0
Lane Group Flow (vph)	0	172	0	0	95	0	267	282	0	0	456	0
Heavy Vehicles (%)	0%	4%	0%	3%	0%	0%	1%	1%	0%	0%	2%	0%
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		9.9			9.9		30.1	30.1			18.9	
Effective Green, g (s)		9.9			9.9		30.1	30.1			18.9	
Actuated g/C Ratio		0.20			0.20		0.60	0.60			0.38	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		278			243		435	998			595	
v/s Ratio Prot							c0.08	0.17				
v/s Ratio Perm		c0.12			0.08		0.29				c0.29	
v/c Ratio		0.62			0.39		0.61	0.28			0.77	
Uniform Delay, d1		18.3			17.4		7.1	4.8			13.6	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		4.1			1.0		2.6	0.2			5.9	
Delay (s)		22.4			18.5		9.7	4.9			19.5	
Level of Service		C			B		A	A			B	
Approach Delay (s)		22.4			18.5			7.2			19.5	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

HCM Signalized Intersection Capacity Analysis
44: S.R. 11 & Poplar St.

No-Build, 2021
PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	730	32	49	738	6	134	46	88	28	43	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		3.0	5.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1805	1832		1703	1841			1826	1599		1792	
Flt Permitted	0.27	1.00		0.95	1.00			0.68	1.00		0.74	
Satd. Flow (perm)	518	1832		1703	1841			1283	1599		1343	
Peak-hour factor, PHF	0.61	0.86	0.81	0.75	0.82	0.38	0.69	0.66	0.83	0.81	0.89	0.61
Adj. Flow (vph)	30	849	40	65	900	16	194	70	106	35	48	39
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	19	0
Lane Group Flow (vph)	30	887	0	65	916	0	0	264	106	0	103	0
Confl. Peds. (#/hr)							3					
Heavy Vehicles (%)	0%	3%	3%	6%	3%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm			Prot			Perm		Perm	Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2						8		8	4		
Actuated Green, G (s)	43.0	43.0		15.0	61.0			20.0	20.0		20.0	
Effective Green, g (s)	43.0	43.0		15.0	61.0			20.0	20.0		20.0	
Actuated g/C Ratio	0.48	0.48		0.17	0.68			0.22	0.22		0.22	
Clearance Time (s)	5.0	5.0		3.0	5.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	247	875		284	1248			285	355		298	
v/s Ratio Prot		c0.48		0.04	c0.50							
v/s Ratio Perm	0.06							c0.21	0.07		0.08	
v/c Ratio	0.12	1.01		0.23	0.73			0.93	0.30		0.35	
Uniform Delay, d1	13.0	23.5		32.5	9.3			34.3	29.2		29.5	
Progression Factor	1.00	1.00		0.79	1.27			1.00	1.00		1.00	
Incremental Delay, d2	1.0	33.8		1.6	3.2			37.3	2.1		3.2	
Delay (s)	14.0	57.3		27.2	15.0			71.6	31.3		32.7	
Level of Service	B	E		C	B			E	C		C	
Approach Delay (s)		55.9			15.8			60.1			32.7	
Approach LOS		E			B			E			C	

Intersection Summary			
HCM Average Control Delay	38.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	828	819	0	177	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		-1%	0%		0%	
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1872	1863		1789	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1872	1863		1789	
Peak-hour factor, PHF	1.00	0.87	0.86	0.93	0.83	0.25
Adj. Flow (vph)	0	952	952	0	213	4
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	0	952	952	0	216	0
Heavy Vehicles (%)	0%	2%	2%	2%	1%	0%
Turn Type						
Protected Phases		2	6		8	
Permitted Phases						
Actuated Green, G (s)		67.0	67.0		15.0	
Effective Green, g (s)		67.0	67.0		15.0	
Actuated g/C Ratio		0.74	0.74		0.17	
Clearance Time (s)		4.0	4.0		4.0	
Lane Grp Cap (vph)		1394	1387		298	
v/s Ratio Prot		0.51	c0.51		c0.12	
v/s Ratio Perm						
v/c Ratio		0.68	0.69		0.73	
Uniform Delay, d1		6.0	6.0		35.5	
Progression Factor		0.40	0.59		1.00	
Incremental Delay, d2		2.2	2.5		14.3	
Delay (s)		4.6	6.1		49.8	
Level of Service		A	A		D	
Approach Delay (s)		4.6	6.1		49.8	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations										
Volume (vph)	82	0	0	18	966	35	0	154	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0			4.0		
Lane Util. Factor	1.00			1.00	0.95			1.00		
Frt	1.00			1.00	0.99			0.86		
Flt Protected	0.95			0.95	1.00			1.00		
Satd. Flow (prot)	1805			1805	3552			1627		
Flt Permitted	0.95			0.95	1.00			1.00		
Satd. Flow (perm)	1805			1805	3552			1627		
Peak-hour factor, PHF	0.88	0.90	1.00	0.61	0.92	0.73	1.00	0.67	0.92	0.92
Adj. Flow (vph)	93	0	0	30	1050	48	0	230	0	0
RTOR Reduction (vph)	0	0	0	12	4	0	0	78	0	0
Lane Group Flow (vph)	93	0	0	18	1095	0	0	152	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	1%	2%	2%
Turn Type	Prot			custom				custom		
Protected Phases	8			1	1			8		
Permitted Phases				1				8		
Actuated Green, G (s)	27.0			55.0	55.0			27.0		
Effective Green, g (s)	27.0			55.0	55.0			27.0		
Actuated g/C Ratio	0.30			0.61	0.61			0.30		
Clearance Time (s)	4.0			4.0	4.0			4.0		
Lane Grp Cap (vph)	542			1103	2171			488		
v/s Ratio Prot	0.05			0.01	c0.31			c0.09		
v/s Ratio Perm										
v/c Ratio	0.17			0.02	0.50			0.31		
Uniform Delay, d1	23.2			6.9	9.8			24.3		
Progression Factor	0.84			1.00	1.00			1.00		
Incremental Delay, d2	0.5			0.0	0.8			1.7		
Delay (s)	20.1			6.9	10.7			26.0		
Level of Service	C			A	B			C		
Approach Delay (s)		20.1			10.6		26.0		0.0	
Approach LOS		C			B		C		A	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

HCM Signalized Intersection Capacity Analysis
67: S.R. 11 (Second St.) & Pine St.

No-Build, 2021
PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	790	44	54	133	0	0	0	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			1%	
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		1.00	1.00				1.00
Frt					0.99		1.00	1.00				0.86
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					3539		1796	1890				1635
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					3539		1796	1890				1635
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	0.86	0.64	0.78	0.74	1.00	1.00	1.00	0.71
Adj. Flow (vph)	0	0	0	0	919	69	69	180	0	0	0	56
RTOR Reduction (vph)	0	0	0	0	7	0	56	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	981	0	13	180	0	0	0	56
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type							Perm					custom
Protected Phases					1			2				
Permitted Phases							2					2
Actuated Green, G (s)					40.9		11.1	11.1				11.1
Effective Green, g (s)					40.9		11.1	11.1				11.1
Actuated g/C Ratio					0.68		0.18	0.18				0.18
Clearance Time (s)					4.0		4.0	4.0				4.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					2412		332	350				302
v/s Ratio Prot					c0.28			c0.10				
v/s Ratio Perm							0.01					0.03
v/c Ratio					0.41		0.04	0.51				0.19
Uniform Delay, d1					4.2		20.1	22.0				20.6
Progression Factor					0.95		1.00	1.00				1.00
Incremental Delay, d2					0.5		0.0	1.3				0.3
Delay (s)					4.5		20.1	23.3				20.9
Level of Service					A		C	C				C
Approach Delay (s)		0.0			4.5			22.4			20.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

HCM Signalized Intersection Capacity Analysis
68: S.R. 11 & Orchard St.

No-Build, 2021
PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	744	1	4	699	1	28	25	27	31	7	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.94			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1687	1861		1805	1844			1763			1751	
Flt Permitted	0.27	1.00		0.27	1.00			0.98			0.98	
Satd. Flow (perm)	482	1861		518	1844			1763			1751	
Peak-hour factor, PHF	0.81	0.96	0.25	1.00	0.90	0.25	0.59	0.64	0.42	0.72	0.44	0.66
Adj. Flow (vph)	17	775	4	4	777	4	47	39	64	43	16	47
RTOR Reduction (vph)	0	0	0	0	0	0	0	30	0	0	32	0
Lane Group Flow (vph)	17	779	0	4	781	0	0	120	0	0	74	0
Heavy Vehicles (%)	7%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Split			Split		
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	62.0	62.0		62.0	62.0			7.0			6.0	
Effective Green, g (s)	62.0	62.0		62.0	62.0			7.0			6.0	
Actuated g/C Ratio	0.69	0.69		0.69	0.69			0.08			0.07	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	332	1282		357	1270			137			117	
v/s Ratio Prot		0.42			c0.42			c0.07			c0.04	
v/s Ratio Perm	0.04			0.01								
v/c Ratio	0.05	0.61		0.01	0.61			0.88			0.63	
Uniform Delay, d1	4.5	7.5		4.4	7.6			41.1			40.9	
Progression Factor	0.05	0.04		1.23	0.87			1.00			1.00	
Incremental Delay, d2	0.1	0.8		0.0	1.6			49.9			23.4	
Delay (s)	0.4	1.1		5.5	8.2			91.0			64.3	
Level of Service	A	A		A	A			F			E	
Approach Delay (s)		1.1			8.2			91.0			64.3	
Approach LOS		A			A			F			E	

Intersection Summary			
HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

HCM Signalized Intersection Capacity Analysis
71: S.R. 11 (Second St.) & Oak St.

No-Build, 2021
PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	870	15	15	50	0	0	42	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			1%			-1%	
Total Lost time (s)					6.0			5.0			5.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.93	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3538			1741			1734	
Flt Permitted					1.00			0.85			1.00	
Satd. Flow (perm)					3538			1507			1734	
Peak-hour factor, PHF	1.00	1.00	1.00	0.68	0.93	0.88	0.44	0.64	1.00	1.00	0.70	0.87
Adj. Flow (vph)	0	0	0	65	935	17	34	78	0	0	60	64
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	54	0
Lane Group Flow (vph)	0	0	0	0	1016	0	0	112	0	0	70	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	7%	0%	10%	0%	0%	5%	0%
Turn Type				Perm			Perm					
Protected Phases					1			2			2	
Permitted Phases				1			2					
Actuated Green, G (s)					33.7			8.0			8.0	
Effective Green, g (s)					33.7			8.0			8.0	
Actuated g/C Ratio					0.64			0.15			0.15	
Clearance Time (s)					6.0			5.0			5.0	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2262			229			263	
v/s Ratio Prot											0.04	
v/s Ratio Perm					0.29			c0.07				
v/c Ratio					0.45			0.49			0.27	
Uniform Delay, d1					4.8			20.5			19.8	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.1			1.6			0.5	
Delay (s)					4.9			22.1			20.3	
Level of Service					A			C			C	
Approach Delay (s)		0.0			4.9			22.1			20.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	52.7	Sum of lost time (s)	11.0
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

HCM Signalized Intersection Capacity Analysis
74: Third St. & S.R. 1025 (Market St.)

No-Build, 2021
PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	98	64	32	118	17	13	206	17	20	282	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.98		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1779			1850		1805	1877		1805	1819	
Flt Permitted		0.83			0.90		0.41	1.00		0.57	1.00	
Satd. Flow (perm)		1497			1689		788	1877		1081	1819	
Peak-hour factor, PHF	0.89	0.83	0.78	0.83	0.87	0.67	0.50	0.88	0.80	0.53	0.91	0.74
Adj. Flow (vph)	109	118	82	39	136	25	26	234	21	38	310	96
RTOR Reduction (vph)	0	22	0	0	9	0	0	6	0	0	19	0
Lane Group Flow (vph)	0	287	0	0	191	0	26	250	0	38	387	0
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2	2		1			1	1	
Actuated Green, G (s)		25.0			25.0		27.0	27.0		27.0	27.0	
Effective Green, g (s)		25.0			25.0		27.0	27.0		27.0	27.0	
Actuated g/C Ratio		0.42			0.42		0.45	0.45		0.45	0.45	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		624			704		355	845		486	819	
v/s Ratio Prot								0.13			c0.21	
v/s Ratio Perm		c0.19			0.11		0.03			0.04		
v/c Ratio		0.46			0.27		0.07	0.30		0.08	0.47	
Uniform Delay, d1		12.6			11.5		9.4	10.5		9.4	11.5	
Progression Factor		1.00			1.00		1.07	0.93		1.00	1.00	
Incremental Delay, d2		2.4			1.0		0.4	0.9		0.3	2.0	
Delay (s)		15.1			12.5		10.4	10.6		9.7	13.5	
Level of Service		B			B		B	B		A	B	
Approach Delay (s)		15.1			12.5			10.6			13.2	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	47	901	53	29	74	0	0	26	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			-4%	
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					0.99			1.00			0.90	
Flt Protected					1.00			0.98			1.00	
Satd. Flow (prot)					3535			1854			1729	
Flt Permitted					1.00			0.85			1.00	
Satd. Flow (perm)					3535			1604			1729	
Peak-hour factor, PHF	1.00	1.00	1.00	0.63	0.94	0.82	0.56	0.94	1.00	1.00	0.86	0.75
Adj. Flow (vph)	0	0	0	75	959	65	52	79	0	0	30	79
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	62	0
Lane Group Flow (vph)	0	0	0	0	1091	0	0	131	0	0	47	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	4%	0%
Turn Type				Split			Perm					
Protected Phases				1	1			2			2	
Permitted Phases							2					
Actuated Green, G (s)					39.0			13.0			13.0	
Effective Green, g (s)					39.0			13.0			13.0	
Actuated g/C Ratio					0.65			0.22			0.22	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					2298			348			375	
v/s Ratio Prot					c0.31						0.03	
v/s Ratio Perm								c0.08				
v/c Ratio					0.47			0.38			0.13	
Uniform Delay, d1					5.3			20.0			18.9	
Progression Factor					0.32			0.94			1.00	
Incremental Delay, d2					0.6			2.9			0.7	
Delay (s)					2.4			21.7			19.6	
Level of Service					A			C			B	
Approach Delay (s)		0.0			2.4			21.7			19.6	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	824	37	0	0	0	0	19	13	50	15	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			1%			-1%	
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.94			1.00	
Flt Protected		1.00						1.00			0.96	
Satd. Flow (prot)		3521						1780			1810	
Flt Permitted		1.00						1.00			0.76	
Satd. Flow (perm)		3521						1780			1424	
Peak-hour factor, PHF	0.95	0.86	0.71	1.00	1.00	1.00	1.00	0.56	0.50	0.68	0.70	1.00
Adj. Flow (vph)	92	958	52	0	0	0	0	34	26	74	21	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	0	1096	0	0	0	0	0	40	0	0	95	0
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%
Turn Type	Split									Perm		
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)		38.0						14.0			14.0	
Effective Green, g (s)		38.0						14.0			14.0	
Actuated g/C Ratio		0.63						0.23			0.23	
Clearance Time (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		2230						415			332	
v/s Ratio Prot		c0.31						0.02				
v/s Ratio Perm											c0.07	
v/c Ratio		0.49						0.10			0.29	
Uniform Delay, d1		5.9						18.0			18.9	
Progression Factor		1.00						1.00			0.71	
Incremental Delay, d2		0.8						0.5			2.0	
Delay (s)		6.6						18.5			15.5	
Level of Service		A						B			B	
Approach Delay (s)		6.6			0.0			18.5			15.5	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	637	102	223	588	80	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1599	1752	1845	1787	1583
Flt Permitted	1.00	1.00	0.14	1.00	0.95	1.00
Satd. Flow (perm)	1845	1599	262	1845	1787	1583
Peak-hour factor, PHF	0.90	0.78	0.93	0.91	0.77	0.90
Adj. Flow (vph)	708	131	240	646	104	266
RTOR Reduction (vph)	0	74	0	0	0	0
Lane Group Flow (vph)	708	57	240	646	104	266
Heavy Vehicles (%)	3%	1%	3%	3%	1%	2%
Turn Type		Perm	pm+pt			Prot
Protected Phases	4		3	8	2	2
Permitted Phases		4	8			
Actuated Green, G (s)	24.6	24.6	33.7	33.7	12.5	12.5
Effective Green, g (s)	24.6	24.6	33.7	33.7	12.5	12.5
Actuated g/C Ratio	0.43	0.43	0.59	0.59	0.22	0.22
Clearance Time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	800	694	300	1097	394	349
v/s Ratio Prot	c0.38		c0.08	0.35	0.06	c0.17
v/s Ratio Perm		0.04	0.40			
v/c Ratio	0.89	0.08	0.80	0.59	0.26	0.76
Uniform Delay, d1	14.8	9.4	9.8	7.2	18.3	20.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.5	0.1	14.1	0.8	0.4	9.5
Delay (s)	26.2	9.5	23.9	8.0	18.7	30.2
Level of Service	C	A	C	A	B	C
Approach Delay (s)	23.6			12.3	26.9	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	56.7	Sum of lost time (s)	14.1
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

HCM Signalized Intersection Capacity Analysis
103: S.R. 93 (Third St.) & S.R. 339 (Broad St.)

No-Build, 2021
PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	362	137	31	331	2	112	16	47	8	9	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			0%	
Total Lost time (s)		6.5			6.5			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.97			0.98	
Flt Protected		1.00			1.00			0.97			0.98	
Satd. Flow (prot)		1832			1856			1780			1812	
Flt Permitted		0.99			0.92			0.80			0.81	
Satd. Flow (perm)		1816			1719			1457			1510	
Peak-hour factor, PHF	0.42	0.85	0.91	0.83	0.89	0.50	0.89	0.40	0.94	0.40	0.56	0.50
Adj. Flow (vph)	12	426	151	37	372	4	126	40	50	20	16	8
RTOR Reduction (vph)	0	22	0	0	0	0	0	20	0	0	6	0
Lane Group Flow (vph)	0	567	0	0	413	0	0	196	0	0	38	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	50%	0%	0%	2%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		31.5			31.5			10.2			10.2	
Effective Green, g (s)		31.5			31.5			10.2			10.2	
Actuated g/C Ratio		0.58			0.58			0.19			0.19	
Clearance Time (s)		6.5			6.5			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1055			999			274			284	
v/s Ratio Prot												
v/s Ratio Perm		c0.31			0.24			c0.13			0.02	
v/c Ratio		0.54			0.41			0.71			0.13	
Uniform Delay, d1		6.9			6.3			20.6			18.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.0			1.3			8.5			0.2	
Delay (s)		8.9			7.5			29.2			18.5	
Level of Service		A			A			C			B	
Approach Delay (s)		8.9			7.5			29.2			18.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

HCM Signalized Intersection Capacity Analysis
106: S.R. 93 (Third St.) & Dewey St.

No-Build, 2021
PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	373	5	2	351	2	8	1	3	3	2	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.97			0.93	
Flt Protected		1.00			1.00			0.97			0.99	
Satd. Flow (prot)		1866			1859			1795			1750	
Flt Permitted		0.99			0.99			1.00			1.00	
Satd. Flow (perm)		1849			1847			1849			1772	
Peak-hour factor, PHF	0.92	0.86	0.62	0.25	0.90	0.50	0.67	0.25	0.75	0.38	0.25	0.69
Adj. Flow (vph)	12	434	8	8	390	4	12	4	4	8	8	16
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	16	0
Lane Group Flow (vph)	0	454	0	0	402	0	0	16	0	0	16	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		39.0			39.0			1.5			1.5	
Effective Green, g (s)		39.0			39.0			1.5			1.5	
Actuated g/C Ratio		0.77			0.77			0.03			0.03	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1428			1426			55			53	
v/s Ratio Prot												
v/s Ratio Perm		c0.25			0.22			0.01			c0.01	
v/c Ratio		0.32			0.28			0.29			0.31	
Uniform Delay, d1		1.7			1.7			24.0			24.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.6			0.5			3.0			3.3	
Delay (s)		2.3			2.2			26.9			27.3	
Level of Service		A			A			C			C	
Approach Delay (s)		2.3			2.2			26.9			27.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	89	571	26	21	546	215	54	9	22	200	4	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	16	16
Grade (%)		1%			-1%			1%			2%	
Total Lost time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1796	1807		1814	1854	1623	1796	1700		1787	2132	1812
Flt Permitted	0.23	1.00		0.38	1.00	1.00	0.75	1.00		0.73	1.00	1.00
Satd. Flow (perm)	441	1807		719	1854	1623	1422	1700		1364	2132	1812
Peak-hour factor, PHF	0.71	0.95	0.75	0.71	0.93	0.95	0.69	0.56	0.66	0.80	0.50	0.69
Adj. Flow (vph)	125	601	35	30	587	226	78	16	33	250	8	196
RTOR Reduction (vph)	0	4	0	0	0	126	0	24	0	0	0	143
Lane Group Flow (vph)	125	632	0	30	587	100	78	25	0	250	8	53
Heavy Vehicles (%)	0%	4%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt			Perm		Perm	Perm			Perm		Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	31.6	31.6		25.5	25.5	25.5	15.5	15.5		15.5	15.5	15.5
Effective Green, g (s)	31.6	31.6		25.5	25.5	25.5	15.5	15.5		15.5	15.5	15.5
Actuated g/C Ratio	0.55	0.55		0.44	0.44	0.44	0.27	0.27		0.27	0.27	0.27
Clearance Time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	303	991		318	821	719	383	457		367	574	488
v/s Ratio Prot	0.02	c0.35			c0.32			0.01			0.00	
v/s Ratio Perm	0.21			0.04		0.06	0.05			c0.18		0.03
v/c Ratio	0.41	0.64		0.09	0.71	0.14	0.20	0.05		0.68	0.01	0.11
Uniform Delay, d1	8.2	9.0		9.3	13.1	9.5	16.3	15.6		18.8	15.4	15.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.9	1.4		0.1	3.0	0.1	0.3	0.0		5.1	0.0	0.1
Delay (s)	9.1	10.4		9.5	16.1	9.6	16.5	15.7		24.0	15.5	15.9
Level of Service	A	B		A	B	A	B	B		C	B	B
Approach Delay (s)		10.2			14.1			16.2			20.4	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	57.6	Sum of lost time (s)	15.8
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	392	11	8	780	242	11	1	8	151	4	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			0%			-1%	
Total Lost time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.99			0.97			0.94			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)	1796	1845			1812			1747			1772	1399
Flt Permitted	0.24	1.00			0.99			0.98			0.95	1.00
Satd. Flow (perm)	462	1845			1799			1747			1772	1399
Peak-hour factor, PHF	0.64	0.88	0.69	0.50	0.93	0.91	0.69	0.25	0.50	0.90	0.50	0.60
Adj. Flow (vph)	45	445	16	16	839	266	16	4	16	168	8	20
RTOR Reduction (vph)	0	1	0	0	12	0	0	16	0	0	0	13
Lane Group Flow (vph)	45	460	0	0	1109	0	0	20	0	0	176	7
Heavy Vehicles (%)	0%	2%	0%	12%	2%	1%	0%	0%	0%	3%	0%	16%
Turn Type	Perm			Perm			Split			Split		Perm
Protected Phases		2			6		8	8		4	4	
Permitted Phases	2	2		6								4
Actuated Green, G (s)	56.6	56.6			56.6			2.2			9.1	9.1
Effective Green, g (s)	56.6	56.6			56.6			2.2			9.1	9.1
Actuated g/C Ratio	0.67	0.67			0.67			0.03			0.11	0.11
Clearance Time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	307	1227			1197			45			189	150
v/s Ratio Prot		0.25						c0.01			c0.10	
v/s Ratio Perm	0.10				c0.62							0.00
v/c Ratio	0.15	0.37			0.93			0.45			0.93	0.04
Uniform Delay, d1	5.3	6.4			12.4			40.9			37.7	34.1
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.2	0.2			12.1			7.1			46.0	0.1
Delay (s)	5.5	6.5			24.5			48.0			83.7	34.2
Level of Service	A	A			C			D			F	C
Approach Delay (s)		6.5			24.5			48.0			78.7	
Approach LOS		A			C			D			E	

Intersection Summary			
HCM Average Control Delay	25.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	85.1	Sum of lost time (s)	17.2
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	414	216	124	724	225	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-2%	0%	
Total Lost time (s)	7.0		7.0	7.0	7.0	7.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770		1823	1900	1805	1615
Flt Permitted	1.00		0.12	1.00	0.95	1.00
Satd. Flow (perm)	1770		223	1900	1805	1615
Peak-hour factor, PHF	0.95	0.79	0.90	0.89	0.83	0.82
Adj. Flow (vph)	436	273	138	813	271	84
RTOR Reduction (vph)	32	0	0	0	0	0
Lane Group Flow (vph)	677	0	138	813	271	84
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Turn Type			pm+pt			pt+ov
Protected Phases	4		3	8	2	2 3
Permitted Phases			8			
Actuated Green, G (s)	27.4		39.6	39.6	12.4	24.6
Effective Green, g (s)	27.4		39.6	39.6	12.4	24.6
Actuated g/C Ratio	0.42		0.60	0.60	0.19	0.37
Clearance Time (s)	7.0		7.0	7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	735		260	1140	339	602
v/s Ratio Prot	c0.38		0.04	c0.43	c0.15	0.05
v/s Ratio Perm			0.28			
v/c Ratio	0.92		0.53	0.71	0.80	0.14
Uniform Delay, d1	18.3		11.4	9.2	25.6	13.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	16.9		2.1	2.1	12.4	0.1
Delay (s)	35.1		13.5	11.4	38.0	13.8
Level of Service	D		B	B	D	B
Approach Delay (s)	35.1			11.7	32.3	
Approach LOS	D			B	C	

Intersection Summary			
HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	66.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	1	1	1	1	0	0	0	0	1	2	1
Volume (vph)	0	133	96	220	116	0	0	0	0	148	571	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00					1.00	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		1792	1599	1787	1863					1736	3539	1615
Flt Permitted		1.00	1.00	0.66	1.00					0.95	1.00	1.00
Satd. Flow (perm)		1792	1599	1247	1863					1736	3539	1615
Peak-hour factor, PHF	1.00	0.90	0.88	0.82	0.70	1.00	1.00	1.00	1.00	0.83	0.78	0.80
Adj. Flow (vph)	0	148	109	268	166	0	0	0	0	178	732	65
RTOR Reduction (vph)	0	0	79	0	0	0	0	0	0	0	0	41
Lane Group Flow (vph)	0	148	30	268	166	0	0	0	0	178	732	24
Heavy Vehicles (%)	0%	6%	1%	1%	2%	0%	0%	0%	0%	4%	2%	0%
Turn Type			Perm	pm+pt						Split		Prot
Protected Phases		4		3	8					2	2	2
Permitted Phases			4	8								
Actuated Green, G (s)		16.5	16.5	30.0	28.5					22.0	22.0	22.0
Effective Green, g (s)		16.5	16.5	30.0	28.5					22.0	22.0	22.0
Actuated g/C Ratio		0.28	0.28	0.50	0.48					0.37	0.37	0.37
Clearance Time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Grp Cap (vph)		493	440	705	885					637	1298	592
v/s Ratio Prot		0.08		c0.06	0.09					0.10	c0.21	0.01
v/s Ratio Perm			0.02	c0.13								
v/c Ratio		0.30	0.07	0.38	0.19					0.28	0.56	0.04
Uniform Delay, d1		17.2	16.1	9.6	9.1					13.4	15.2	12.2
Progression Factor		0.75	0.45	0.02	0.02					0.79	0.80	0.67
Incremental Delay, d2		1.5	0.3	1.2	0.4					1.1	1.7	0.1
Delay (s)		14.3	7.5	1.4	0.5					11.7	13.9	8.3
Level of Service		B	A	A	A					B	B	A
Approach Delay (s)		11.4			1.1			0.0			13.1	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	2>	0	0	0	0	0	1	1	1	1	0
Volume (vph)	0	554	133	0	0	0	0	332	222	40	233	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			1%	
Total Lost time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Util. Factor		0.95						1.00	1.00	1.00	1.00	
Frt		0.97						1.00	0.85	1.00	1.00	
Flt Protected		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3421						1872	1607	1633	1835	
Flt Permitted		1.00						1.00	1.00	0.36	1.00	
Satd. Flow (perm)		3421						1872	1607	611	1835	
Peak-hour factor, PHF	1.00	0.89	0.87	1.00	1.00	1.00	1.00	0.78	0.66	0.77	0.80	1.00
Adj. Flow (vph)	0	622	153	0	0	0	0	426	336	52	291	0
RTOR Reduction (vph)	0	36	0	0	0	0	0	0	124	0	0	0
Lane Group Flow (vph)	0	739	0	0	0	0	0	426	212	52	291	0
Heavy Vehicles (%)	0%	2%	4%	0%	0%	0%	0%	2%	1%	10%	3%	0%
Turn Type									Perm	D.P+P		
Protected Phases		1						3		2	4	
Permitted Phases									3	3		
Actuated Green, G (s)		22.0						22.0	22.0	25.0	28.0	
Effective Green, g (s)		22.0						22.0	22.0	25.0	28.0	
Actuated g/C Ratio		0.37						0.37	0.37	0.42	0.47	
Clearance Time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		1254						686	589	306	856	
v/s Ratio Prot		c0.22						c0.23		0.01	c0.16	
v/s Ratio Perm									0.13	0.06		
v/c Ratio		0.59						0.62	0.36	0.17	0.34	
Uniform Delay, d1		15.3						15.6	13.9	11.0	10.1	
Progression Factor		0.75						1.00	1.00	0.68	0.65	
Incremental Delay, d2		2.0						4.2	1.7	1.2	1.1	
Delay (s)		13.5						19.8	15.6	8.6	7.6	
Level of Service		B						B	B	A	A	
Approach Delay (s)		13.5			0.0			17.9			7.8	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	45	72	158	10	62	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Total Lost time (s)	5.2		5.4	5.4	5.4	5.4
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.93		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1682		1863	1615	1761	1872
Flt Permitted	0.98		1.00	1.00	0.48	1.00
Satd. Flow (perm)	1682		1863	1615	895	1872
Peak-hour factor, PHF	0.57	0.85	0.88	0.62	0.74	0.85
Adj. Flow (vph)	79	85	180	16	84	532
RTOR Reduction (vph)	75	0	0	9	0	0
Lane Group Flow (vph)	89	0	180	7	84	532
Heavy Vehicles (%)	0%	5%	2%	0%	3%	2%
Turn Type				Perm	pm+pt	
Protected Phases	4		6		5	2
Permitted Phases				6	2	
Actuated Green, G (s)	4.6		16.2	16.2	24.4	24.4
Effective Green, g (s)	4.6		16.2	16.2	24.4	24.4
Actuated g/C Ratio	0.12		0.41	0.41	0.62	0.62
Clearance Time (s)	5.2		5.4	5.4	5.4	5.4
Vehicle Extension (s)	5.0		5.0	5.0	3.0	5.0
Lane Grp Cap (vph)	195		762	661	613	1153
v/s Ratio Prot	c0.05		0.10		0.01	c0.28
v/s Ratio Perm				0.00	0.07	
v/c Ratio	0.46		0.24	0.01	0.14	0.46
Uniform Delay, d1	16.3		7.7	6.9	3.5	4.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	3.5		0.3	0.0	0.1	0.6
Delay (s)	19.8		8.0	7.0	3.6	4.7
Level of Service	B		A	A	A	A
Approach Delay (s)	19.8		7.9			4.5
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	39.6	Sum of lost time (s)	10.6
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	0	<1>	0
Volume (vph)	155	26	115	12	14	2	71	244	12	2	197	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			1%	
Total Lost time (s)		5.0			5.0		5.0	5.0			5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.95			0.97		1.00	0.99			0.96	
Flt Protected		0.97			0.98		0.95	1.00			1.00	
Satd. Flow (prot)		1546			1545		1616	1623			1486	
Flt Permitted		0.82			0.83		0.40	1.00			0.99	
Satd. Flow (perm)		1295			1312		674	1623			1471	
Peak-hour factor, PHF	0.92	0.69	0.96	0.75	0.88	0.25	0.65	0.83	0.60	0.25	0.90	0.52
Adj. Flow (vph)	168	38	120	16	16	8	109	294	20	8	219	96
RTOR Reduction (vph)	0	40	0	0	6	0	0	5	0	0	28	0
Lane Group Flow (vph)	0	286	0	0	34	0	109	309	0	0	295	0
Heavy Vehicles (%)	2%	8%	0%	0%	14%	0%	0%	3%	16%	0%	10%	10%
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		14.3			14.3		23.6	23.6			15.6	
Effective Green, g (s)		14.3			14.3		23.6	23.6			15.6	
Actuated g/C Ratio		0.30			0.30		0.49	0.49			0.33	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		387			392		391	800			479	
v/s Ratio Prot							0.02	c0.19				
v/s Ratio Perm		c0.22			0.03		0.12				c0.20	
v/c Ratio		0.74			0.09		0.28	0.39			0.62	
Uniform Delay, d1		15.1			12.1		7.7	7.6			13.6	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		7.2			0.1		0.4	0.3			2.4	
Delay (s)		22.3			12.2		8.1	7.9			16.0	
Level of Service		C			B		A	A			B	
Approach Delay (s)		22.3			12.2			8.0			16.0	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	47.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	0	<1	1	0	<1>	0
Volume (vph)	0	493	25	37	585	0	51	0	25	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		3.0	5.0			4.0	4.0			
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00			
Frpb, ped/bikes		1.00		1.00	1.00			1.00	1.00			
Flpb, ped/bikes		1.00		1.00	1.00			0.99	1.00			
Frt		0.99		1.00	1.00			1.00	0.85			
Flt Protected		1.00		0.95	1.00			0.95	1.00			
Satd. Flow (prot)		1806		1626	1845			1693	1335			
Flt Permitted		1.00		0.95	1.00			0.76	1.00			
Satd. Flow (perm)		1806		1626	1845			1350	1335			
Peak-hour factor, PHF	1.00	0.84	0.64	0.71	0.88	1.00	0.57	1.00	0.64	1.00	1.00	1.00
Adj. Flow (vph)	0	587	39	52	665	0	89	0	39	0	0	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	623	0	52	665	0	0	89	39	0	0	0
Confl. Peds. (#/hr)							3					
Heavy Vehicles (%)	0%	4%	8%	11%	3%	0%	6%	0%	21%	0%	0%	0%
Turn Type	Perm			Prot			Perm		Perm	Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2						8		8	4		
Actuated Green, G (s)		27.0		16.0	46.0			20.0	20.0			
Effective Green, g (s)		27.0		16.0	46.0			20.0	20.0			
Actuated g/C Ratio		0.36		0.21	0.61			0.27	0.27			
Clearance Time (s)		5.0		3.0	5.0			4.0	4.0			
Lane Grp Cap (vph)		650		347	1132			360	356			
v/s Ratio Prot		c0.34		0.03	c0.36							
v/s Ratio Perm								c0.07	0.03			
v/c Ratio		0.96		0.15	0.59			0.25	0.11			
Uniform Delay, d1		23.4		24.0	8.8			21.6	20.8			
Progression Factor		1.00		0.65	0.63			1.00	1.00			
Incremental Delay, d2		26.4		0.7	1.7			1.6	0.6			
Delay (s)		49.8		16.3	7.2			23.2	21.4			
Level of Service		D		B	A			C	C			
Approach Delay (s)		49.8			7.9			22.7			0.0	
Approach LOS		D			A			C			A	

Intersection Summary			
HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	1	1	0	1	0
Volume (vph)	0	495	629	0	84	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		-1%	0%		0%	
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1819	1845		1787	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1819	1845		1787	
Peak-hour factor, PHF	1.00	0.93	0.84	0.93	0.68	1.00
Adj. Flow (vph)	0	532	749	0	124	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	532	749	0	124	0
Heavy Vehicles (%)	0%	5%	3%	2%	1%	0%
Turn Type						
Protected Phases		2	6		8	
Permitted Phases						
Actuated Green, G (s)		54.0	54.0		13.0	
Effective Green, g (s)		54.0	54.0		13.0	
Actuated g/C Ratio		0.72	0.72		0.17	
Clearance Time (s)		4.0	4.0		4.0	
Lane Grp Cap (vph)		1310	1328		310	
v/s Ratio Prot		0.29	c0.41		c0.07	
v/s Ratio Perm						
v/c Ratio		0.41	0.56		0.40	
Uniform Delay, d1		4.2	5.0		27.5	
Progression Factor		0.39	0.52		1.00	
Incremental Delay, d2		0.8	1.6		3.8	
Delay (s)		2.4	4.2		31.4	
Level of Service		A	A		C	
Approach Delay (s)		2.4	4.2		31.4	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations	1	0	0	1	2>	0	0	1	0	0
Volume (vph)	50	0	0	10	659	22	0	67	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0			4.0		
Lane Util. Factor	1.00			1.00	0.95			1.00		
Frt	1.00			1.00	0.99			0.86		
Flt Protected	0.95			0.95	1.00			1.00		
Satd. Flow (prot)	1805			1805	3517			1627		
Flt Permitted	0.95			0.95	1.00			1.00		
Satd. Flow (perm)	1805			1805	3517			1627		
Peak-hour factor, PHF	0.54	0.90	1.00	0.75	0.84	0.56	1.00	0.76	0.92	0.92
Adj. Flow (vph)	93	0	0	13	785	39	0	88	0	0
RTOR Reduction (vph)	0	0	0	6	5	0	0	59	0	0
Lane Group Flow (vph)	93	0	0	7	819	0	0	29	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	1%	2%	2%
Turn Type	Prot			custom				custom		
Protected Phases	8			1	1			8		
Permitted Phases				1				8		
Actuated Green, G (s)	25.0			42.0	42.0			25.0		
Effective Green, g (s)	25.0			42.0	42.0			25.0		
Actuated g/C Ratio	0.33			0.56	0.56			0.33		
Clearance Time (s)	4.0			4.0	4.0			4.0		
Lane Grp Cap (vph)	602			1011	1970			542		
v/s Ratio Prot	c0.05			0.00	c0.23			0.02		
v/s Ratio Perm										
v/c Ratio	0.15			0.01	0.42			0.05		
Uniform Delay, d1	17.6			7.3	9.5			17.0		
Progression Factor	1.21			1.00	1.00			1.00		
Incremental Delay, d2	0.5			0.0	0.6			0.2		
Delay (s)	21.8			7.3	10.1			17.2		
Level of Service	C			A	B			B		
Approach Delay (s)		21.8			10.1		17.2		0.0	
Approach LOS		C			B		B		A	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	2>	0	1	1	0	0	0	1
Volume (vph)	0	0	0	0	652	19	26	72	0	0	0	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			1%	
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		1.00	1.00				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					3491		1796	1872				1635
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					3491		1796	1872				1635
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	0.73	0.64	0.67	0.79	1.00	1.00	1.00	0.71
Adj. Flow (vph)	0	0	0	0	893	30	39	91	0	0	0	25
RTOR Reduction (vph)	0	0	0	0	3	0	34	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	920	0	5	91	0	0	0	25
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	1%	0%	0%	0%	0%
Turn Type							Perm					custom
Protected Phases					1			2				
Permitted Phases							2					2
Actuated Green, G (s)					44.8		7.2	7.2				7.2
Effective Green, g (s)					44.8		7.2	7.2				7.2
Actuated g/C Ratio					0.75		0.12	0.12				0.12
Clearance Time (s)					4.0		4.0	4.0				4.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					2607		216	225				196
v/s Ratio Prot					c0.26			c0.05				
v/s Ratio Perm							0.00					0.02
v/c Ratio					0.35		0.02	0.40				0.13
Uniform Delay, d1					2.6		23.3	24.4				23.6
Progression Factor					0.96		1.00	1.00				1.00
Incremental Delay, d2					0.4		0.0	1.2				0.3
Delay (s)					2.9		23.3	25.6				23.9
Level of Service					A		C	C				C
Approach Delay (s)		0.0			2.9			24.9			23.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	0	1	1	0	0	<1>	0	0	<1>	0
Volume (vph)	9	570	1	6	633	3	20	12	5	25	2	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.98			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1805	1815		1805	1842			1815			1768	
Flt Permitted	0.26	1.00		0.34	1.00			0.98			0.97	
Satd. Flow (perm)	490	1815		652	1842			1815			1768	
Peak-hour factor, PHF	0.56	0.90	0.25	0.38	0.82	0.38	0.68	0.46	0.42	0.52	0.25	0.71
Adj. Flow (vph)	16	633	4	16	772	8	29	26	12	48	8	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	10	0	0	21	0
Lane Group Flow (vph)	16	637	0	16	780	0	0	57	0	0	60	0
Heavy Vehicles (%)	0%	4%	100%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Split			Split		
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	49.0	49.0		49.0	49.0			5.0			6.0	
Effective Green, g (s)	49.0	49.0		49.0	49.0			5.0			6.0	
Actuated g/C Ratio	0.65	0.65		0.65	0.65			0.07			0.08	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	320	1186		426	1203			121			141	
v/s Ratio Prot		0.35			c0.42			c0.03			c0.03	
v/s Ratio Perm	0.03			0.02								
v/c Ratio	0.05	0.54		0.04	0.65			0.47			0.42	
Uniform Delay, d1	4.7	6.9		4.6	7.8			33.7			32.9	
Progression Factor	0.05	0.30		0.13	0.09			1.00			1.00	
Incremental Delay, d2	0.1	0.8		0.1	2.3			12.5			9.1	
Delay (s)	0.4	2.9		0.7	3.0			46.2			41.9	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		2.9			3.0			46.2			41.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	24	780	21	7	30	0	0	33	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			1%			-1%	
Total Lost time (s)					6.0			5.0			5.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3536			1660			1684	
Flt Permitted					1.00			0.88			1.00	
Satd. Flow (perm)					3536			1474			1684	
Peak-hour factor, PHF	1.00	1.00	1.00	0.69	0.86	0.83	0.44	0.70	1.00	1.00	0.65	0.88
Adj. Flow (vph)	0	0	0	35	907	25	16	43	0	0	51	43
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	40	0
Lane Group Flow (vph)	0	0	0	0	963	0	0	59	0	0	54	0
Heavy Vehicles (%)	0%	0%	0%	4%	2%	0%	0%	17%	0%	0%	0%	14%
Turn Type				Perm			Perm					
Protected Phases					1			2			2	
Permitted Phases				1			2					
Actuated Green, G (s)					32.8			3.3			3.3	
Effective Green, g (s)					32.8			3.3			3.3	
Actuated g/C Ratio					0.70			0.07			0.07	
Clearance Time (s)					6.0			5.0			5.0	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2462			103			118	
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.27			c0.04				
v/c Ratio					0.39			0.57			0.46	
Uniform Delay, d1					3.0			21.2			21.0	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.1			7.5			2.8	
Delay (s)					3.1			28.7			23.8	
Level of Service					A			C			C	
Approach Delay (s)		0.0			3.1			28.7			23.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	47.1	Sum of lost time (s)	11.0
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	1	1>	0
Volume (vph)	27	63	25	21	85	8	38	144	13	13	202	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.99		1.00	0.98		1.00	0.97	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786			1860		1805	1853		1805	1844	
Flt Permitted		0.91			0.92		0.52	1.00		0.63	1.00	
Satd. Flow (perm)		1647			1739		989	1853		1191	1844	
Peak-hour factor, PHF	0.78	0.91	0.72	0.62	0.78	0.67	0.80	0.77	0.60	0.50	0.76	0.85
Adj. Flow (vph)	35	69	35	34	109	12	48	187	22	26	266	65
RTOR Reduction (vph)	0	20	0	0	5	0	0	7	0	0	14	0
Lane Group Flow (vph)	0	119	0	0	150	0	48	202	0	26	317	0
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2	2		1			1	1	
Actuated Green, G (s)		20.0			20.0		32.0	32.0		32.0	32.0	
Effective Green, g (s)		20.0			20.0		32.0	32.0		32.0	32.0	
Actuated g/C Ratio		0.33			0.33		0.53	0.53		0.53	0.53	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		549			580		527	988		635	983	
v/s Ratio Prot								0.11			c0.17	
v/s Ratio Perm		0.07			c0.09		0.05			0.02		
v/c Ratio		0.22			0.26		0.09	0.20		0.04	0.32	
Uniform Delay, d1		14.4			14.6		6.9	7.3		6.7	7.9	
Progression Factor		1.00			1.00		0.58	0.53		1.00	1.00	
Incremental Delay, d2		0.9			1.1		0.3	0.5		0.1	0.9	
Delay (s)		15.3			15.7		4.3	4.3		6.8	8.8	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		15.3			15.7			4.3			8.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	17	799	21	17	38	0	0	17	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			-4%	
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.90	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3554			1802			1737	
Flt Permitted					1.00			0.91			1.00	
Satd. Flow (perm)					3554			1663			1737	
Peak-hour factor, PHF	1.00	1.00	1.00	0.50	0.78	0.62	0.80	0.73	1.00	1.00	0.67	0.70
Adj. Flow (vph)	0	0	0	34	1024	34	21	52	0	0	25	83
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	65	0
Lane Group Flow (vph)	0	0	0	0	1088	0	0	73	0	0	43	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	12%	0%	0%	0%	0%	0%
Turn Type				Split			Perm					
Protected Phases				1	1			2			2	
Permitted Phases							2					
Actuated Green, G (s)					39.0			13.0			13.0	
Effective Green, g (s)					39.0			13.0			13.0	
Actuated g/C Ratio					0.65			0.22			0.22	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					2310			360			376	
v/s Ratio Prot					c0.31						0.02	
v/s Ratio Perm								c0.04				
v/c Ratio					0.47			0.20			0.11	
Uniform Delay, d1					5.3			19.3			18.9	
Progression Factor					0.36			0.82			1.00	
Incremental Delay, d2					0.6			1.2			0.6	
Delay (s)					2.5			17.0			19.5	
Level of Service					A			B			B	
Approach Delay (s)		0.0			2.5			17.0			19.5	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<2>	0	0	0	0	0	1>	0	0	<1	0
Volume (vph)	47	611	20	0	0	0	0	10	4	23	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			1%			-1%	
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.95			1.00	
Flt Protected		1.00						1.00			0.96	
Satd. Flow (prot)		3459						1693			1827	
Flt Permitted		1.00						1.00			0.79	
Satd. Flow (perm)		3459						1693			1515	
Peak-hour factor, PHF	0.72	0.92	0.68	1.00	1.00	1.00	1.00	0.62	0.50	0.66	0.50	1.00
Adj. Flow (vph)	65	664	29	0	0	0	0	16	8	35	4	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	753	0	0	0	0	0	18	0	0	39	0
Heavy Vehicles (%)	2%	3%	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%
Turn Type	Split									Perm		
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)		39.0						13.0			13.0	
Effective Green, g (s)		39.0						13.0			13.0	
Actuated g/C Ratio		0.65						0.22			0.22	
Clearance Time (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		2248						367			328	
v/s Ratio Prot		c0.22						0.01				
v/s Ratio Perm											c0.03	
v/c Ratio		0.34						0.05			0.12	
Uniform Delay, d1		4.7						18.6			18.9	
Progression Factor		1.00						1.00			0.89	
Incremental Delay, d2		0.4						0.2			0.7	
Delay (s)		5.1						18.9			17.4	
Level of Service		A						B			B	
Approach Delay (s)		5.1			0.0			18.9			17.4	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Volume (vph)	511	35	108	663	122	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1810	1404	1736	1845	1770	1583
Flt Permitted	1.00	1.00	0.23	1.00	0.95	1.00
Satd. Flow (perm)	1810	1404	415	1845	1770	1583
Peak-hour factor, PHF	0.83	0.57	0.77	0.78	0.85	0.84
Adj. Flow (vph)	616	61	140	850	144	223
RTOR Reduction (vph)	0	34	0	0	0	0
Lane Group Flow (vph)	616	27	140	850	144	223
Heavy Vehicles (%)	5%	15%	4%	3%	2%	2%
Turn Type		Perm	pm+pt			Prot
Protected Phases	4		3	8	2	2
Permitted Phases		4	8			
Actuated Green, G (s)	23.3	23.3	30.2	30.2	11.7	11.7
Effective Green, g (s)	23.3	23.3	30.2	30.2	11.7	11.7
Actuated g/C Ratio	0.44	0.44	0.58	0.58	0.22	0.22
Clearance Time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	805	624	322	1063	395	353
v/s Ratio Prot	0.34		0.03	c0.46	0.08	c0.14
v/s Ratio Perm		0.02	0.22			
v/c Ratio	0.77	0.04	0.43	0.80	0.36	0.63
Uniform Delay, d1	12.2	8.2	7.0	8.7	17.2	18.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.4	0.0	0.9	4.3	0.6	3.7
Delay (s)	16.6	8.3	7.9	13.0	17.8	22.1
Level of Service	B	A	A	B	B	C
Approach Delay (s)	15.9			12.3	20.4	
Approach LOS	B			B	C	

Intersection Summary			
HCM Average Control Delay	14.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	52.4	Sum of lost time (s)	10.5
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	2	247	49	42	359	2	145	11	46	4	4	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			0%	
Total Lost time (s)		6.5			6.5			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.97			0.93	
Flt Protected		1.00			0.99			0.97			0.99	
Satd. Flow (prot)		1773			1838			1709			1750	
Flt Permitted		0.99			0.92			0.77			0.90	
Satd. Flow (perm)		1752			1704			1365			1587	
Peak-hour factor, PHF	0.25	0.94	0.65	0.67	0.74	0.50	0.84	0.69	0.79	0.50	0.50	0.75
Adj. Flow (vph)	8	263	75	63	485	4	173	16	58	8	8	16
RTOR Reduction (vph)	0	16	0	0	0	0	0	19	0	0	12	0
Lane Group Flow (vph)	0	330	0	0	552	0	0	228	0	0	20	0
Heavy Vehicles (%)	0%	4%	4%	5%	3%	0%	2%	0%	11%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		31.6			31.6			13.3			13.3	
Effective Green, g (s)		31.6			31.6			13.3			13.3	
Actuated g/C Ratio		0.55			0.55			0.23			0.23	
Clearance Time (s)		6.5			6.5			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		965			938			316			368	
v/s Ratio Prot												
v/s Ratio Perm		0.19			c0.32			c0.17			0.01	
v/c Ratio		0.34			0.59			0.72			0.05	
Uniform Delay, d1		7.1			8.6			20.3			17.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.0			2.7			7.9			0.1	
Delay (s)		8.1			11.3			28.2			17.2	
Level of Service		A			B			C			B	
Approach Delay (s)		8.1			11.3			28.2			17.2	
Approach LOS		A			B			C			B	

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	5	239	31	7	378	0	16	2	4	2	7	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.96			0.97	
Flt Protected		1.00			1.00			0.97			0.99	
Satd. Flow (prot)		1782			1826			1781			1824	
Flt Permitted		0.98			0.99			1.00			0.95	
Satd. Flow (perm)		1753			1808			1830			1740	
Peak-hour factor, PHF	0.42	0.99	0.50	0.44	0.76	1.00	0.67	0.25	0.33	0.50	0.35	0.62
Adj. Flow (vph)	12	241	62	16	497	0	24	8	12	4	20	8
RTOR Reduction (vph)	0	13	0	0	0	0	0	11	0	0	8	0
Lane Group Flow (vph)	0	302	0	0	513	0	0	33	0	0	24	0
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		40.0			40.0			2.4			2.4	
Effective Green, g (s)		40.0			40.0			2.4			2.4	
Actuated g/C Ratio		0.76			0.76			0.05			0.05	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1338			1380			84			80	
v/s Ratio Prot												
v/s Ratio Perm		0.17			c0.28			c0.02			0.01	
v/c Ratio		0.23			0.37			0.39			0.30	
Uniform Delay, d1		1.8			2.0			24.3			24.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.4			0.8			3.0			2.2	
Delay (s)		2.2			2.8			27.2			26.3	
Level of Service		A			A			C			C	
Approach Delay (s)		2.2			2.8			27.2			26.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	52.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1	1	1	1>	0	1	1	1
Volume (vph)	36	555	39	27	440	71	33	7	4	52	9	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	16	16
Grade (%)		1%			-1%			1%			2%	
Total Lost time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1744	1804		1744	1836	1623	1796	1796		1718	2132	1812
Flt Permitted	0.37	1.00		0.42	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Satd. Flow (perm)	679	1804		765	1836	1623	1890	1796		1809	2132	1812
Peak-hour factor, PHF	0.63	0.91	0.90	0.42	0.83	0.74	0.70	0.44	0.50	0.71	0.56	0.78
Adj. Flow (vph)	57	610	43	64	530	96	47	16	8	73	16	42
RTOR Reduction (vph)	0	5	0	0	0	41	0	7	0	0	0	39
Lane Group Flow (vph)	57	648	0	64	530	55	47	17	0	73	16	3
Heavy Vehicles (%)	3%	4%	0%	4%	4%	0%	0%	0%	0%	4%	0%	0%
Turn Type	pm+pt			Perm		Perm	Perm			Perm		Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	29.1	29.1		24.6	24.6	24.6	3.3	3.3		3.3	3.3	3.3
Effective Green, g (s)	29.1	29.1		24.6	24.6	24.6	3.3	3.3		3.3	3.3	3.3
Actuated g/C Ratio	0.68	0.68		0.57	0.57	0.57	0.08	0.08		0.08	0.08	0.08
Clearance Time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	485	1224		439	1053	931	145	138		139	164	139
v/s Ratio Prot	0.00	c0.36			0.29			0.01			0.01	
v/s Ratio Perm	0.08			0.08		0.03	0.02			c0.04		0.00
v/c Ratio	0.12	0.53		0.15	0.50	0.06	0.32	0.12		0.53	0.10	0.02
Uniform Delay, d1	2.7	3.5		4.3	5.5	4.0	18.7	18.4		19.0	18.4	18.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.4		0.2	0.4	0.0	1.3	0.4		3.6	0.3	0.1
Delay (s)	2.8	3.9		4.4	5.9	4.1	20.0	18.8		22.6	18.7	18.4
Level of Service	A	A		A	A	A	C	B		C	B	B
Approach Delay (s)		3.8			5.5			19.6			20.8	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	42.9	Sum of lost time (s)	10.5
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	0	1>	0	0	<1>	0	0	<1	1
Volume (vph)	30	795	29	7	310	116	6	1	30	181	3	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			0%			-1%	
Total Lost time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.99			0.96			0.89			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.99			0.95	1.00
Satd. Flow (prot)	1497	1836			1733			1541			1804	1531
Flt Permitted	0.47	1.00			0.87			0.99			0.95	1.00
Satd. Flow (perm)	734	1836			1505			1541			1804	1531
Peak-hour factor, PHF	0.91	0.86	0.64	0.58	0.90	0.79	0.75	0.25	0.66	0.80	0.38	0.67
Adj. Flow (vph)	33	924	45	12	344	147	8	4	45	226	8	24
RTOR Reduction (vph)	0	2	0	0	19	0	0	44	0	0	0	14
Lane Group Flow (vph)	33	967	0	0	484	0	0	13	0	0	234	10
Heavy Vehicles (%)	20%	2%	7%	14%	7%	2%	33%	0%	6%	1%	0%	6%
Turn Type	Perm			Perm			Split			Split		Perm
Protected Phases		2			6		8	8		4	4	
Permitted Phases	2	2		6								4
Actuated Green, G (s)	43.9	43.9			43.9			2.2			11.2	11.2
Effective Green, g (s)	43.9	43.9			43.9			2.2			11.2	11.2
Actuated g/C Ratio	0.59	0.59			0.59			0.03			0.15	0.15
Clearance Time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	433	1082			887			46			271	230
v/s Ratio Prot		c0.53						c0.01			c0.13	
v/s Ratio Perm	0.04				0.32							0.01
v/c Ratio	0.08	0.89			0.55			0.29			0.86	0.05
Uniform Delay, d1	6.6	13.3			9.3			35.4			30.9	27.1
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.1	9.6			0.7			3.5			23.6	0.1
Delay (s)	6.7	22.9			10.0			38.9			54.5	27.2
Level of Service	A	C			A			D			D	C
Approach Delay (s)		22.3			10.0			38.9			51.9	
Approach LOS		C			A			D			D	

Intersection Summary			
HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	74.5	Sum of lost time (s)	17.2
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	761	241	69	336	145	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-2%	0%	
Total Lost time (s)	7.0		7.0	7.0	7.0	7.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1799		1823	1881	1805	1599
Flt Permitted	1.00		0.06	1.00	0.95	1.00
Satd. Flow (perm)	1799		115	1881	1805	1599
Peak-hour factor, PHF	0.91	0.78	0.61	0.92	0.68	0.86
Adj. Flow (vph)	836	309	113	365	213	79
RTOR Reduction (vph)	13	0	0	0	0	0
Lane Group Flow (vph)	1132	0	113	365	213	79
Heavy Vehicles (%)	1%	2%	0%	2%	0%	1%
Turn Type			pm+pt			pt+ov
Protected Phases	4		3	8	2	2 3
Permitted Phases			8			
Actuated Green, G (s)	60.0		73.2	73.2	12.8	26.0
Effective Green, g (s)	60.0		73.2	73.2	12.8	26.0
Actuated g/C Ratio	0.60		0.73	0.73	0.13	0.26
Clearance Time (s)	7.0		7.0	7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1079		190	1377	231	416
v/s Ratio Prot	c0.63		c0.04	0.19	c0.12	0.05
v/s Ratio Perm			0.40			
v/c Ratio	1.05		0.59	0.27	0.92	0.19
Uniform Delay, d1	20.0		24.9	4.5	43.1	28.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	41.2		4.9	0.1	38.4	0.2
Delay (s)	61.2		29.8	4.6	81.5	29.0
Level of Service	E		C	A	F	C
Approach Delay (s)	61.2			10.5	67.3	
Approach LOS	E			B	E	

Intersection Summary			
HCM Average Control Delay	49.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	1	1	1	1	0	0	0	0	1	2	1
Volume (vph)	0	236	122	207	133	0	0	0	0	239	773	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00					1.00	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		1900	1599	1787	1900					1805	3539	1583
Flt Permitted		1.00	1.00	0.48	1.00					0.95	1.00	1.00
Satd. Flow (perm)		1900	1599	910	1900					1805	3539	1583
Peak-hour factor, PHF	1.00	0.83	0.85	0.79	0.71	1.00	1.00	1.00	1.00	0.96	0.93	0.73
Adj. Flow (vph)	0	284	144	262	187	0	0	0	0	249	831	108
RTOR Reduction (vph)	0	0	100	0	0	0	0	0	0	0	0	68
Lane Group Flow (vph)	0	284	44	262	187	0	0	0	0	249	831	40
Heavy Vehicles (%)	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	2%	2%
Turn Type			Perm	pm+pt						Split		Prot
Protected Phases		4		3	8					2	2	2
Permitted Phases			4	8								
Actuated Green, G (s)		16.5	16.5	30.0	28.5					22.0	22.0	22.0
Effective Green, g (s)		16.5	16.5	30.0	28.5					22.0	22.0	22.0
Actuated g/C Ratio		0.28	0.28	0.50	0.48					0.37	0.37	0.37
Clearance Time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Grp Cap (vph)		523	440	587	903					662	1298	580
v/s Ratio Prot		c0.15		c0.07	0.10					0.14	c0.23	0.03
v/s Ratio Perm			0.03	0.16								
v/c Ratio		0.54	0.10	0.45	0.21					0.38	0.64	0.07
Uniform Delay, d1		18.5	16.2	12.4	9.2					14.0	15.7	12.3
Progression Factor		0.79	0.79	0.17	0.06					0.73	0.77	0.66
Incremental Delay, d2		3.6	0.4	1.9	0.4					1.5	2.2	0.2
Delay (s)		18.2	13.3	3.9	1.0					11.7	14.4	8.4
Level of Service		B	B	A	A					B	B	A
Approach Delay (s)		16.5			2.7			0.0			13.3	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	2>	0	0	0	0	0	1	1	1	1	0
Volume (vph)	0	720	213	0	0	0	0	334	204	106	362	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			1%	
Total Lost time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Util. Factor		0.95						1.00	1.00	1.00	1.00	
Frt		0.97						1.00	0.85	1.00	1.00	
Flt Protected		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3458						1910	1591	1796	1890	
Flt Permitted		1.00						1.00	1.00	0.32	1.00	
Satd. Flow (perm)		3458						1910	1591	598	1890	
Peak-hour factor, PHF	1.00	0.94	0.92	1.00	1.00	1.00	1.00	0.80	0.82	0.71	0.93	1.00
Adj. Flow (vph)	0	766	232	0	0	0	0	418	249	149	389	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	998	0	0	0	0	0	418	249	149	389	0
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%
Turn Type									Perm	D.P+P		
Protected Phases		1						3		2	4	
Permitted Phases									3	3		
Actuated Green, G (s)		24.0						19.0	19.0	23.0	26.0	
Effective Green, g (s)		24.0						19.0	19.0	23.0	26.0	
Actuated g/C Ratio		0.40						0.32	0.32	0.38	0.43	
Clearance Time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		1383						605	504	309	819	
v/s Ratio Prot		c0.29						c0.22		0.03	c0.21	
v/s Ratio Perm									0.16	0.15		
v/c Ratio		0.72						0.69	0.49	0.48	0.47	
Uniform Delay, d1		15.2						17.9	16.6	13.0	12.1	
Progression Factor		0.71						1.00	1.00	0.51	0.54	
Incremental Delay, d2		3.0						6.4	3.4	4.8	1.8	
Delay (s)		13.7						24.3	20.0	11.4	8.3	
Level of Service		B						C	C	B	A	
Approach Delay (s)		13.7			0.0			22.7			9.2	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	21	133	373	66	121	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Total Lost time (s)	5.2		5.4	5.4	5.4	5.4
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.89		1.00	0.85	1.00	1.00
Flt Protected	0.99		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1545		1863	1615	1814	1801
Flt Permitted	0.99		1.00	1.00	0.37	1.00
Satd. Flow (perm)	1545		1863	1615	701	1801
Peak-hour factor, PHF	0.56	0.85	0.90	0.79	0.76	0.92
Adj. Flow (vph)	38	156	414	84	159	261
RTOR Reduction (vph)	137	0	0	46	0	0
Lane Group Flow (vph)	57	0	414	38	159	261
Heavy Vehicles (%)	15%	7%	2%	0%	0%	6%
Turn Type				Perm	pm+pt	
Protected Phases	4		6		5	2
Permitted Phases				6	2	
Actuated Green, G (s)	5.8		21.0	21.0	30.6	30.6
Effective Green, g (s)	5.8		21.0	21.0	30.6	30.6
Actuated g/C Ratio	0.12		0.45	0.45	0.65	0.65
Clearance Time (s)	5.2		5.4	5.4	5.4	5.4
Vehicle Extension (s)	5.0		5.0	5.0	3.0	5.0
Lane Grp Cap (vph)	191		832	722	556	1173
v/s Ratio Prot	c0.04		c0.22		0.03	c0.14
v/s Ratio Perm				0.02	0.16	
v/c Ratio	0.30		0.50	0.05	0.29	0.22
Uniform Delay, d1	18.8		9.2	7.4	3.9	3.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8		1.0	0.1	0.3	0.2
Delay (s)	20.6		10.2	7.4	4.2	3.5
Level of Service	C		B	A	A	A
Approach Delay (s)	20.6		9.8			3.8
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	47.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	0	<1>	0
Volume (vph)	51	24	116	28	29	6	232	253	27	3	258	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			1%	
Total Lost time (s)		5.0			5.0		5.0	5.0			5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.91			0.98		1.00	0.98			0.94	
Flt Protected		0.99			0.98		0.95	1.00			1.00	
Satd. Flow (prot)		1528			1636		1600	1659			1580	
Flt Permitted		0.91			0.73		0.29	1.00			1.00	
Satd. Flow (perm)		1408			1220		494	1659			1576	
Peak-hour factor, PHF	0.94	0.52	0.63	0.75	0.54	0.50	0.85	0.94	0.81	0.75	0.92	0.78
Adj. Flow (vph)	54	46	184	37	54	12	273	269	33	4	280	236
RTOR Reduction (vph)	0	111	0	0	8	0	0	8	0	0	56	0
Lane Group Flow (vph)	0	173	0	0	95	0	273	294	0	0	464	0
Heavy Vehicles (%)	0%	4%	0%	3%	0%	0%	1%	1%	0%	0%	2%	0%
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		10.0			10.0		30.4	30.4			19.2	
Effective Green, g (s)		10.0			10.0		30.4	30.4			19.2	
Actuated g/C Ratio		0.20			0.20		0.60	0.60			0.38	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		279			242		434	1001			600	
v/s Ratio Prot							c0.08	0.18				
v/s Ratio Perm		c0.12			0.08		0.30				c0.29	
v/c Ratio		0.62			0.39		0.63	0.29			0.77	
Uniform Delay, d1		18.5			17.6		7.2	4.8			13.7	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		4.3			1.1		2.8	0.2			6.1	
Delay (s)		22.7			18.6		10.0	5.0			19.8	
Level of Service		C			B		B	A			B	
Approach Delay (s)		22.7			18.6			7.4			19.8	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	50.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	0	<1	1	0	<1>	0
Volume (vph)	18	738	32	50	908	6	134	46	88	28	43	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		3.0	5.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1805	1832		1703	1859			1826	1599		1792	
Flt Permitted	0.12	1.00		0.95	1.00			0.68	1.00		0.74	
Satd. Flow (perm)	232	1832		1703	1859			1283	1599		1343	
Peak-hour factor, PHF	0.61	0.86	0.81	0.75	0.83	0.38	0.69	0.66	0.83	0.81	0.89	0.61
Adj. Flow (vph)	30	858	40	67	1094	16	194	70	106	35	48	39
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	19	0
Lane Group Flow (vph)	30	896	0	67	1110	0	0	264	106	0	103	0
Confl. Peds. (#/hr)							3					
Heavy Vehicles (%)	0%	3%	3%	6%	2%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm			Prot			Perm		Perm	Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2						8		8	4		
Actuated Green, G (s)	43.0	43.0		15.0	61.0			20.0	20.0		20.0	
Effective Green, g (s)	43.0	43.0		15.0	61.0			20.0	20.0		20.0	
Actuated g/C Ratio	0.48	0.48		0.17	0.68			0.22	0.22		0.22	
Clearance Time (s)	5.0	5.0		3.0	5.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	111	875		284	1260			285	355		298	
v/s Ratio Prot		c0.49		0.04	c0.60							
v/s Ratio Perm	0.13							c0.21	0.07		0.08	
v/c Ratio	0.27	1.02		0.24	0.88			0.93	0.30		0.35	
Uniform Delay, d1	14.1	23.5		32.5	11.6			34.3	29.2		29.5	
Progression Factor	1.00	1.00		0.73	1.28			1.00	1.00		1.00	
Incremental Delay, d2	5.9	36.6		0.9	4.4			37.3	2.1		3.2	
Delay (s)	20.0	60.1		24.7	19.2			71.6	31.3		32.7	
Level of Service	B	E		C	B			E	C		C	
Approach Delay (s)		58.8			19.6			60.1			32.7	
Approach LOS		E			B			E			C	

Intersection Summary			
HCM Average Control Delay	40.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	1	1	0	1	0
Volume (vph)	0	835	990	0	177	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		-1%	0%		0%	
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1872	1863		1789	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1872	1863		1789	
Peak-hour factor, PHF	1.00	0.87	0.91	0.93	0.83	0.25
Adj. Flow (vph)	0	960	1088	0	213	4
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	0	960	1088	0	216	0
Heavy Vehicles (%)	0%	2%	2%	2%	1%	0%
Turn Type						
Protected Phases		2	6		8	
Permitted Phases						
Actuated Green, G (s)		67.0	67.0		15.0	
Effective Green, g (s)		67.0	67.0		15.0	
Actuated g/C Ratio		0.74	0.74		0.17	
Clearance Time (s)		4.0	4.0		4.0	
Lane Grp Cap (vph)		1394	1387		298	
v/s Ratio Prot		0.51	c0.58		c0.12	
v/s Ratio Perm						
v/c Ratio		0.69	0.78		0.73	
Uniform Delay, d1		6.0	7.1		35.5	
Progression Factor		0.41	0.69		1.00	
Incremental Delay, d2		2.3	3.9		14.3	
Delay (s)		4.7	8.8		49.8	
Level of Service		A	A		D	
Approach Delay (s)		4.7	8.8		49.8	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations	1	0	0	1	2>	0	0	1	0	0
Volume (vph)	82	0	0	18	1136	35	0	154	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0			4.0		
Lane Util. Factor	1.00			1.00	0.95			1.00		
Frt	1.00			1.00	0.99			0.86		
Flt Protected	0.95			0.95	1.00			1.00		
Satd. Flow (prot)	1805			1805	3555			1627		
Flt Permitted	0.95			0.95	1.00			1.00		
Satd. Flow (perm)	1805			1805	3555			1627		
Peak-hour factor, PHF	0.88	0.90	1.00	0.61	0.96	0.73	1.00	0.67	0.92	0.92
Adj. Flow (vph)	93	0	0	30	1183	48	0	230	0	0
RTOR Reduction (vph)	0	0	0	11	3	0	0	58	0	0
Lane Group Flow (vph)	93	0	0	19	1228	0	0	172	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	1%	2%	2%
Turn Type	Prot			custom				custom		
Protected Phases	8			1	1			8		
Permitted Phases				1				8		
Actuated Green, G (s)	27.0			55.0	55.0			27.0		
Effective Green, g (s)	27.0			55.0	55.0			27.0		
Actuated g/C Ratio	0.30			0.61	0.61			0.30		
Clearance Time (s)	4.0			4.0	4.0			4.0		
Lane Grp Cap (vph)	542			1103	2173			488		
v/s Ratio Prot	0.05			0.01	c0.35			c0.11		
v/s Ratio Perm										
v/c Ratio	0.17			0.02	0.57			0.35		
Uniform Delay, d1	23.2			6.9	10.4			24.7		
Progression Factor	0.84			1.00	1.00			1.00		
Incremental Delay, d2	0.5			0.0	1.1			2.0		
Delay (s)	20.1			6.9	11.5			26.6		
Level of Service	C			A	B			C		
Approach Delay (s)		20.1			11.4		26.6		0.0	
Approach LOS		C			B		C		A	

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	2>	0	1	1	0	0	0	1
Volume (vph)	0	0	0	0	988	44	54	133	0	0	0	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			1%	
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		1.00	1.00				1.00
Frt					0.99		1.00	1.00				0.86
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					3545		1796	1890				1635
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					3545		1796	1890				1635
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	0.90	0.64	0.78	0.74	1.00	1.00	1.00	0.71
Adj. Flow (vph)	0	0	0	0	1098	69	69	180	0	0	0	56
RTOR Reduction (vph)	0	0	0	0	6	0	56	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1161	0	13	180	0	0	0	56
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type							Perm					custom
Protected Phases					1			2				
Permitted Phases							2					2
Actuated Green, G (s)					40.9		11.1	11.1				11.1
Effective Green, g (s)					40.9		11.1	11.1				11.1
Actuated g/C Ratio					0.68		0.18	0.18				0.18
Clearance Time (s)					4.0		4.0	4.0				4.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					2417		332	350				302
v/s Ratio Prot					c0.33			c0.10				
v/s Ratio Perm							0.01					0.03
v/c Ratio					0.48		0.04	0.51				0.19
Uniform Delay, d1					4.5		20.1	22.0				20.6
Progression Factor					0.97		1.00	1.00				1.00
Incremental Delay, d2					0.7		0.0	1.3				0.3
Delay (s)					5.1		20.1	23.3				20.9
Level of Service					A		C	C				C
Approach Delay (s)		0.0			5.1			22.4			20.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	0	1	1	0	0	<1>	0	0	<1>	0
Volume (vph)	14	751	1	4	870	1	28	25	27	31	7	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.94			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1687	1862		1805	1862			1763			1751	
Flt Permitted	0.08	1.00		0.27	1.00			0.98			0.98	
Satd. Flow (perm)	147	1862		511	1862			1763			1751	
Peak-hour factor, PHF	0.81	0.96	0.25	1.00	0.77	0.25	0.59	0.64	0.42	0.72	0.44	0.66
Adj. Flow (vph)	17	782	4	4	1130	4	47	39	64	43	16	47
RTOR Reduction (vph)	0	0	0	0	0	0	0	30	0	0	32	0
Lane Group Flow (vph)	17	786	0	4	1134	0	0	120	0	0	74	0
Heavy Vehicles (%)	7%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Split			Split		
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	62.0	62.0		62.0	62.0			7.0			6.0	
Effective Green, g (s)	62.0	62.0		62.0	62.0			7.0			6.0	
Actuated g/C Ratio	0.69	0.69		0.69	0.69			0.08			0.07	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	101	1283		352	1283			137			117	
v/s Ratio Prot		0.42			c0.61			c0.07			c0.04	
v/s Ratio Perm	0.12			0.01								
v/c Ratio	0.17	0.61		0.01	0.88			0.88			0.63	
Uniform Delay, d1	4.9	7.5		4.4	11.1			41.1			40.9	
Progression Factor	0.04	0.04		1.34	0.84			1.00			1.00	
Incremental Delay, d2	1.3	0.8		0.0	6.1			49.9			23.4	
Delay (s)	1.5	1.1		5.9	15.5			91.0			64.3	
Level of Service	A	A		A	B			F			E	
Approach Delay (s)		1.1			15.4			91.0			64.3	
Approach LOS		A			B			F			E	

Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	44	1041	15	15	50	0	0	42	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			1%			-1%	
Total Lost time (s)					6.0			5.0			5.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.93	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3574			1741			1734	
Flt Permitted					1.00			0.85			1.00	
Satd. Flow (perm)					3574			1507			1734	
Peak-hour factor, PHF	1.00	1.00	1.00	0.68	0.91	0.88	0.44	0.64	1.00	1.00	0.70	0.87
Adj. Flow (vph)	0	0	0	65	1144	17	34	78	0	0	60	64
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	54	0
Lane Group Flow (vph)	0	0	0	0	1225	0	0	112	0	0	70	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	7%	0%	10%	0%	0%	5%	0%
Turn Type				Perm			Perm					
Protected Phases					1			2			2	
Permitted Phases				1			2					
Actuated Green, G (s)					35.3			8.1			8.1	
Effective Green, g (s)					35.3			8.1			8.1	
Actuated g/C Ratio					0.65			0.15			0.15	
Clearance Time (s)					6.0			5.0			5.0	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2319			224			258	
v/s Ratio Prot											0.04	
v/s Ratio Perm					0.34			c0.07				
v/c Ratio					0.53			0.50			0.27	
Uniform Delay, d1					5.1			21.3			20.5	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.2			1.8			0.6	
Delay (s)					5.3			23.0			21.1	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.3			23.0			21.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	54.4	Sum of lost time (s)	11.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	1	1>	0
Volume (vph)	97	98	64	32	118	17	13	207	17	20	282	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.98		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1779			1850		1805	1877		1805	1819	
Flt Permitted		0.83			0.90		0.41	1.00		0.57	1.00	
Satd. Flow (perm)		1497			1689		788	1877		1079	1819	
Peak-hour factor, PHF	0.89	0.83	0.78	0.83	0.87	0.67	0.50	0.88	0.80	0.53	0.91	0.74
Adj. Flow (vph)	109	118	82	39	136	25	26	235	21	38	310	96
RTOR Reduction (vph)	0	22	0	0	9	0	0	6	0	0	19	0
Lane Group Flow (vph)	0	287	0	0	191	0	26	251	0	38	387	0
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2	2		1			1	1	
Actuated Green, G (s)		25.0			25.0		27.0	27.0		27.0	27.0	
Effective Green, g (s)		25.0			25.0		27.0	27.0		27.0	27.0	
Actuated g/C Ratio		0.42			0.42		0.45	0.45		0.45	0.45	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		624			704		355	845		486	819	
v/s Ratio Prot								0.13			c0.21	
v/s Ratio Perm		c0.19			0.11		0.03			0.04		
v/c Ratio		0.46			0.27		0.07	0.30		0.08	0.47	
Uniform Delay, d1		12.6			11.5		9.4	10.5		9.4	11.5	
Progression Factor		1.00			1.00		0.99	0.88		1.00	1.00	
Incremental Delay, d2		2.4			1.0		0.4	0.9		0.3	2.0	
Delay (s)		15.1			12.5		9.7	10.1		9.7	13.5	
Level of Service		B			B		A	B		A	B	
Approach Delay (s)		15.1			12.5			10.0			13.2	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	47	1071	53	29	74	0	0	26	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			-4%	
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					0.99			1.00			0.90	
Flt Protected					1.00			0.98			1.00	
Satd. Flow (prot)					3543			1854			1729	
Flt Permitted					1.00			0.85			1.00	
Satd. Flow (perm)					3543			1604			1729	
Peak-hour factor, PHF	1.00	1.00	1.00	0.63	0.87	0.82	0.56	0.94	1.00	1.00	0.86	0.75
Adj. Flow (vph)	0	0	0	75	1231	65	52	79	0	0	30	79
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	62	0
Lane Group Flow (vph)	0	0	0	0	1365	0	0	131	0	0	47	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	4%	0%
Turn Type				Split			Perm					
Protected Phases				1	1			2			2	
Permitted Phases							2					
Actuated Green, G (s)					39.0			13.0			13.0	
Effective Green, g (s)					39.0			13.0			13.0	
Actuated g/C Ratio					0.65			0.22			0.22	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					2303			348			375	
v/s Ratio Prot					c0.39						0.03	
v/s Ratio Perm								c0.08				
v/c Ratio					0.59			0.38			0.13	
Uniform Delay, d1					6.0			20.0			18.9	
Progression Factor					0.34			0.94			1.00	
Incremental Delay, d2					1.0			2.9			0.7	
Delay (s)					3.1			21.7			19.6	
Level of Service					A			C			B	
Approach Delay (s)		0.0			3.1			21.7			19.6	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<2>	0	0	0	0	0	1>	0	0	<1	0
Volume (vph)	87	831	37	0	0	0	0	19	13	50	15	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			1%			-1%	
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.94			1.00	
Flt Protected		1.00						1.00			0.96	
Satd. Flow (prot)		3521						1780			1810	
Flt Permitted		1.00						1.00			0.76	
Satd. Flow (perm)		3521						1780			1424	
Peak-hour factor, PHF	0.95	0.87	0.71	1.00	1.00	1.00	1.00	0.56	0.50	0.68	0.70	1.00
Adj. Flow (vph)	92	955	52	0	0	0	0	34	26	74	21	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	0	1093	0	0	0	0	0	40	0	0	95	0
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%
Turn Type	Split									Perm		
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)		38.0						14.0			14.0	
Effective Green, g (s)		38.0						14.0			14.0	
Actuated g/C Ratio		0.63						0.23			0.23	
Clearance Time (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		2230						415			332	
v/s Ratio Prot		c0.31						0.02				
v/s Ratio Perm											c0.07	
v/c Ratio		0.49						0.10			0.29	
Uniform Delay, d1		5.8						18.0			18.9	
Progression Factor		1.00						1.00			0.78	
Incremental Delay, d2		0.8						0.5			1.9	
Delay (s)		6.6						18.5			16.7	
Level of Service		A						B			B	
Approach Delay (s)		6.6			0.0			18.5			16.7	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Volume (vph)	644	102	223	758	81	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1599	1752	1845	1787	1583
Flt Permitted	1.00	1.00	0.14	1.00	0.95	1.00
Satd. Flow (perm)	1845	1599	259	1845	1787	1583
Peak-hour factor, PHF	0.90	0.78	0.93	0.76	0.77	0.90
Adj. Flow (vph)	716	131	240	997	105	266
RTOR Reduction (vph)	0	74	0	0	0	0
Lane Group Flow (vph)	716	57	240	997	105	266
Heavy Vehicles (%)	3%	1%	3%	3%	1%	2%
Turn Type		Perm	pm+pt			Prot
Protected Phases	4		3	8	2	2
Permitted Phases		4	8			
Actuated Green, G (s)	24.9	24.9	34.0	34.0	12.5	12.5
Effective Green, g (s)	24.9	24.9	34.0	34.0	12.5	12.5
Actuated g/C Ratio	0.44	0.44	0.60	0.60	0.22	0.22
Clearance Time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	806	699	299	1101	392	347
v/s Ratio Prot	0.39		0.08	c0.54	0.06	c0.17
v/s Ratio Perm		0.04	0.40			
v/c Ratio	0.89	0.08	0.80	0.91	0.27	0.77
Uniform Delay, d1	14.8	9.4	9.9	10.1	18.5	20.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.7	0.1	14.3	10.5	0.4	9.7
Delay (s)	26.4	9.4	24.2	20.6	18.8	30.6
Level of Service	C	A	C	C	B	C
Approach Delay (s)	23.8			21.3	27.3	
Approach LOS	C			C	C	

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	5	389	137	31	333	2	112	16	47	8	9	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			0%	
Total Lost time (s)		6.5			6.5			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.97			0.98	
Flt Protected		1.00			1.00			0.97			0.98	
Satd. Flow (prot)		1835			1856			1780			1812	
Flt Permitted		0.99			0.92			0.80			0.81	
Satd. Flow (perm)		1818			1715			1457			1510	
Peak-hour factor, PHF	0.42	0.87	0.91	0.83	0.89	0.50	0.89	0.40	0.94	0.40	0.56	0.50
Adj. Flow (vph)	12	447	151	37	374	4	126	40	50	20	16	8
RTOR Reduction (vph)	0	21	0	0	0	0	0	20	0	0	6	0
Lane Group Flow (vph)	0	589	0	0	415	0	0	196	0	0	38	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	50%	0%	0%	2%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		31.5			31.5			10.2			10.2	
Effective Green, g (s)		31.5			31.5			10.2			10.2	
Actuated g/C Ratio		0.58			0.58			0.19			0.19	
Clearance Time (s)		6.5			6.5			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1057			997			274			284	
v/s Ratio Prot												
v/s Ratio Perm		c0.32			0.24			c0.13			0.02	
v/c Ratio		0.56			0.42			0.71			0.13	
Uniform Delay, d1		7.0			6.3			20.6			18.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.1			1.3			8.5			0.2	
Delay (s)		9.2			7.5			29.2			18.5	
Level of Service		A			A			C			B	
Approach Delay (s)		9.2			7.5			29.2			18.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	11	401	5	2	353	2	8	1	3	3	2	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.97			0.93	
Flt Protected		1.00			1.00			0.97			0.99	
Satd. Flow (prot)		1866			1859			1795			1750	
Flt Permitted		0.99			0.99			1.00			1.00	
Satd. Flow (perm)		1850			1847			1849			1772	
Peak-hour factor, PHF	0.92	0.88	0.62	0.25	0.90	0.50	0.67	0.25	0.75	0.38	0.25	0.69
Adj. Flow (vph)	12	456	8	8	392	4	12	4	4	8	8	16
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	16	0
Lane Group Flow (vph)	0	476	0	0	404	0	0	16	0	0	16	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		39.0			39.0			1.5			1.5	
Effective Green, g (s)		39.0			39.0			1.5			1.5	
Actuated g/C Ratio		0.77			0.77			0.03			0.03	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1429			1426			55			53	
v/s Ratio Prot												
v/s Ratio Perm		c0.26			0.22			0.01			c0.01	
v/c Ratio		0.33			0.28			0.29			0.31	
Uniform Delay, d1		1.8			1.7			24.0			24.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.6			0.5			3.0			3.3	
Delay (s)		2.4			2.2			26.9			27.3	
Level of Service		A			A			C			C	
Approach Delay (s)		2.4			2.2			26.9			27.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1	1	1	1>	0	1	1	1
Volume (vph)	89	578	26	21	716	215	54	9	23	200	4	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	16	16
Grade (%)		1%			-1%			1%			2%	
Total Lost time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1796	1807		1814	1872	1623	1796	1696		1787	2132	1812
Flt Permitted	0.09	1.00		0.39	1.00	1.00	0.75	1.00		0.72	1.00	1.00
Satd. Flow (perm)	169	1807		746	1872	1623	1422	1696		1361	2132	1812
Peak-hour factor, PHF	0.71	0.96	0.75	0.71	0.77	0.95	0.69	0.56	0.66	0.80	0.50	0.69
Adj. Flow (vph)	125	602	35	30	930	226	78	16	35	250	8	196
RTOR Reduction (vph)	0	3	0	0	0	70	0	27	0	0	0	153
Lane Group Flow (vph)	125	634	0	30	930	156	78	24	0	250	8	43
Heavy Vehicles (%)	0%	4%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt			Perm		Perm	Perm			Perm		Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	47.3	47.3		41.2	41.2	41.2	16.1	16.1		16.1	16.1	16.1
Effective Green, g (s)	47.3	47.3		41.2	41.2	41.2	16.1	16.1		16.1	16.1	16.1
Actuated g/C Ratio	0.64	0.64		0.56	0.56	0.56	0.22	0.22		0.22	0.22	0.22
Clearance Time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	165	1157		416	1044	905	310	369		297	464	395
v/s Ratio Prot	c0.03	0.35			c0.50			0.01			0.00	
v/s Ratio Perm	0.46			0.04		0.10	0.05			c0.18		0.02
v/c Ratio	0.76	0.55		0.07	0.89	0.17	0.25	0.06		0.84	0.02	0.11
Uniform Delay, d1	14.3	7.4		7.5	14.4	8.0	23.9	22.9		27.7	22.7	23.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	17.9	0.5		0.1	9.7	0.1	0.4	0.1		18.9	0.0	0.1
Delay (s)	32.2	7.9		7.6	24.1	8.1	24.3	23.0		46.6	22.7	23.3
Level of Service	C	A		A	C	A	C	C		D	C	C
Approach Delay (s)		11.9			20.6			23.8			36.1	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM Average Control Delay	20.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	0	1>	0	0	<1>	0	0	<1	1
Volume (vph)	29	411	11	8	784	242	11	1	8	151	4	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			0%			-1%	
Total Lost time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	1.00			0.97			0.94			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)	1796	1846			1813			1747			1772	1399
Flt Permitted	0.24	1.00			0.99			0.98			0.95	1.00
Satd. Flow (perm)	457	1846			1799			1747			1772	1399
Peak-hour factor, PHF	0.64	0.87	0.69	0.50	0.92	0.91	0.69	0.25	0.50	0.90	0.50	0.60
Adj. Flow (vph)	45	472	16	16	852	266	16	4	16	168	8	20
RTOR Reduction (vph)	0	1	0	0	12	0	0	16	0	0	0	13
Lane Group Flow (vph)	45	487	0	0	1122	0	0	20	0	0	176	7
Heavy Vehicles (%)	0%	2%	0%	12%	2%	1%	0%	0%	0%	3%	0%	16%
Turn Type	Perm			Perm			Split			Split		Perm
Protected Phases		2			6		8	8		4	4	
Permitted Phases	2	2		6								4
Actuated Green, G (s)	57.6	57.6			57.6			2.2			9.1	9.1
Effective Green, g (s)	57.6	57.6			57.6			2.2			9.1	9.1
Actuated g/C Ratio	0.67	0.67			0.67			0.03			0.11	0.11
Clearance Time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	306	1235			1204			45			187	148
v/s Ratio Prot		0.26						c0.01			c0.10	
v/s Ratio Perm	0.10				c0.62							0.00
v/c Ratio	0.15	0.39			0.93			0.45			0.94	0.04
Uniform Delay, d1	5.2	6.4			12.5			41.4			38.2	34.6
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.2	0.2			12.8			7.1			48.9	0.1
Delay (s)	5.5	6.6			25.3			48.5			87.1	34.7
Level of Service	A	A			C			D			F	C
Approach Delay (s)		6.5			25.3			48.5			81.8	
Approach LOS		A			C			D			F	

Intersection Summary			
HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	86.1	Sum of lost time (s)	17.2
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	433	216	125	728	226	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-2%	0%	
Total Lost time (s)	7.0		7.0	7.0	7.0	7.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1783		1823	1900	1805	1615
Flt Permitted	1.00		0.12	1.00	0.95	1.00
Satd. Flow (perm)	1783		223	1900	1805	1615
Peak-hour factor, PHF	0.97	0.79	0.90	0.89	0.83	0.82
Adj. Flow (vph)	446	273	139	818	272	84
RTOR Reduction (vph)	32	0	0	0	0	0
Lane Group Flow (vph)	687	0	139	818	272	84
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Turn Type			pm+pt			pt+ov
Protected Phases	4		3	8	2	2 3
Permitted Phases			8			
Actuated Green, G (s)	27.4		39.6	39.6	12.5	24.7
Effective Green, g (s)	27.4		39.6	39.6	12.5	24.7
Actuated g/C Ratio	0.41		0.60	0.60	0.19	0.37
Clearance Time (s)	7.0		7.0	7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	739		259	1138	341	603
v/s Ratio Prot	c0.39		0.04	c0.43	c0.15	0.05
v/s Ratio Perm			0.28			
v/c Ratio	0.93		0.54	0.72	0.80	0.14
Uniform Delay, d1	18.4		11.7	9.3	25.6	13.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	18.2		2.1	2.2	12.2	0.1
Delay (s)	36.7		13.8	11.5	37.8	13.8
Level of Service	D		B	B	D	B
Approach Delay (s)	36.7			11.9	32.1	
Approach LOS	D			B	C	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	66.1	Sum of lost time (s)	21.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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Appendix H
Traffic Assignment

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APPENDIX H – TRAFFIC ASSIGNMENT

The traffic expected to arrive/depart on site is assigned to the study area intersections based on the spatial location of the trip origins/destinations. The region surrounding the site is divided into 8 directional sectors relative to the site: (North, North East, East, South East, South, South West, West and North West). For each of these directions, potential routes are identified and traffic is then assigned to the study area intersections based on their locations along these potential routes. The following section defines these routes and the resulting assignment.

Site Location and Access Routes

Based on the site location the major access routes to the site from different directions would be the following:

Table H-1 Direction and Potential Routes

From	***Path 1***	***Path 2***	***Comments***
North (N), North-West (NW)	Route 239, Route 11		
North-East (NE)	Route 11	Route 29, Route 11	Path 2 is twice as likely as Path 1
East (E)	I-80, Route 93, Route 11	I-81, Route 29, Route 11	Each of the 2 paths is equally likely
South-East (SE), South (S) , South-West (SW)	I-80, Route 93, Route 11	I-80, Route 11	Path 2 is twice as likely as Path 1
West (W)	I-80, Route 11		

These routes are shown in Figure H-1. Using these routes traffic from each direction (relative to the new site at Bell Bend) is assigned as follows:

North and North West

The traffic related to this direction is assigned through the following intersections

- SR 11 and SR 239 (Union Street)
  - Traffic heading to the site will make a *right* from EB RT 239 onto SB SR 11
  - Traffic coming from the site will make a *left* from NB SR 11 onto WB RT 239
- SR 11 (S Main Street) and SR 239
  - Traffic heading to the site will continue *through* along SB SR 11
  - Traffic coming from the site will continue *through* along NB SR 11
- SR 11 and SSES Entrance
  - Traffic heading to the site will continue *through* along SB SR 11
  - Traffic coming from the site will continue *through* along NB SR 11
- SR 11 and Bell Bend Entrance
  - Traffic heading to the site will make a *right* from SB SR 11
  - Traffic coming from the site will make a *left* onto NB SR 11

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North East

This direction related traffic is assigned through the following intersections:

Approximately two-thirds of the traffic related to this direction is assigned through the following intersections assuming they took Cross Valley Expressway (SR 29) to SR 11:

- SR 11 (E Poplar Avenue) and SR 29
    - Traffic heading to the site will make a *left* along SR 29
    - Traffic heading from the site will make a *right* along SR 29

The remaining traffic related to this direction is assigned through the following intersections assuming they took SR 11:

- SR 11 (E Poplar Avenue) and SR 29
    - Traffic heading to the site will continue *through* along SR 11
    - Traffic leaving the site will continue *through* along SR 11

All the traffic related to this direction is assigned through the following intersections:

- SR 11 and SR 29 (Mill Street)
    - Traffic heading to the site will continue *through* along SB SR 11
    - Traffic coming from the site will continue *through* along NB SR 11
- SR 11 and SR 239 (Union Street)
    - Traffic heading to the site will continue *through* along SB SR 11
    - Traffic coming from the site will continue *through* along NB SR 11
- SR 11 (S Main Street) and SR 239
    - Traffic heading to the site will continue *through* along SB SR 11
    - Traffic coming from the site will continue *through* along NB SR 11
- SR 11 and SSES Entrance
    - Traffic heading to the site will continue *through* along SB SR 11
    - Traffic coming from the site will continue *through* along NB SR 11
- SR 11 and Bell Bend Entrance
    - Traffic heading to the site will make a *right* from SB SR 11
    - Traffic coming from the site will make a *left* onto NB SR 11

East

Half (50%) of the traffic related to this direction is assigned through the following intersections assuming they took I-81 to RT 29 to SR 11

- SR 11 (E Poplar Avenue) and SR 29
    - Traffic heading to the site will make a *left* along SR 29
    - Traffic heading from the site will make a *right* along SR 29
- SR 11 and SR 29 (Mill Street)
    - Traffic heading to the site will continue *through* along SB SR 11
    - Traffic coming from the site will continue *through* along NB SR 11

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- SR 11 and SR 239 (Union Street)
  - Traffic heading to the site will continue *through* along SB SR 11
  - Traffic coming from the site will continue *through* along NB SR 11
- SR 11 (S Main Street) and SR 239
  - Traffic heading to the site will continue *through* along SB SR 11
  - Traffic coming from the site will continue *through* along NB SR 11
- SR 11 and SSES Entrance
  - Traffic heading to the site will continue *through* along SB SR 11
  - Traffic coming from the site will continue *through* along NB SR 11
- SR 11 and Bell Bend Entrance
  - Traffic heading to the site will make a *right* from SB SR 11
  - Traffic coming from the site will make a *left* onto NB SR 11

The other half is of the traffic related to this direction is assigned to through the following intersections assuming they took I-80 to RT 93 onto SR 11:

- SR 11 (2nd Street, Front Street) and RT 93 (Market Street)
  - Traffic heading to the site will make a *right* from RT 93 onto SR 11 going NB
  - Traffic coming from the site will make a *left* from SR 11 SB onto RT 93
- SR 11 and Bell Bend Entrance
  - Traffic heading to the site will make a *left* from NB SR 11
  - Traffic coming from the site will make a *right* onto SB SR 11

South-East

Two-third (66%) of the traffic related to this direction is assigned to through the following intersections assuming they took I-80 onto SR 11:

- SR 11 and SR 2028
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 and Briar Creek Plaza
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 and Eaton Street
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 and Poplar Street
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 and Orchard Street
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 (Front Street) and RT 93 (Orange Street)
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11

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- SR 11 (2nd Street) and LaSalle Street
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 (2nd Street, Front Street) and Mulberry Street
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 (2nd Street, Front Street) and RT 93 (Market Street)
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 (2nd Street) and Oak Street
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 and Bell Bend Entrance
  - Traffic heading to the site will make a *left* from NB SR 11
  - Traffic coming from the site will make a *right* onto SB SR 11

The remaining one-third of the traffic related to this direction is assigned to through the following intersections assuming they took I-80 to Route 93 onto SR 11:

- SR 93 (3rd Street) and Dewey Street
  - Traffic heading to the site will continue *through* along NB SR 93
  - Traffic coming from the site will continue *through* along SB SR 93
- SR 93 (3rd Street) and SR 339 (Broad Street)
  - Traffic heading to the site will continue *through* along NB SR 93
  - Traffic coming from the site will continue *through* along SB SR 93
- SR 11 (2nd Street, Front Street) and RT 93 (Market Street)
  - Traffic heading to the site will make a *right* turn from RT 93 onto SR 11 going NB
  - Traffic coming from the site will make a *left* turn from SR 11 SB onto RT 93
- SR 11 and Bell Bend Entrance
  - Traffic heading to the site will make a *left* from NB SR 11
  - Traffic coming from the site will make a *right* onto SB SR 11

South

All traffic related to this direction is assumed to use Route 93 onto SR 11 through these intersections:

- SR 93 (3rd Street) and Dewey Street
  - Traffic heading to the site will continue *through* along NB SR 93
  - Traffic coming from the site will continue *through* along SB SR 93
- SR 93 (3rd Street) and SR 339 (Broad Street)
  - Traffic heading to the site will continue *through* along NB SR 93
  - Traffic coming from the site will continue *through* along SB SR 93
- SR 11 (2nd Street, Front Street) and RT 93 (Market Street)
  - Traffic heading to the site will make a *right* turn from RT 93 onto SR 11 going NB
  - Traffic coming from the site will make a *left* turn from SR 11 SB onto RT 93

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- SR 11 and Bell Bend Entrance
  - Traffic heading to the site will make a *left* from NB SR 11
  - Traffic coming from the site will make a *right* onto SB SR 11

South-West & West

All traffic related to this direction is assumed to use I80 onto SR 11 through these intersections:

- SR 11 and SR 2028
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 and Briar Creek Plaza
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 and Eaton Street
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 and Poplar Street
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 and Orchard Street
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 (Front Street) and RT 93 (Orange Street)
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 (2nd Street) and LaSalle Street
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 (2nd Street, Front Street) and Mulberry Street
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 (2nd Street, Front Street) and RT 93 (Market Street)
  - Traffic heading to the site will continue *through* along NB SR 11
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 (2nd Street) and Oak Street
  - Traffic coming from the site will continue *through* along SB SR 11
- SR 11 and Bell Bend Entrance
  - Traffic heading to the site will make a *left* from NB SR 11
  - Traffic coming from the site will make a right onto SB SR 11

Using these as a guide, the traffic from each direction is individually assigned to each intersection and the sum total of all directions by intersection is summarized in the next section.

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Spatial Distribution of the Construction Work Force

The construction workforce is estimated to be drawn from the major population centers around the site. Using the census data within 40 miles as a starting point, the spatial distribution of the population into 8 directions was identified as shown in Table H-2.

Table H-2 Spatial Distribution of Census Block Population

Direction	2000 Census Block Population*	Distribution (%)
N	38,458	3.8
NW	19,451	1.9
W	117,235	11.5
SW	87,884	8.6
S	121,621	11.9
SE	***158,518***	***15.5***
E	96,586	9.8
NE	***380,169***	***37.3***

It appears from Table H-2 that most of the traffic will come from the North East (NE) and South East (SE) directions. These correspond to the Wilkes-Barre/Scranton region and Hazleton areas respectively. Using Table H-2 an d the availa ble routes, the construction and heavy vehicle traffic leaving the site and arriving on site, is assigned as shown in Figure H-2.

Spatial Distribution of the Operations/Outage Work Force

Using the employee zip codes the spatial distribution of the workers on site is shown in Table H-3. As shown in Table H-3, most of the current operations workforce is drawn from the west (Berwick). Using this distribution and the available routes, the operations traffic leaving the site is assigned as shown in Figure H-3. The same distribution is applied for the outage workforce.

Table H-3: Spatial Distribution of Current Employment on Site

Direction	No. of Workers	Distribution (%)
N	77	6.19
NW	60	4.83
W	***582***	***46.82***
SW	134	10.78
S	31	2.49
SE	105	8.45
E	119	9.57
NE	135	10.86

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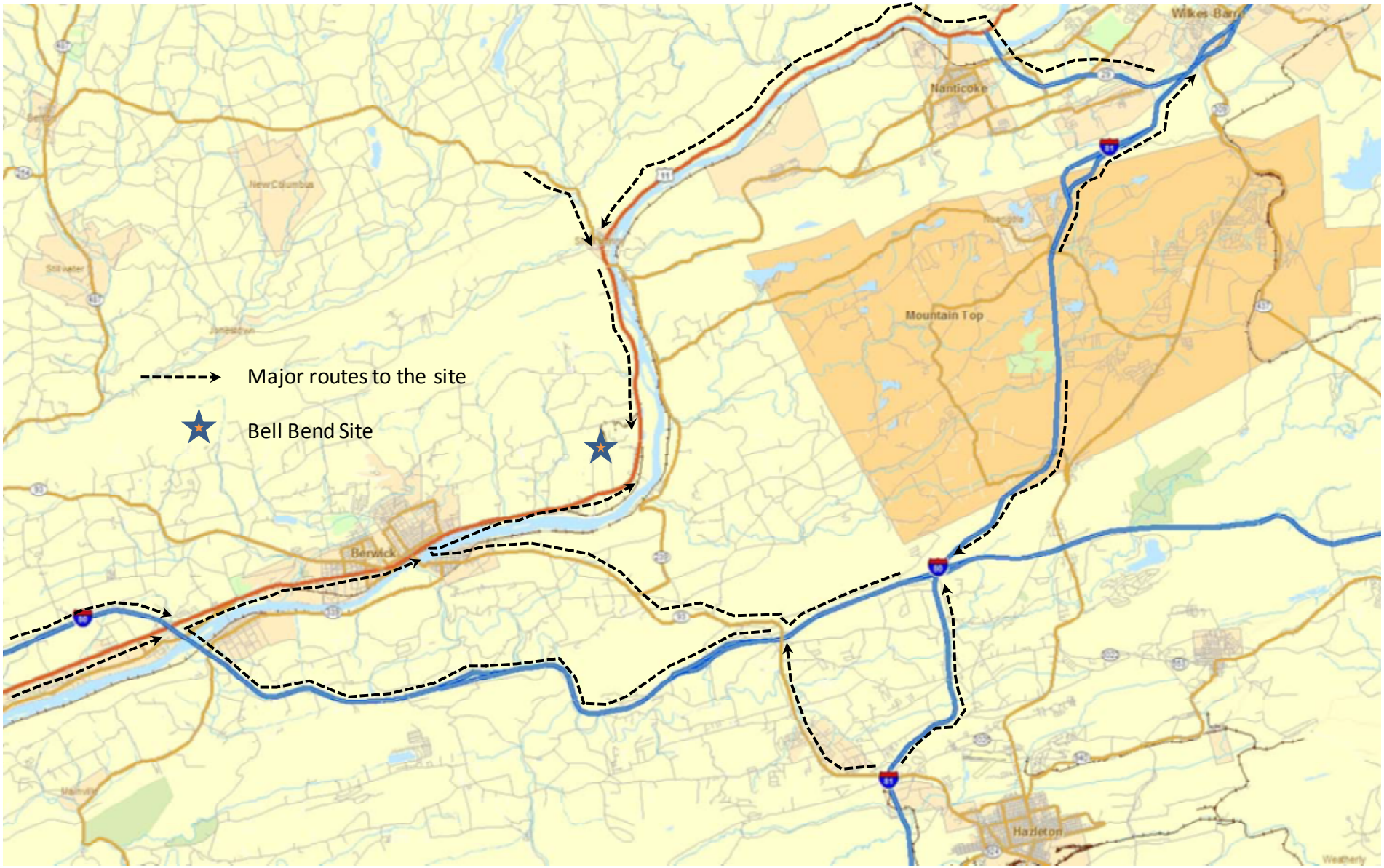

Figure H-1 – Site Location and Access Routes

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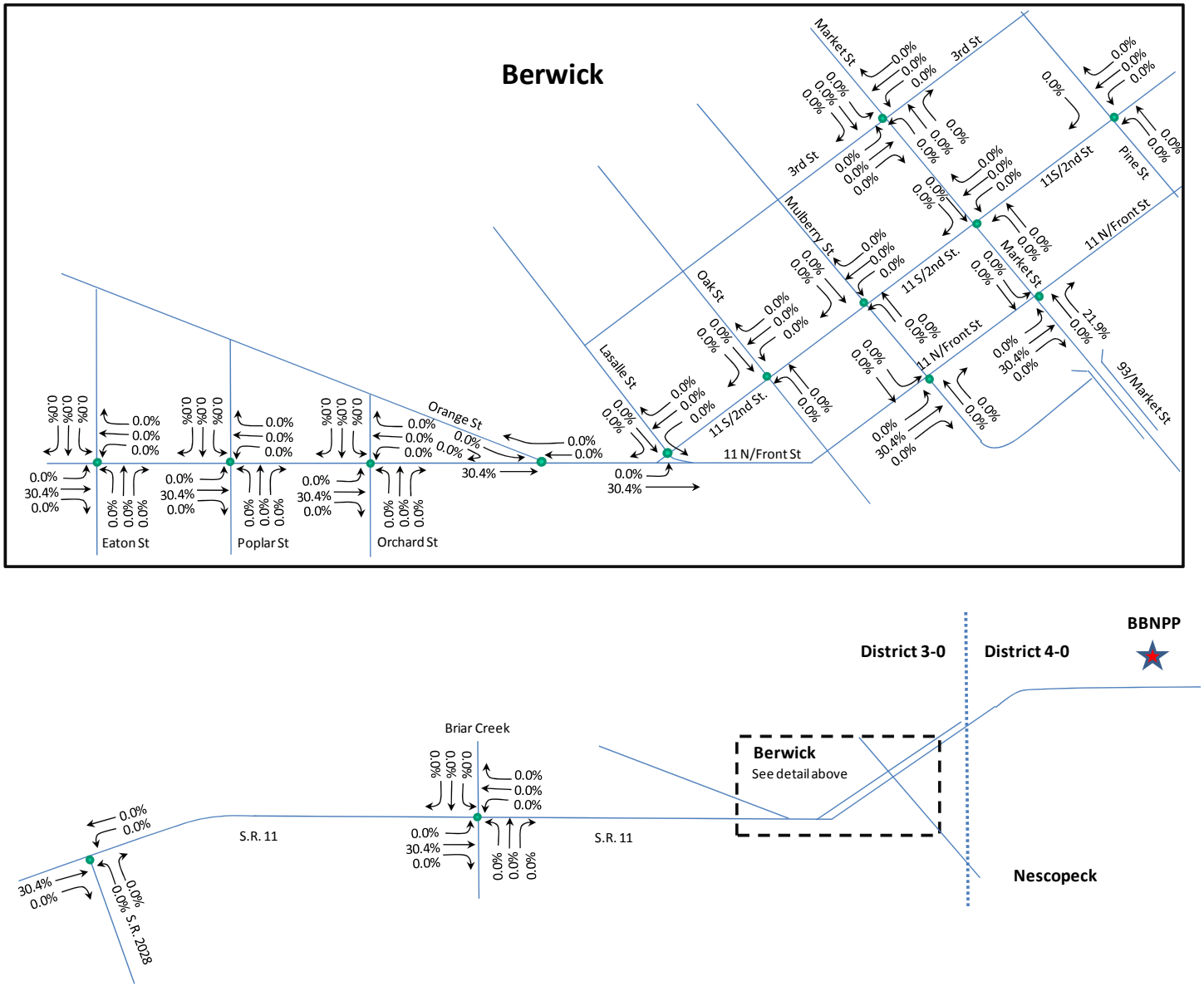

Figure H-2 Construction Traffic Assignment Arriving to Site (%)

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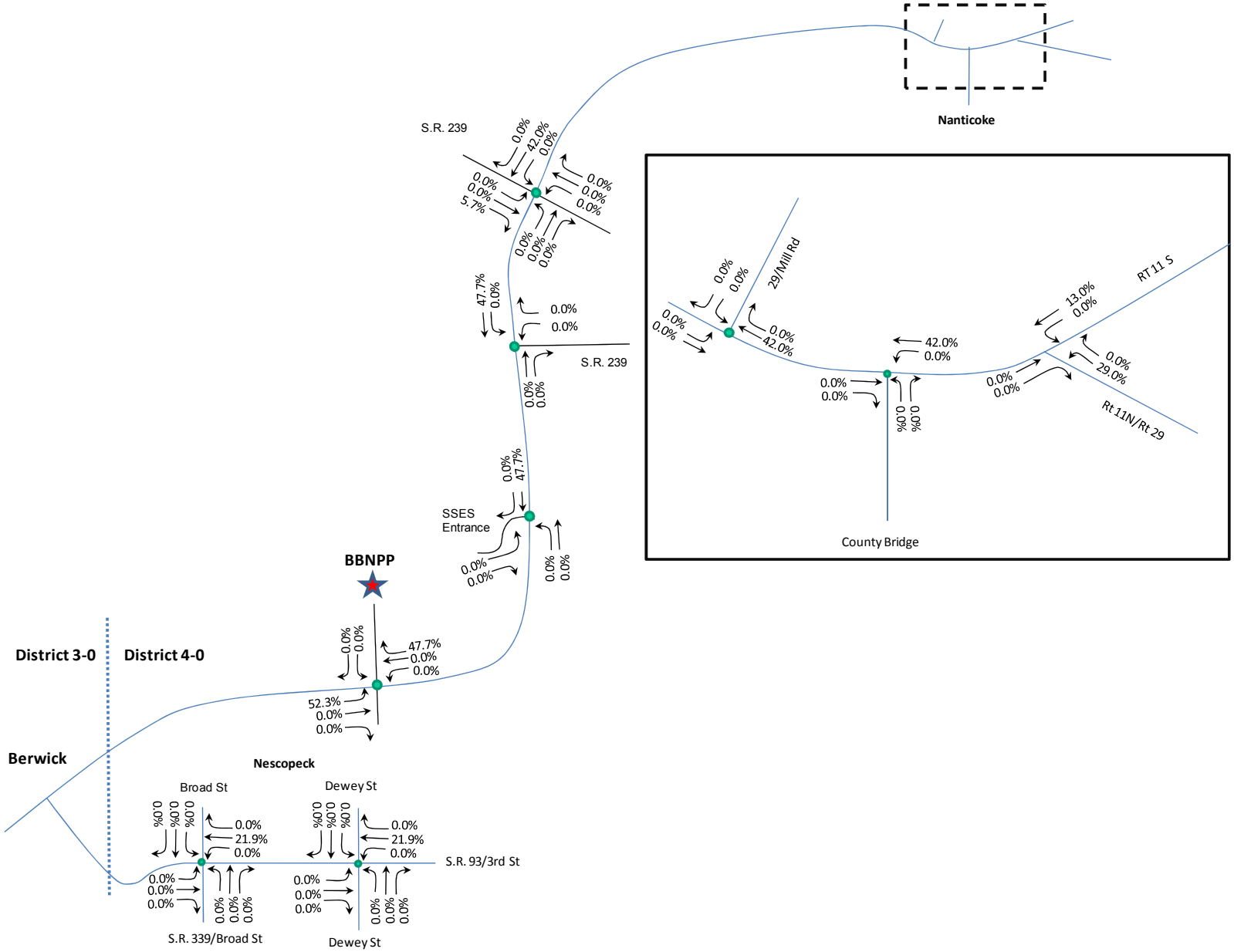

Figure H-2 Construction Traffic Assignment Arriving to Site (%)

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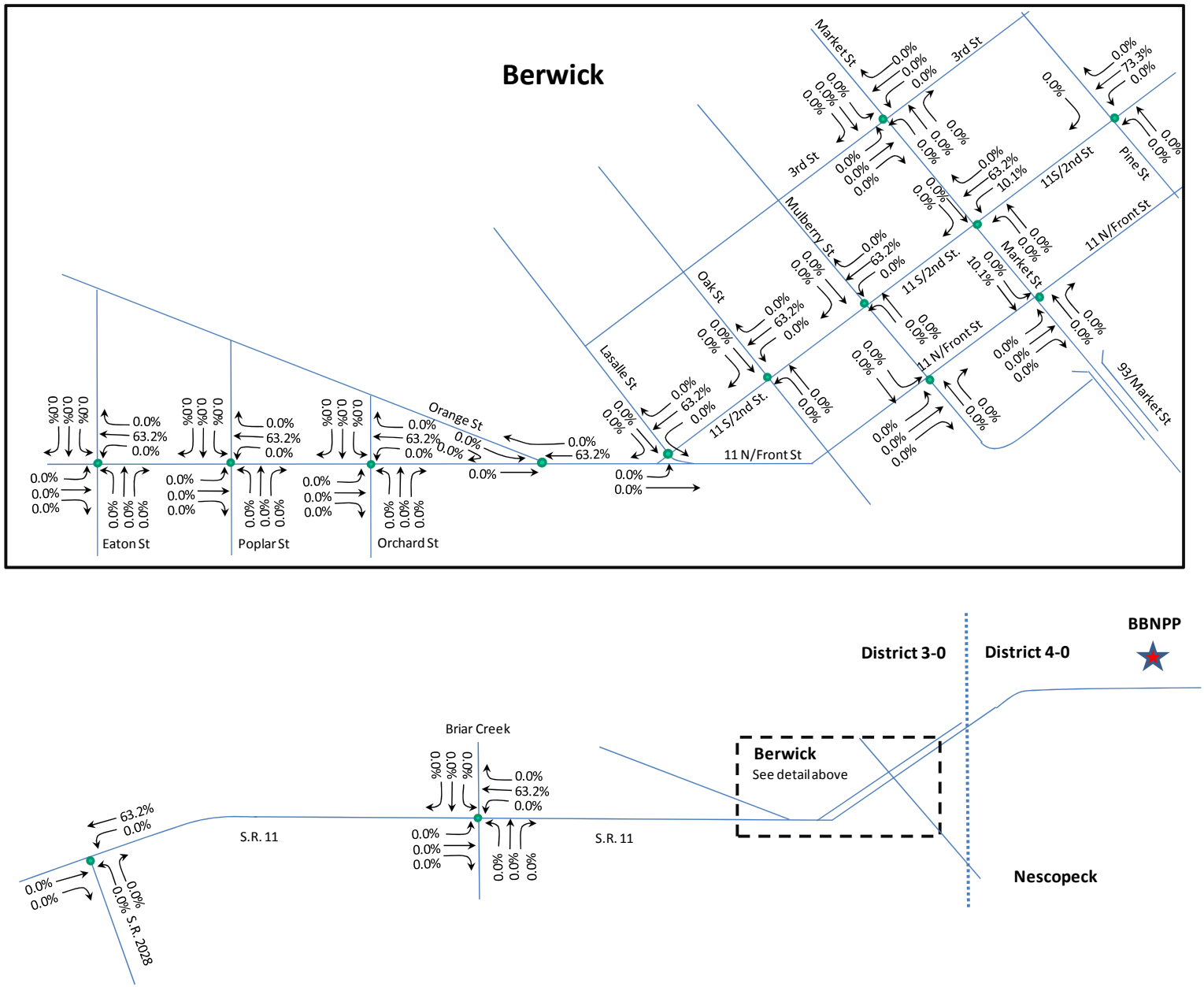

Figure H-3 Operations Traffic Assignment Arriving to Site (%)

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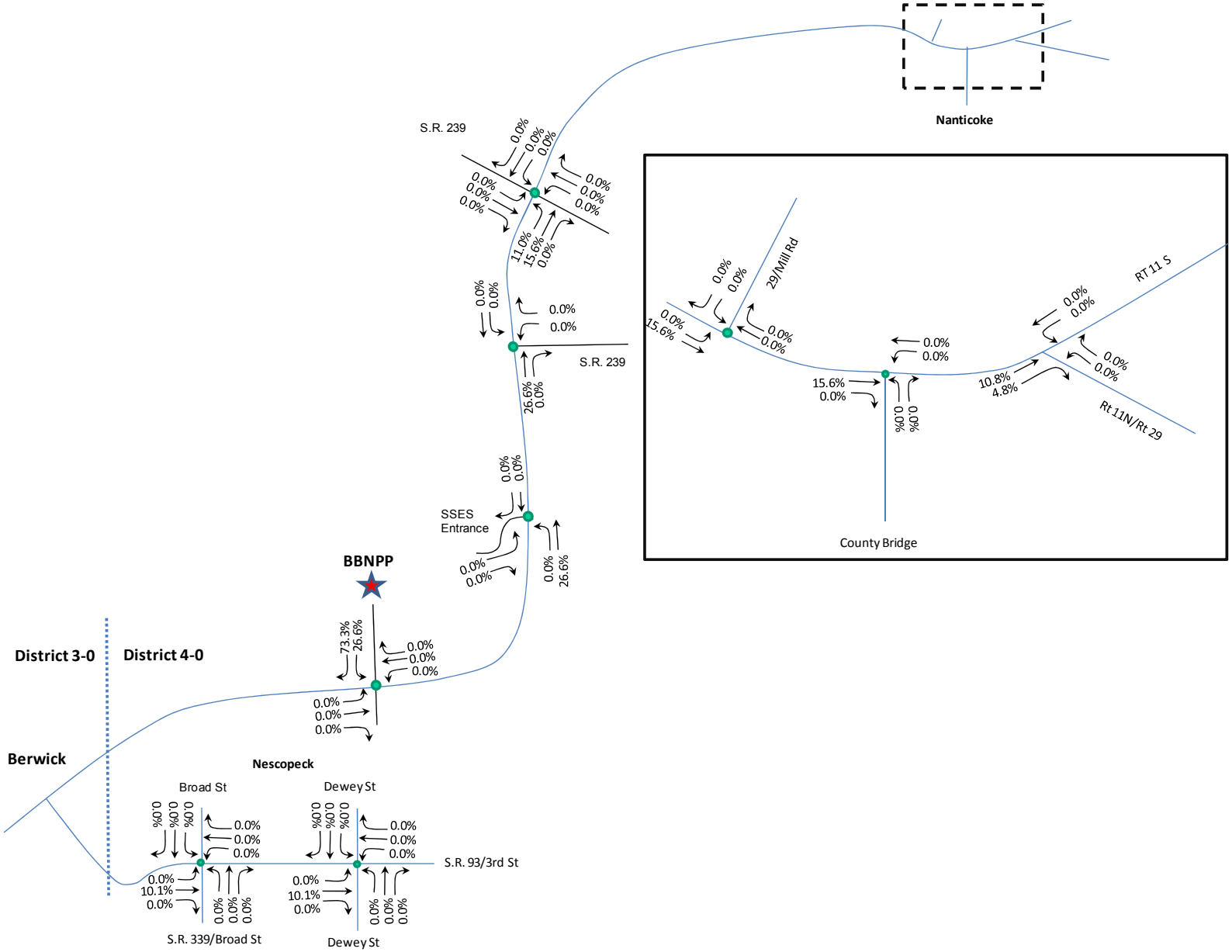

Figure H-3 Operations Traffic Assignment Arriving to Site (%)

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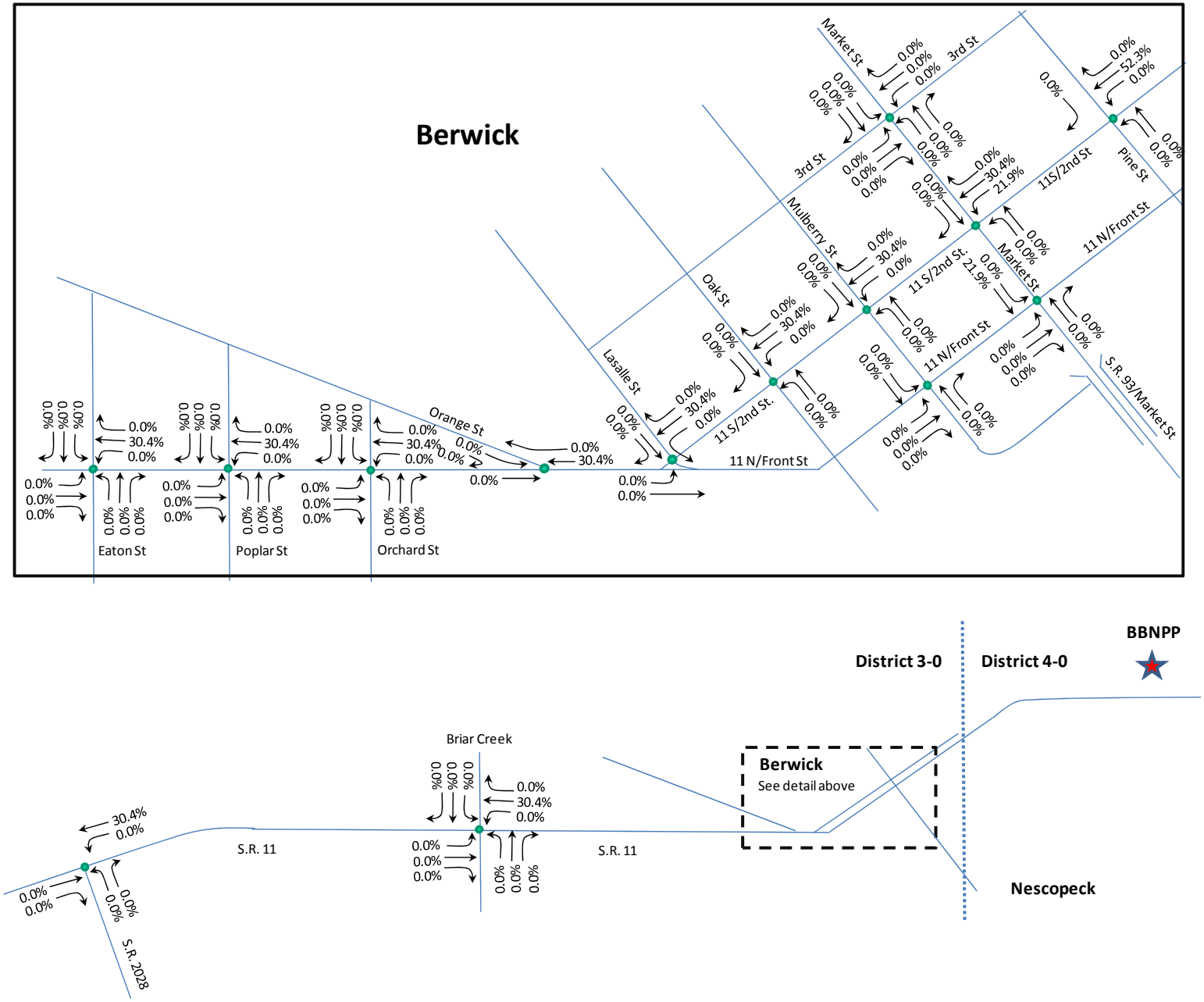

Figure H-4 Construction Traffic Assignment Departing from the Site (%)

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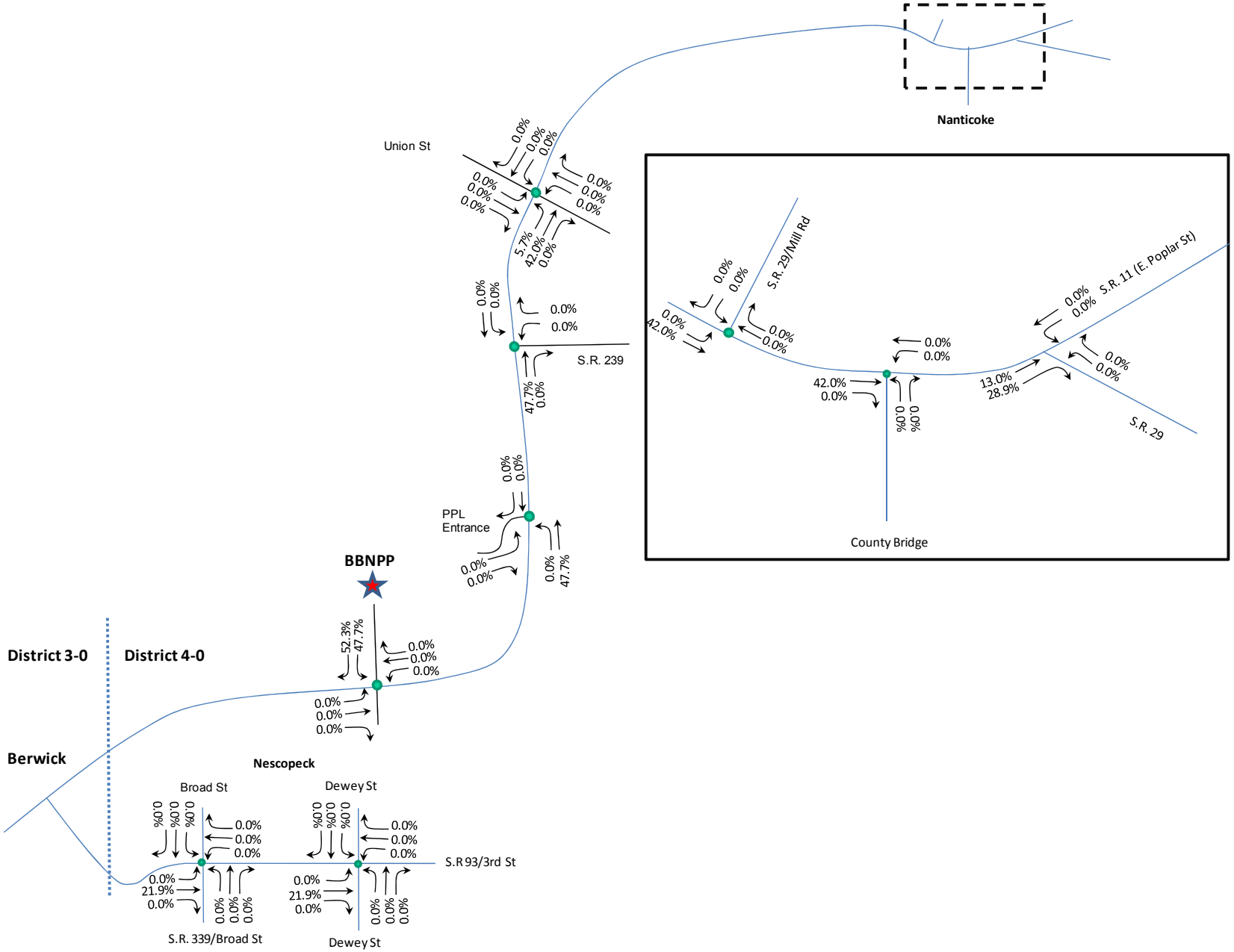

Figure H-4 Construction Traffic Assignment Departing from the Site (%)

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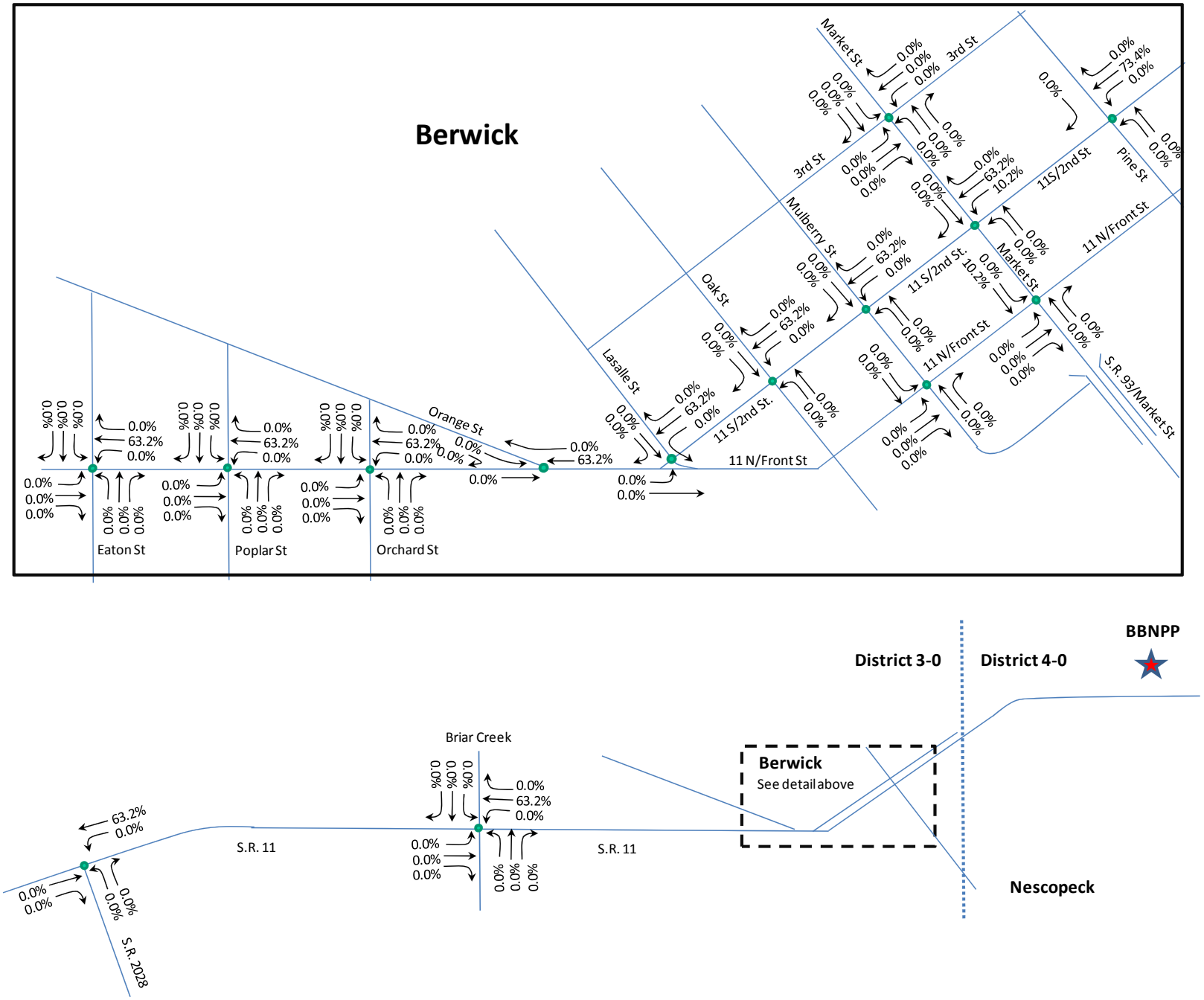

Figure H-5 Operations Traffic Assignment Departing from the Site (%)

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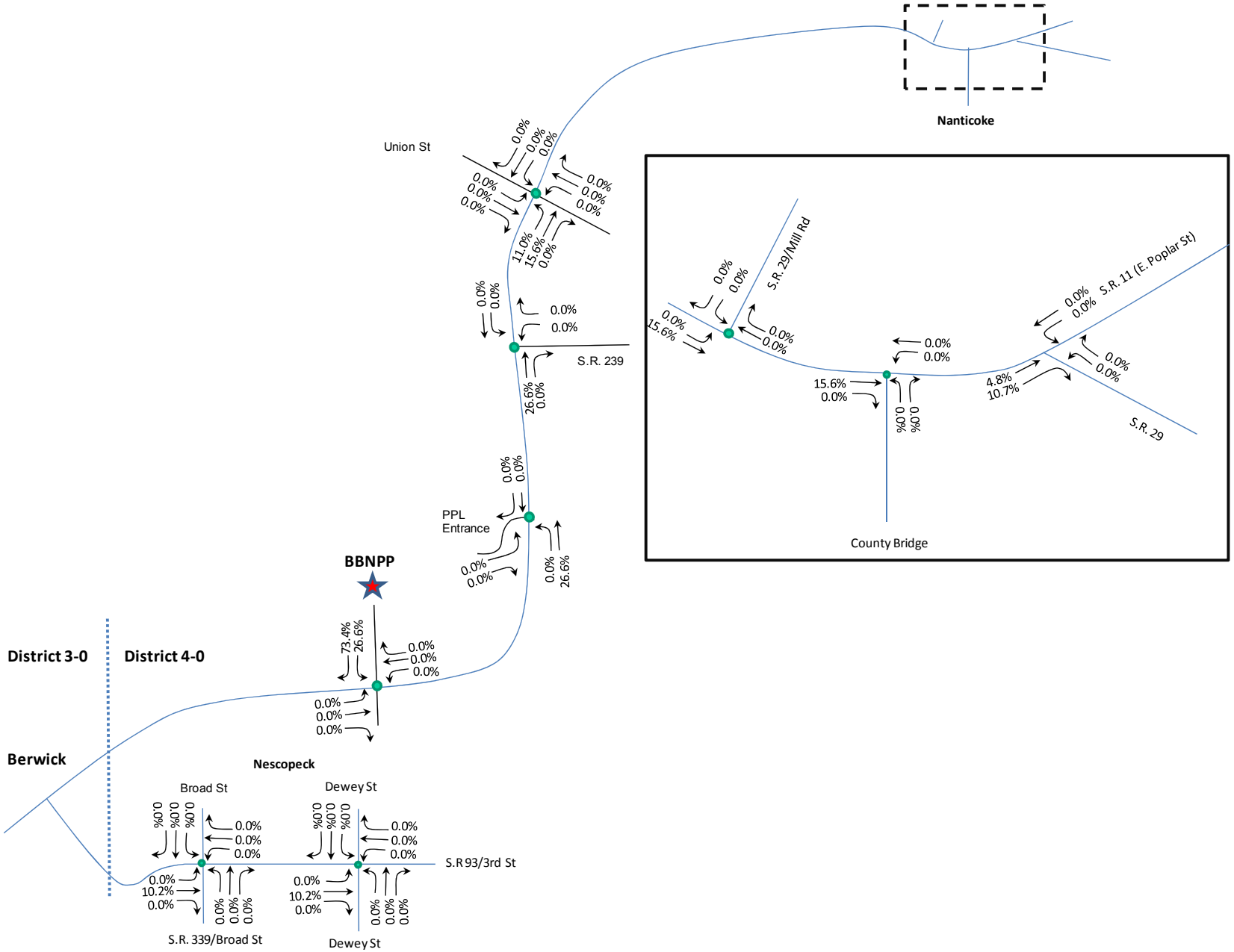

Figure H-5 Operations Traffic Assignment Departing from the Site (%)

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Appendix I
Capacity Analysis – Future Build Conditions

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Appendix I

This appendix contains all supporting worksheets and materials relating to capacity analysis for the Future Build scenario. Table I-1 summarizes the LOS and delay at each intersection. Stick diagrams depicting the volumes used as inputs are again provided. Synchro HCM signalized reports are given to support calculations at signalized intersections and HCS+ reports are given for all unsignalized intersections.

Queue storage calculations employing the PennDOT method are provided. The volumes shown in these worksheets are PCE (Passenger Car Equivalent) volumes which are factored up to account for the presence of heavy vehicles. The maximum hourly left turn volumes were used to determine the necessary storage.

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Table I-2 – LOS and Average Delay (sec/veh): Future Build Conditions without Outage

Int No	*PennDOT*	*County*	*Municipality*	*Intersection*	*FNB AM*[1]	*FB AM*[1]	*FNB PM*[1]	*FB PM*[1]
1	3-0	Columbia	South Centre	S.R. 11 and S.R. 2028	B (14.2)	B (14.4)	B (19.4)	B (19.4)
2			Briar Creek	S.R. 11 and Briar Creek Plaza Driveways	A (6.6)	A (6.6)	B (14.2)	B (15.2)
3			Berwick	S.R. 11 (Front Street) and Eaton Street*	A (1.1)	A (1.1)	A (1.8)	A (1.8)
4				S.R. 11 (Front Street) and Poplar Street	C (20)	C (21.3)	**D (38.9)**	**D (39)**
5				S.R. 11 (Front Street) and Orchard Street	A (6.5)	A (6.6)	B (15.1)	B (15.2)
6				S.R. 11 (Front Street) and S.R. 93 (Orange Street)	A (5.8)	A (5.8)	A (9.9)	B (10.1)
7				S.R. 11 (Second Street) and LaSalle Street	B (11.7)	B (11.7)	B (13.6)	B (13.7)
8				S.R. 11 (Second Street) and Oak Street	A (6.2)	A (6.2)	A (8)	A (8)
9				S.R. 11 (Second Street) and Mulberry Street	A (4.8)	A (4.8)	A (5.7)	A (5.6)
10				S.R. 11 (Front Street) and Mulberry Street	A (6)	A (6)	A (7.9)	A (7.9)
11				S.R. 1025 (Market Street) and Third Street	A (9.6)	A (9.6)	B (12.9)	B (12.9)
12				S.R. 11 (Second Street) and Market Street	A (9.5)	A (9.6)	B (11.6)	B (11.6)
13				S.R. 11 (Front Street) and Market Street	B (13.7)	B (13.8)	B (15.3)	B (15.3)
14				S.R. 11 (Second Street) and Pine Street	A (6)	A (6)	A (8.7)	A (8.7)
15	4-0	Luzerne	Nescopeck	S.R. 93 (Third Street) and S.R. 339 (Broad Street)	B (13.9)	B (13.9)	B (12.2)	B (12.3)
16				S.R. 93 (Third Street) and Dewey Street	A (4.6)	A (4.6)	A (3.7)	A (3.7)
17			Salem Township	S.R. 11 and Bell Bend Site Entrance*		A (1.6)		A (1.7)
18				S.R. 11 and SSES Site Entrance*	A (4.4)	A (4.3)	A (3.8)	A (3.7)
19			Shickshinny	S.R. 11 (S. Main Street) and S.R. 239	A (8.1)	A (7.9)	A (9.1)	A (9.1)
20				S.R. 11 (Main Street) and S.R. 239 (Union Street)	B (13.6)	B (14.2)	B (15.3)	B (15.3)
21			Nanticoke	S.R. 11 and S.R. 29 (Mill Street)	C (23.4)	C (23.5)	C (25.8)	C (25.7)
22				S.R. 11 and County Bridge	**D (48.9)**	**D (48.9)**	C (23.6)	C (24)
23				S.R. 11 (E. Poplar Street) and S.R. 29*	A (2.7)	A (2.7)	**D (27.7)**	**D (28.6)**

Note 1: "FNB" corresponds to the Future Year No-Build Condition and "FB" corresponds to Future Build Condition with no mitigation
Note 2: * implies this is a stop controlled intersection. The intersection LOS was calculated based on the weighted average of approach delays as specified in Reference [3].
Note 3: The cells with LOS D or worse are highlighted.

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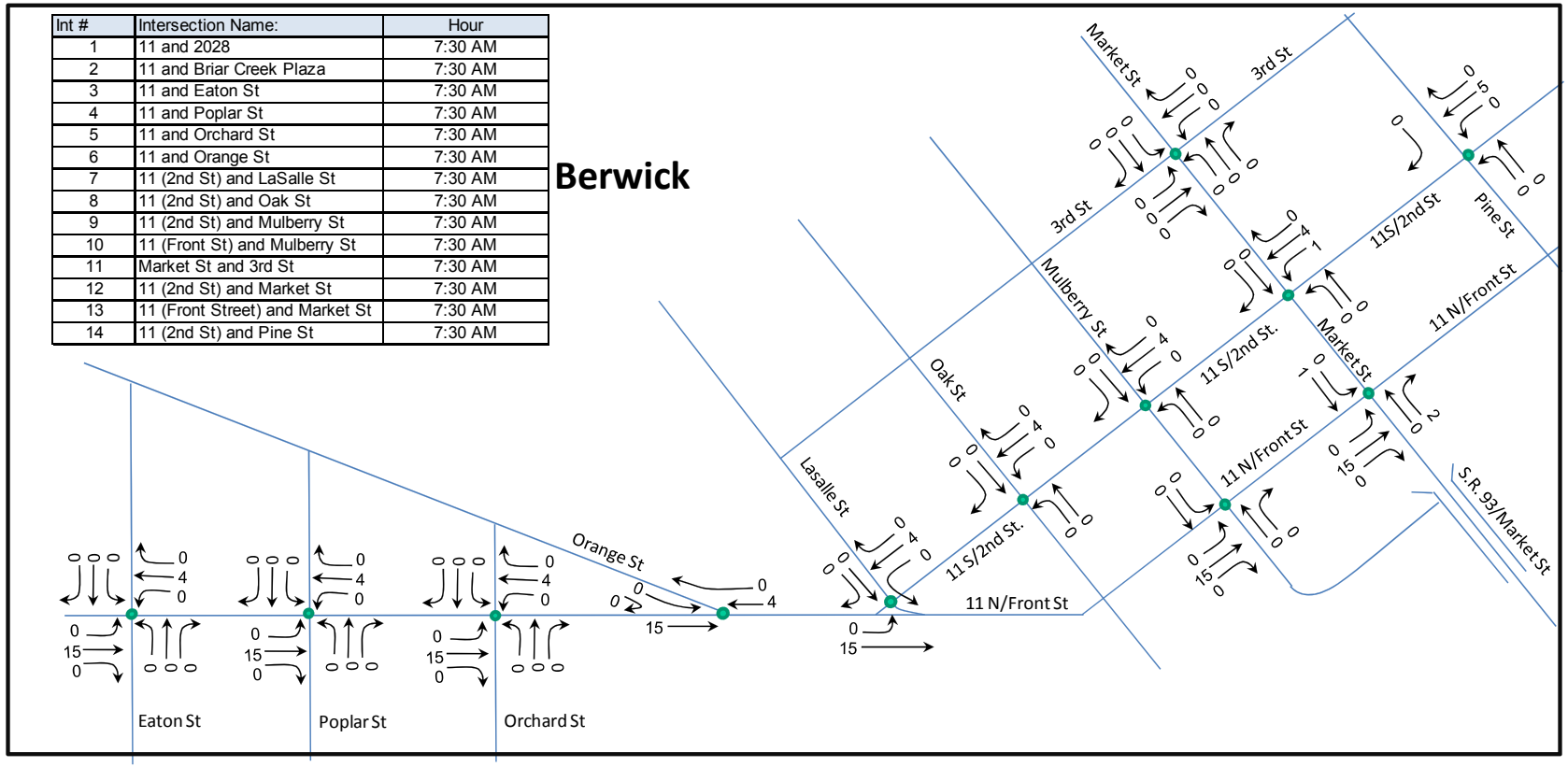
Int #	Intersection Name:	Hour
1	11 and 2028	7:30 AM
2	11 and Briar Creek Plaza	7:30 AM
3	11 and Eaton St	7:30 AM
4	11 and Poplar St	7:30 AM
5	11 and Orchard St	7:30 AM
6	11 and Orange St	7:30 AM
7	11 (2nd St) and LaSalle St	7:30 AM
8	11 (2nd St) and Oak St	7:30 AM
9	11 (2nd St) and Mulberry St	7:30 AM
10	11 (Front St) and Mulberry St	7:30 AM
11	Market St and 3rd St	7:30 AM
12	11 (2nd St) and Market St	7:30 AM
13	11 (Front Street) and Market St	7:30 AM
14	11 (2nd St) and Pine St	7:30 AM



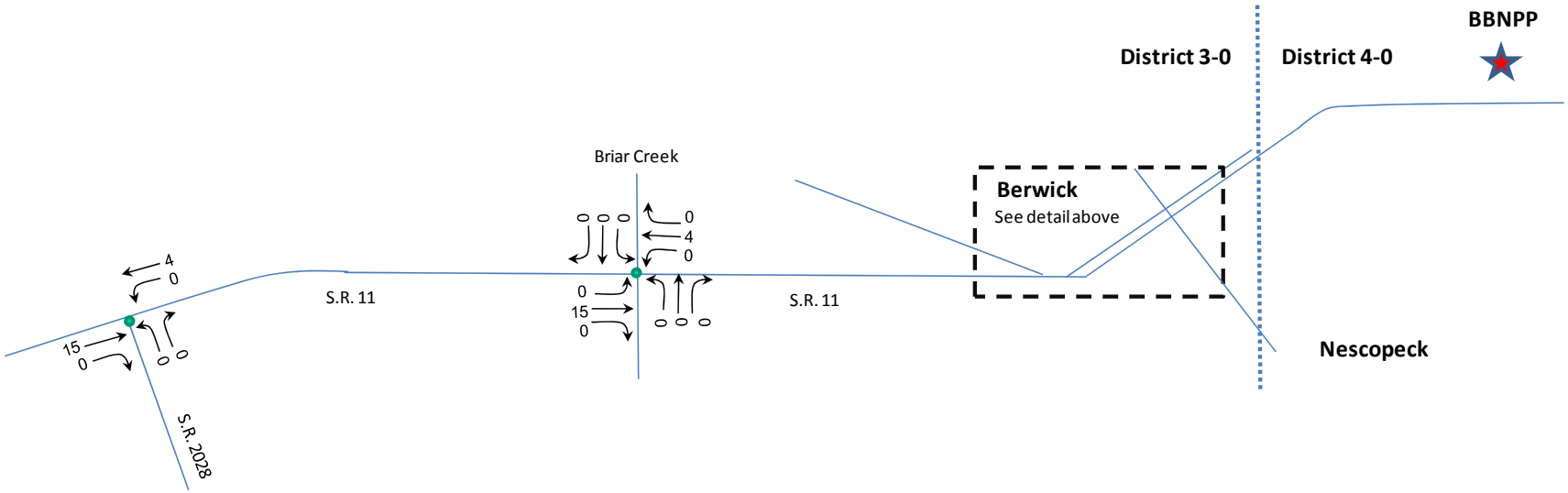


Figure I-1 - Future Build AM Additional Operations Traffic Only

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Int #	Intersection:	Hour
15	93 (3rd St) and 339 (Broad St)	7:30 AM
16	93 (3rd St) and Dewey St	7:30 AM
17	11 and Bell Bend Entrance	6:00 AM
18	11 and SSES Entrance	6:00 AM
19	11 and 239	6:00 AM
20	11 and 239 (Union St)	7:00 AM
21	11 and 29 (Mill St)	7:00 AM
22	11 and County Bridge	7:00 AM
23	11 (E. Poplar St) and 29	7:00 AM

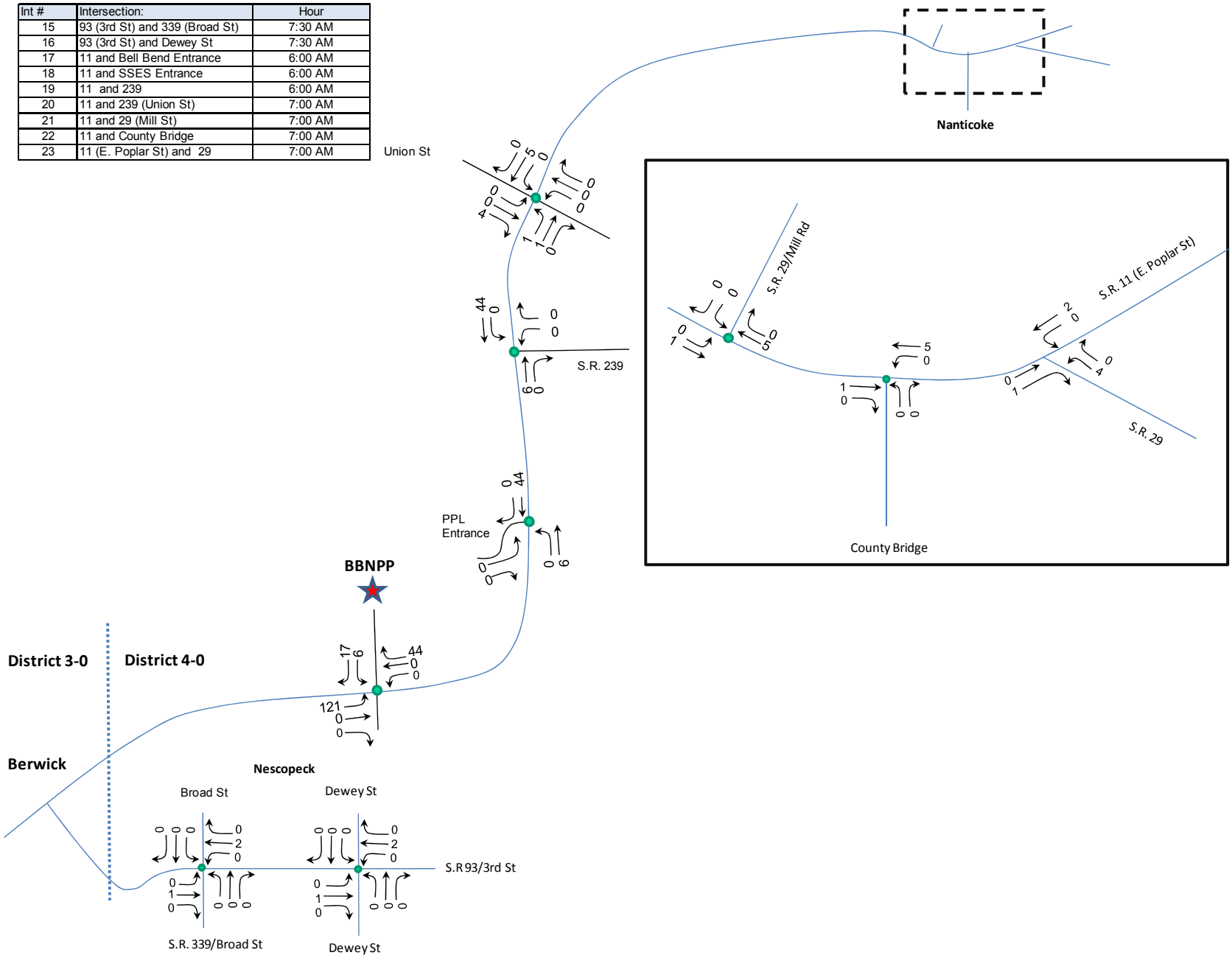

Figure I-1 - Future Build AM Additional Operations Traffic Only

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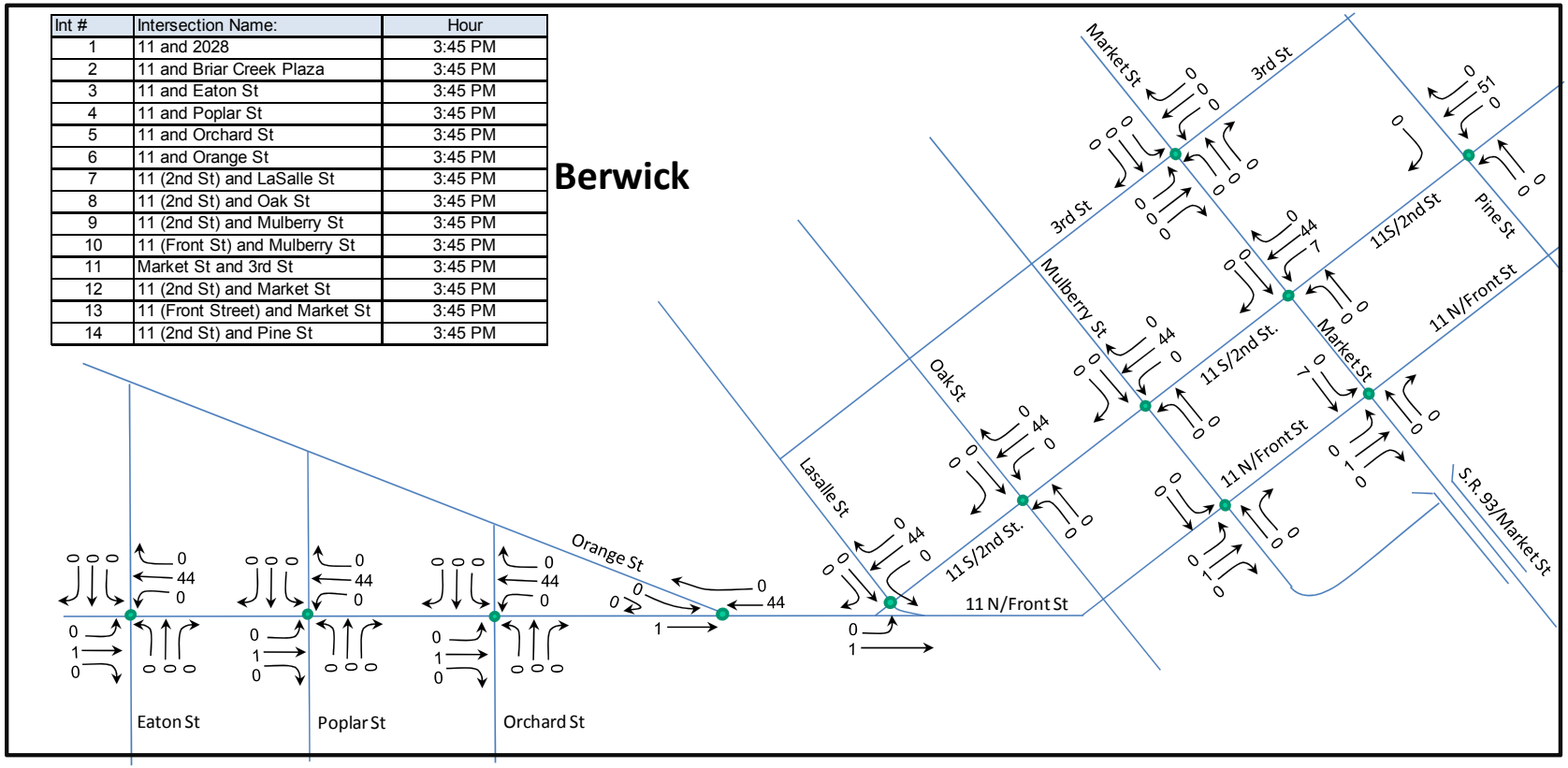
Int #	Intersection Name:	Hour
1	11 and 2028	3:45 PM
2	11 and Briar Creek Plaza	3:45 PM
3	11 and Eaton St	3:45 PM
4	11 and Poplar St	3:45 PM
5	11 and Orchard St	3:45 PM
6	11 and Orange St	3:45 PM
7	11 (2nd St) and LaSalle St	3:45 PM
8	11 (2nd St) and Oak St	3:45 PM
9	11 (2nd St) and Mulberry St	3:45 PM
10	11 (Front St) and Mulberry St	3:45 PM
11	Market St and 3rd St	3:45 PM
12	11 (2nd St) and Market St	3:45 PM
13	11 (Front Street) and Market St	3:45 PM
14	11 (2nd St) and Pine St	3:45 PM



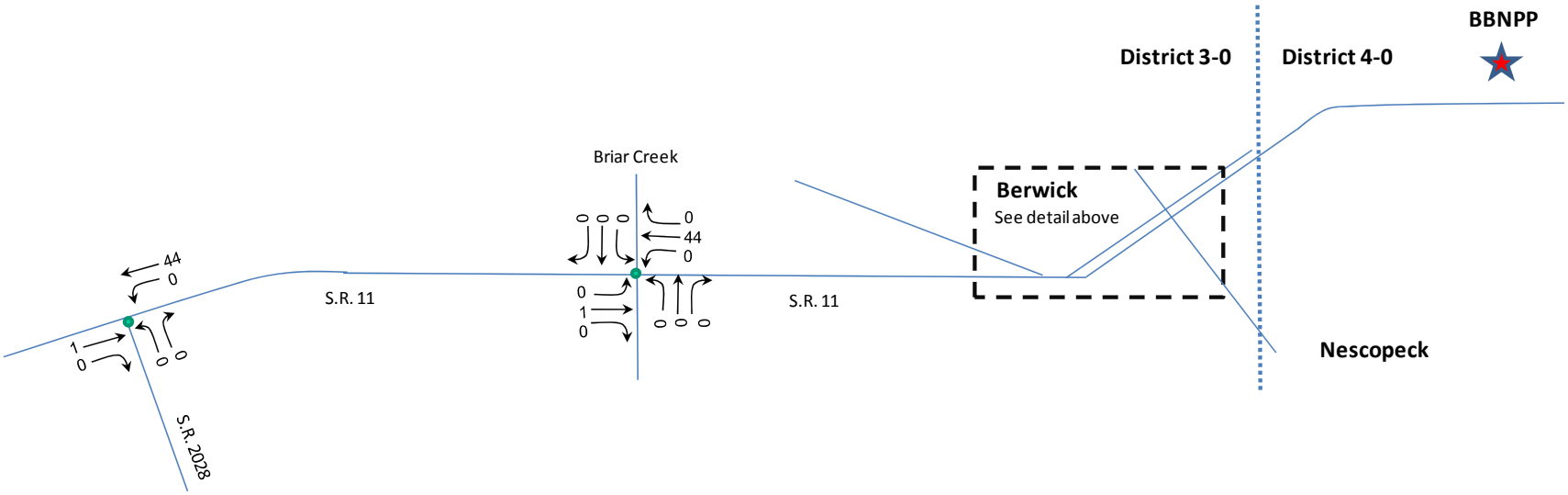


Figure I-2 - Future Build PM Additional Operations Traffic Only

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Intersection:	Hour
93 (3rd St) and 339 (Broad St)	3:45 PM
93 (3rd St) and Dewey St	3:45 PM
11 and Bell Bend Entrance	3:00 PM
11 and SSES Entrance	4:45 PM
11 and 239	3:30 PM
11 and 239 (Union St)	4:30 PM
11 and 29 (Mill St)	4:30 PM
11 and County Bridge	4:30 PM
11 (E. Poplar St) and 29	4:30 PM

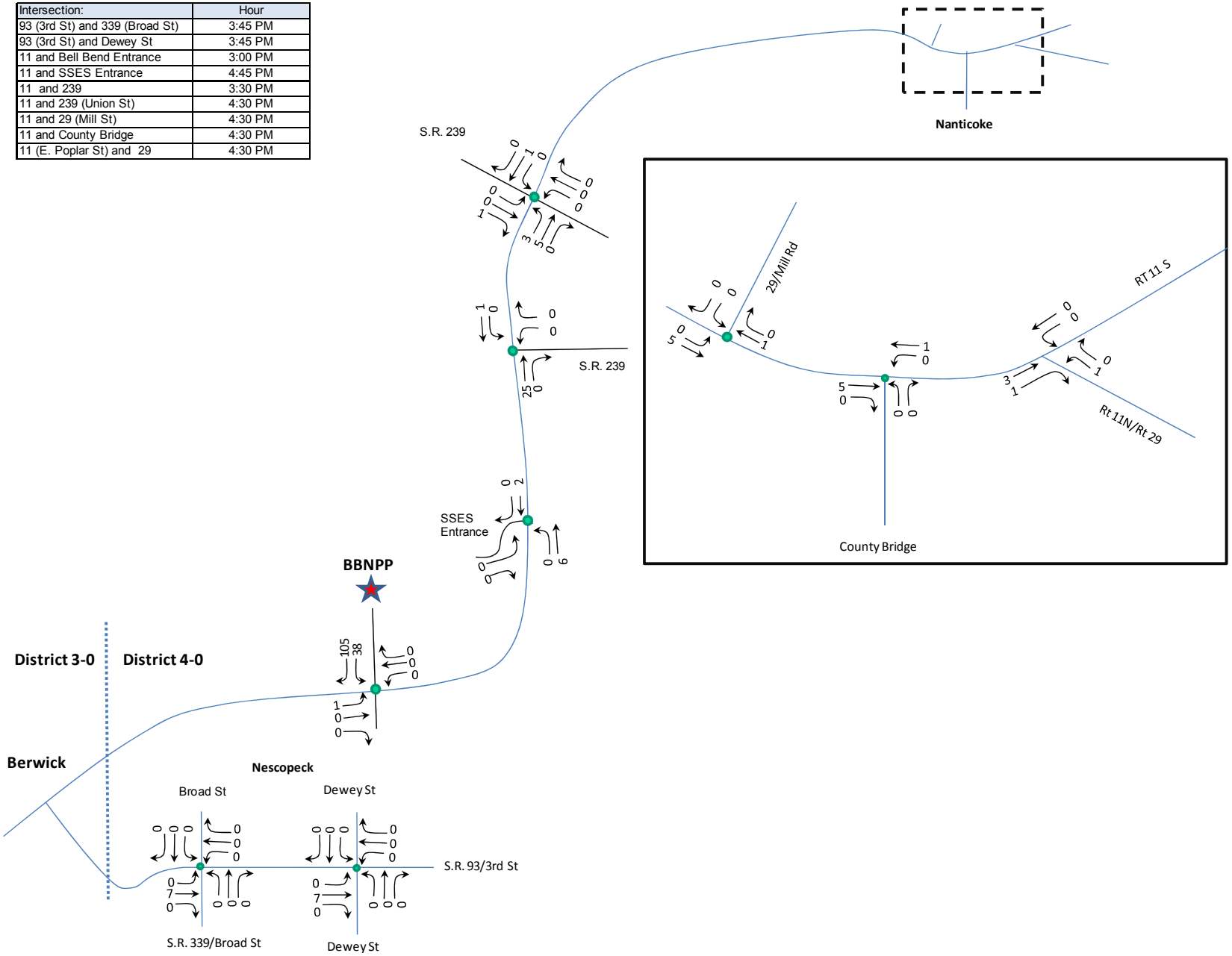

Figure I-2 - Future Build PM Additional Operations Traffic Only

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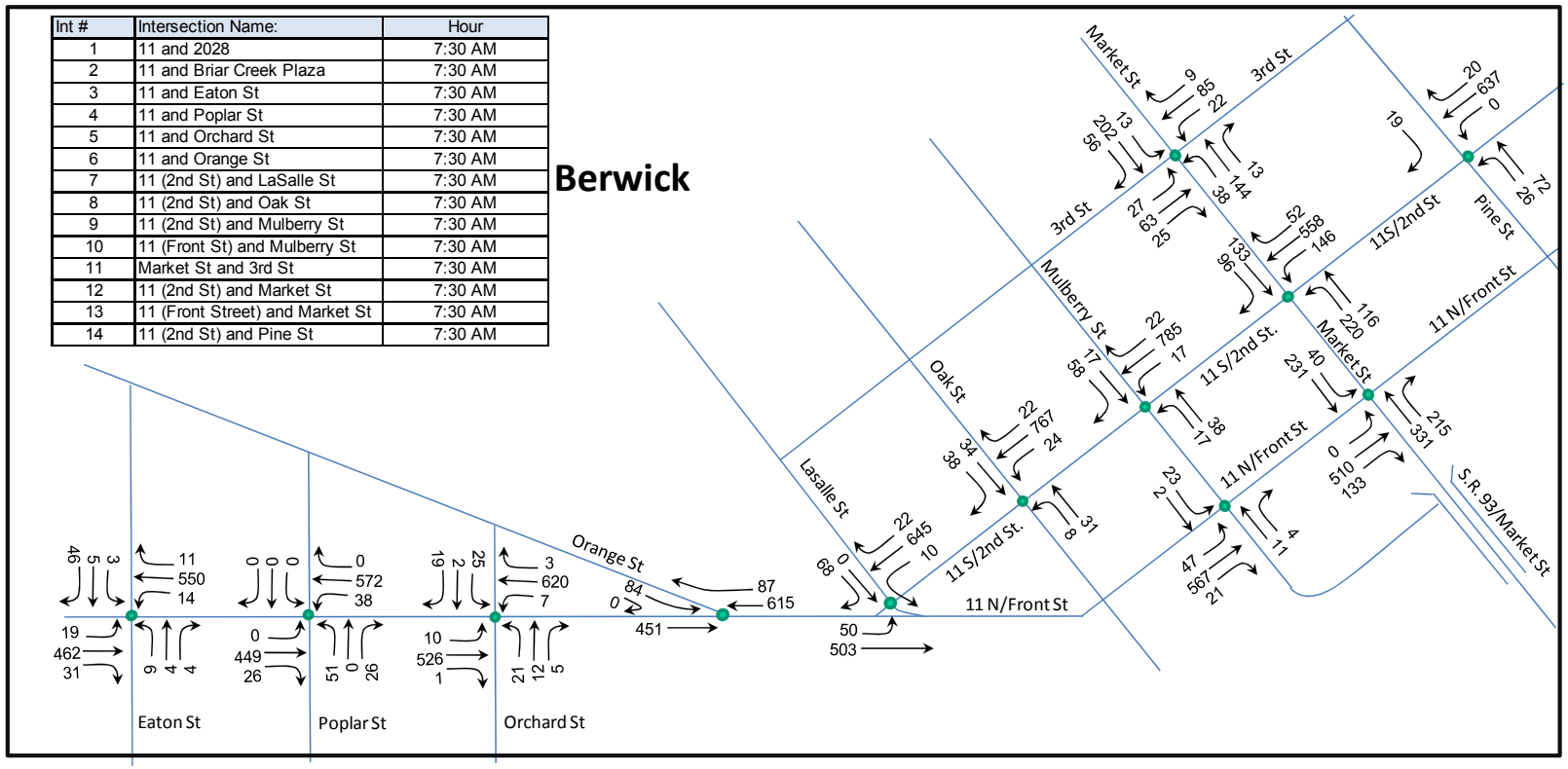
Int #	Intersection Name:	Hour
1	11 and 2028	7:30 AM
2	11 and Briar Creek Plaza	7:30 AM
3	11 and Eaton St	7:30 AM
4	11 and Poplar St	7:30 AM
5	11 and Orchard St	7:30 AM
6	11 and Orange St	7:30 AM
7	11 (2nd St) and LaSalle St	7:30 AM
8	11 (2nd St) and Oak St	7:30 AM
9	11 (2nd St) and Mulberry St	7:30 AM
10	11 (Front St) and Mulberry St	7:30 AM
11	Market St and 3rd St	7:30 AM
12	11 (2nd St) and Market St	7:30 AM
13	11 (Front Street) and Market St	7:30 AM
14	11 (2nd St) and Pine St	7:30 AM



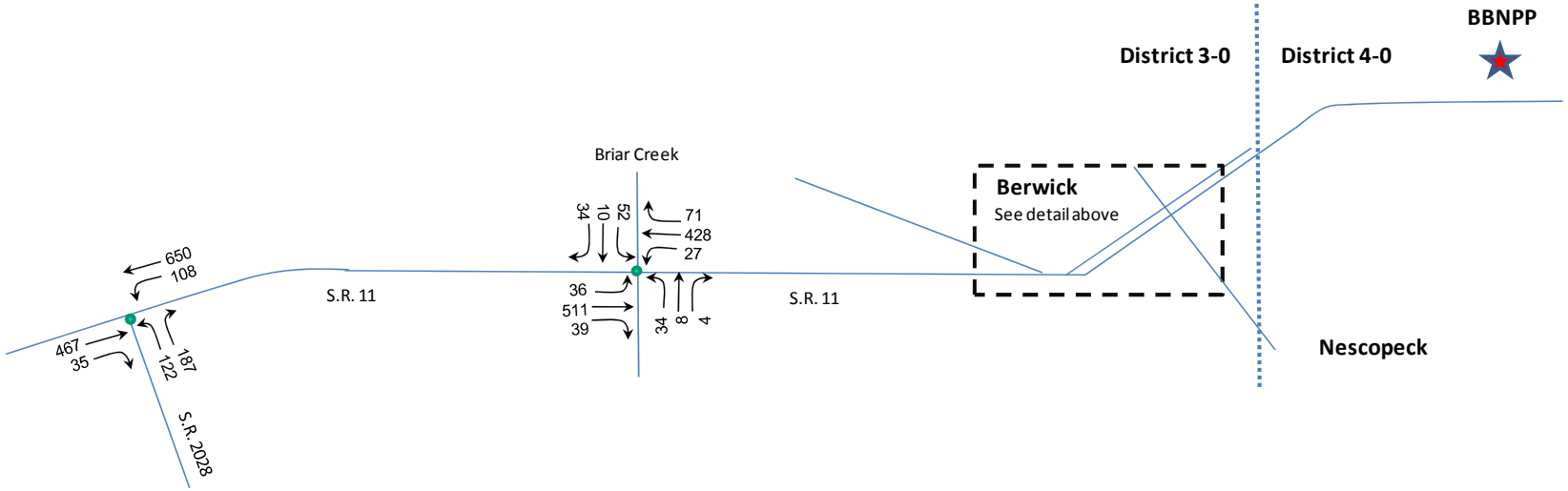


Figure I-3 - Future Build AM Peak Hour Volumes

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Int #	Intersection:	Hour
15	93 (3rd St) and 339 (Broad St)	7:30 AM
16	93 (3rd St) and Dewey St	7:30 AM
17	11 and Bell Bend Entrance	6:00 AM
18	11 and SSES Entrance	6:00 AM
19	11 and 239	6:00 AM
20	11 and 239 (Union St)	7:00 AM
21	11 and 29 (Mill St)	7:00 AM
22	11 and County Bridge	7:00 AM
23	11 (E. Poplar St) and 29	7:00 AM

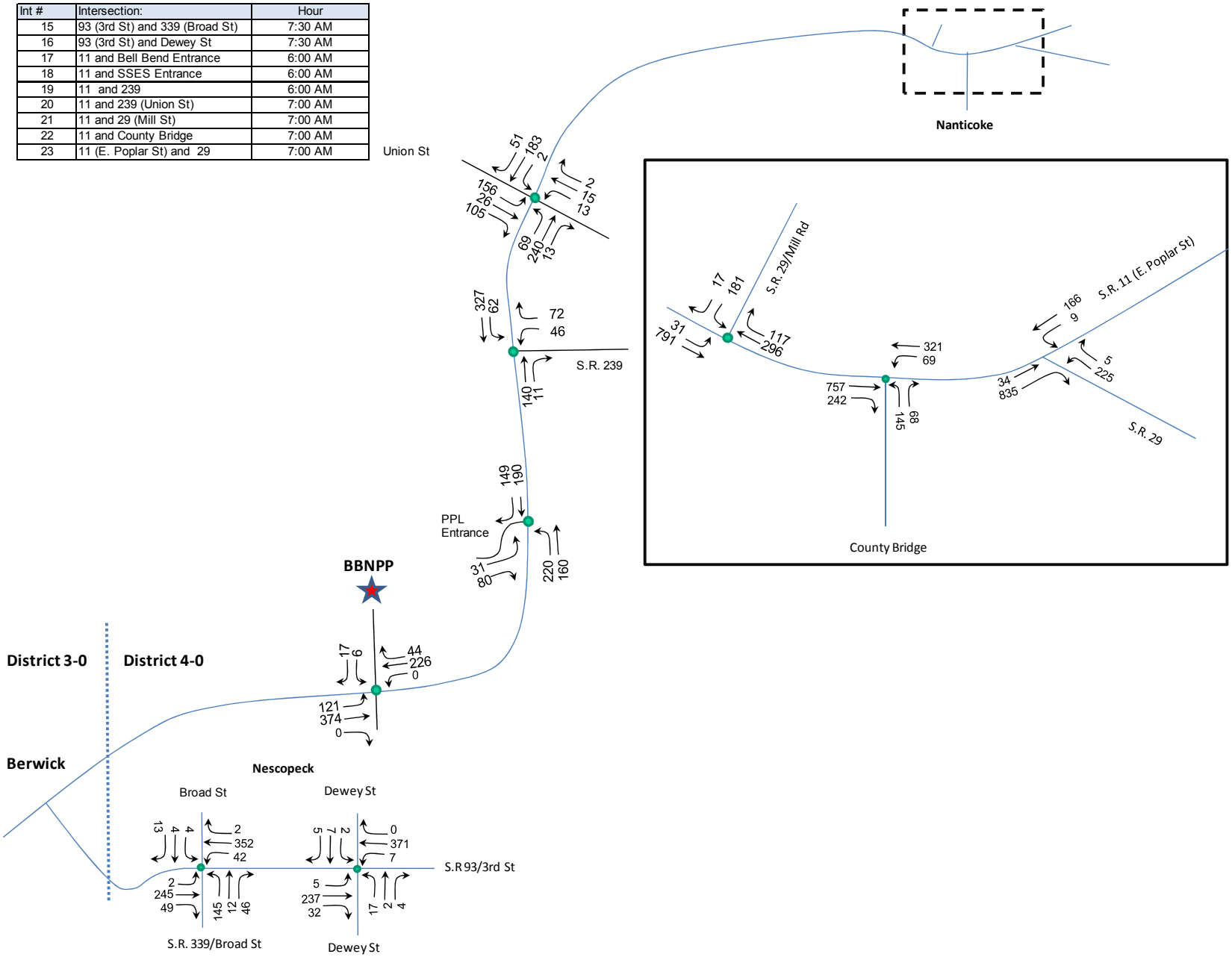

Figure I-3 - Future Build AM Peak Hour Volumes

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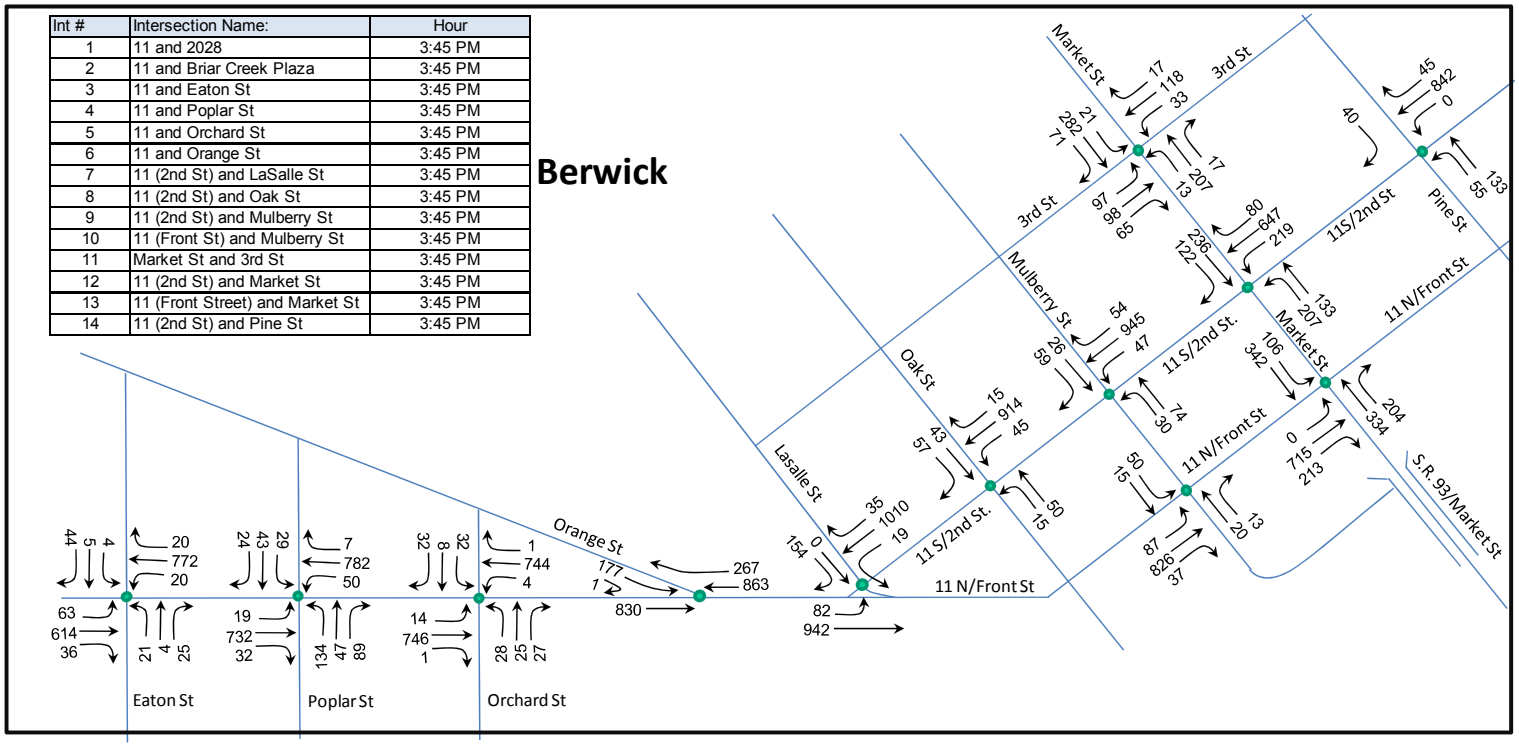
Int #	Intersection Name:	Hour
1	11 and 2028	3:45 PM
2	11 and Briar Creek Plaza	3:45 PM
3	11 and Eaton St	3:45 PM
4	11 and Poplar St	3:45 PM
5	11 and Orchard St	3:45 PM
6	11 and Orange St	3:45 PM
7	11 (2nd St) and LaSalle St	3:45 PM
8	11 (2nd St) and Oak St	3:45 PM
9	11 (2nd St) and Mulberry St	3:45 PM
10	11 (Front St) and Mulberry St	3:45 PM
11	Market St and 3rd St	3:45 PM
12	11 (2nd St) and Market St	3:45 PM
13	11 (Front Street) and Market St	3:45 PM
14	11 (2nd St) and Pine St	3:45 PM



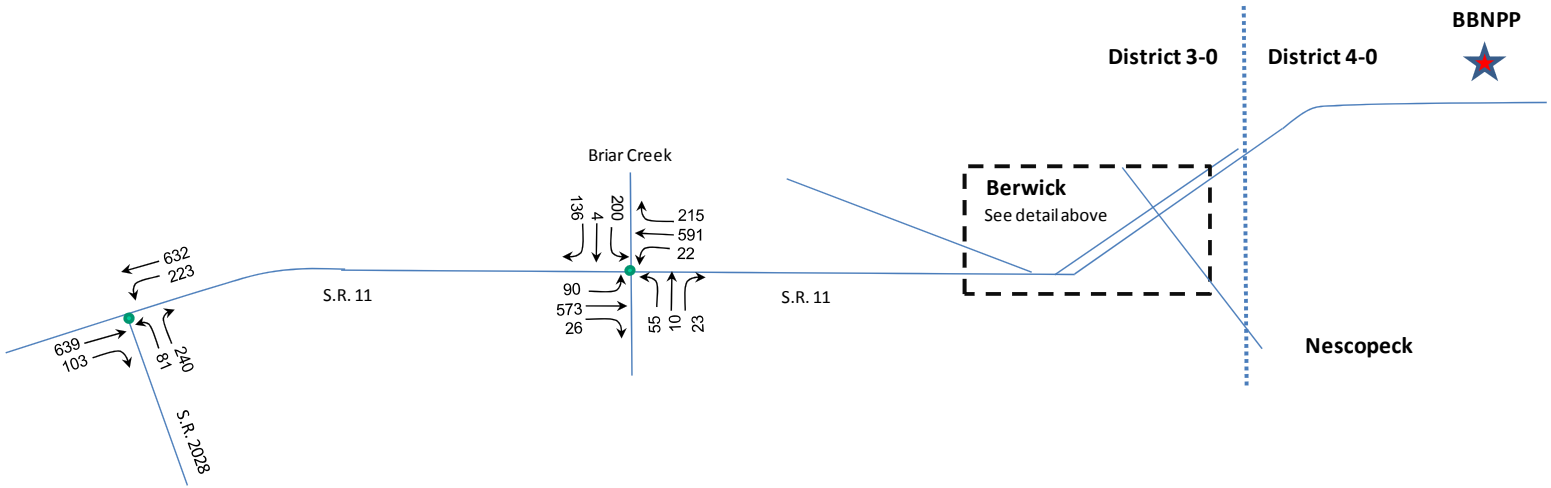


Figure I-4 - Future Build PM Peak Hour Volumes

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Int #	Intersection:	Hour
15	93 (3rd St) and 339 (Broad St)	3:45 PM
16	93 (3rd St) and Dewey St	3:45 PM
17	11 and Bell Bend Entrance	3:00 PM
18	11 and SSES Entrance	4:45 PM
19	11 and 239	3:30 PM
20	11 and 239 (Union St)	4:30 PM
21	11 and 29 (Mill St)	4:30 PM
22	11 and County Bridge	4:30 PM
23	11 (E. Poplar St) and 29	4:30 PM

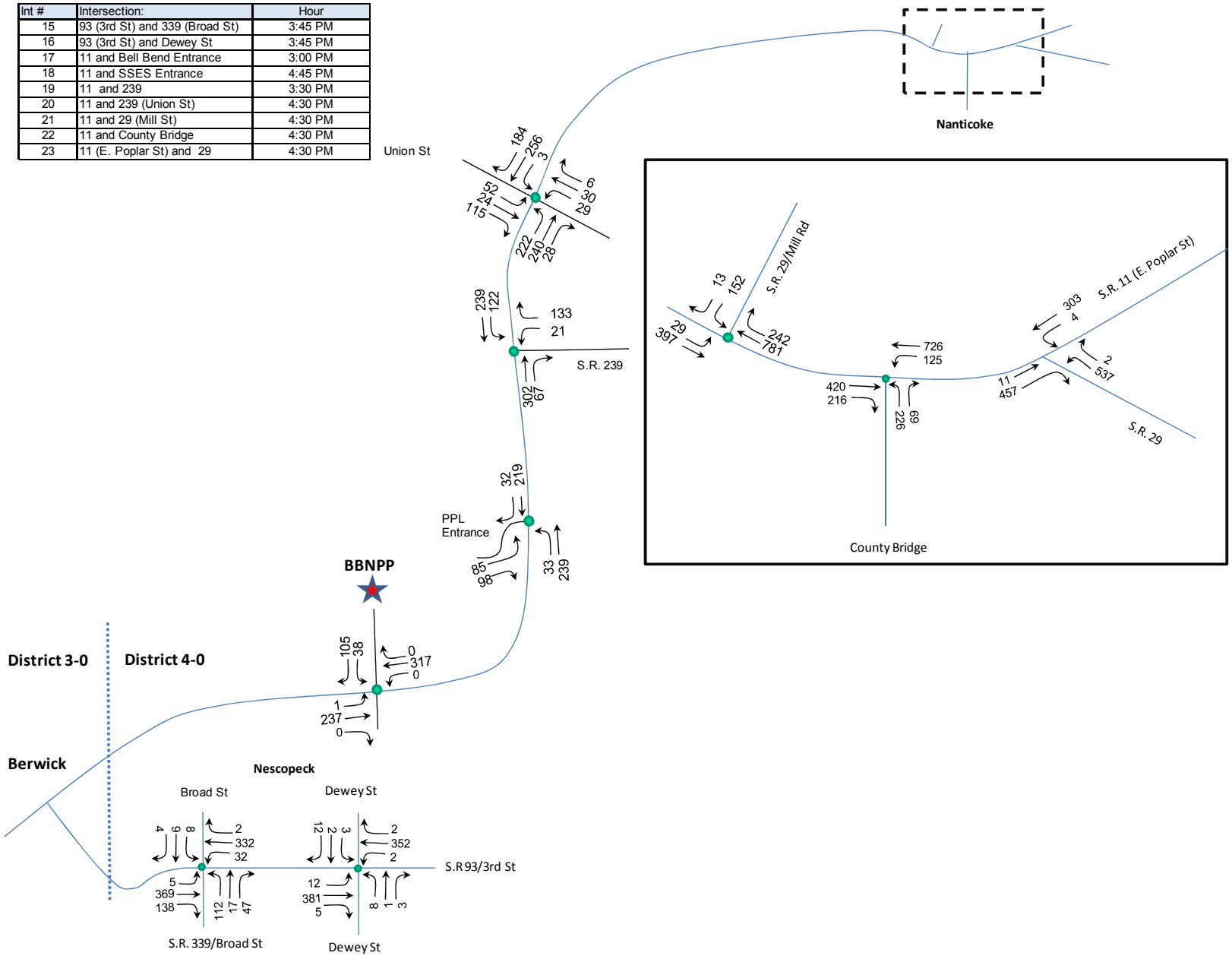

Figure I-4 - Future Build PM Peak Hour Volumes

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and S.R. 2028
Scenario: 2021, Future Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	133	807	16%	60	2.2	150	125	75	225	225	165
SBL	PM	237	1364	17%	60	4.0	175	125	75	250	250	165
Speed (MPH)	45			>10%		Condition:	B or C*					
WBL	AM	127	323	39%	60	2.1	150	#N/A	#N/A	#N/A	150	275
WBL	PM	103	353	29%	60	1.7	100	#N/A	#N/A	#N/A	100	275
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and Briar Creek Plaza Driveways
Scenario: 2021, Future Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	42	587	7%	45	0.5	75	#N/A	#N/A	#N/A	75	175
NBL	PM	110	898	12%	80	2.5	150	#N/A	#N/A	#N/A	150	175
Speed (MPH)	35			>10%		Condition:	A					
SBL	AM	43	532	8%	45	0.5	75	#N/A	#N/A	#N/A	75	135
SBL	PM	22	888	2%	80	0.5	75	#N/A	#N/A	#N/A	75	135
Speed (MPH)	35			<=10%		Condition:	A					
EBL	AM	56	100	56%	45	0.7	75	#N/A	#N/A	#N/A	75	175
EBL	PM	210	327	64%	80	4.7	200	#N/A	#N/A	#N/A	200	175
Speed (MPH)	30			>10%		Condition:	A					
WBL	AM	46	59	79%	45	0.6	75	#N/A	#N/A	#N/A	75	75
WBL	PM	56	86	65%	80	1.2	100	#N/A	#N/A	#N/A	100	75
Speed (MPH)	30			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Eaton Street
Scenario: 2021, Future Build
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	25	546	5%	60	0.4	75	#N/A	#N/A	#N/A	75	150
NBL	PM	66	845	8%	60	1.1	100	#N/A	#N/A	#N/A	100	150
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	14	623	2%	60	0.2	75	#N/A	#N/A	#N/A	75	150
SBL	PM	65	767	8%	60	1.1	100	#N/A	#N/A	#N/A	100	150
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Poplar Street
Scenario: 2021, Future Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	0	37	0%	75	0.0	75	#N/A	#N/A	#N/A	75	75
NBL	PM	23	779	3%	90	0.6	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	58	640	9%	75	1.2	100	#N/A	#N/A	#N/A	100	105
SBL	PM	77	894	9%	90	1.9	100	#N/A	#N/A	#N/A	100	105
Speed (MPH)	35			<=10%		Condition:	A					
WBL	AM	68	110	61%	75	1.4	100	#N/A	#N/A	#N/A	100	250
WBL	PM	140	275	51%	90	3.5	175	#N/A	#N/A	#N/A	175	250
Speed (MPH)	30			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Orchard Street
Scenario: 2021, Future Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	12	564	2%	75	0.3	75	#N/A	#N/A	#N/A	75	75
NBL	PM	16	796	2%	90	0.4	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	9	643	1%	75	0.2	75	#N/A	#N/A	#N/A	75	75
SBL	PM	10	757	1%	90	0.3	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and LaSalle Street
Scenario: 2021, Future Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	60	600	10%	65	1.1	100	#N/A	#N/A	#N/A	100	100
NBL	PM	94	1075	9%	90	2.4	150	#N/A	#N/A	#N/A	150	100
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	11	675	2%	65	0.2	75	#N/A	#N/A	#N/A	75	100
SBL	PM	20	1060	2%	90	0.5	75	#N/A	#N/A	#N/A	75	100
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 1025 (Market Street) and Third Street
Scenario: 2021, Future Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
EBL	AM	14	315	5%	60	0.2	75	#N/A	#N/A	#N/A	75	90
EBL	PM	25	384	7%	60	0.4	75	#N/A	#N/A	#N/A	75	90
Speed (MPH)	25			<=10%		Condition:	A					
WBL	AM	41	189	22%	60	0.7	75	#N/A	#N/A	#N/A	75	175
WBL	PM	29	237	12%	60	0.5	75	#N/A	#N/A	#N/A	75	175
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and Market Street
Scenario: 2021, Future Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	156	786	20%	60	2.6	150	#N/A	#N/A	#N/A	150	100
SBL	PM	239	1056	23%	60	4.0	175	#N/A	#N/A	#N/A	175	100
Speed (MPH)	35			>10%		Condition:	A					
WBL	AM	241	354	68%	60	4.0	200	#N/A	#N/A	#N/A	200	170
WBL	PM	263	377	70%	60	4.4	200	#N/A	#N/A	#N/A	200	170
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and Pine Street
Scenario: 2021, Future Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
WBL	AM	26	100	26%	60	0.4	75	#N/A	#N/A	#N/A	75	175
WBL	PM	67	213	31%	60	1.1	100	#N/A	#N/A	#N/A	100	175
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and SSES Site Entrance
Scenario: 2021, Future Build
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	220	403	55%	90	5.5	250	235	114	364	364	200
NBL	PM	42	559	8%	90	1.1	100	235	114	214	235	200
Speed (MPH)	55			>10%		Condition:	B or C*					
EBL	AM	31	111	28%	90	0.8	75	#N/A	#N/A	#N/A	75	450
EBL	PM	85	183	46%	90	2.1	150	#N/A	#N/A	#N/A	150	450
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Main Street) and S.R. 239 (Union Street)
Scenario: 2021, Future Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	88	290	30%	55	1.3	100	#N/A	#N/A	#N/A	100	150
NBL	PM	229	497	46%	60	3.8	175	#N/A	#N/A	#N/A	175	150
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and S.R. 29 (Mill Street)
Scenario: 2021, Future Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	40	892	4%	80	0.9	75	#N/A	#N/A	#N/A	75	100
NBL	PM	32	449	7%	90	0.8	75	#N/A	#N/A	#N/A	75	100
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and County Bridge
Scenario: 2021, Future Build
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	96	407	23%	100	2.7	150	#N/A	#N/A	#N/A	150	200
SBL	PM	133	834	16%	70	2.6	150	#N/A	#N/A	#N/A	150	200
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (E. Poplar Street) and S.R. 29
Scenario: 2021, Future Build
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	37	889	4%	90	0.9	75	#N/A	#N/A	#N/A	75	300
NBL	PM	27	504	5%	90	0.7	75	#N/A	#N/A	#N/A	75	300
Speed (MPH)	35			<=10%		Condition:	A					
WBL	AM	235	241	97%	90	5.9	250	#N/A	#N/A	#N/A	250	300
WBL	PM	569	569	100%	90	14.2	525	#N/A	#N/A	#N/A	525	300
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C2	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C
Agency/Co.:
Date Performed:
Analysis Time Period: 7:30 AM
Intersection: S.R. 11 and Eaton St.
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2021
Project ID: 2021, Future Build, AM
East/West Street: Eaton St.
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	19	462	31	14	550	11
Peak-Hour Factor, PHF	0.85	0.94	0.64	0.65	0.94	0.50
Hourly Flow Rate, HFR	22	491	48	21	585	22
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	TWLTL			/ 9		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	9	4	4	3	5	46
Peak Hour Factor, PHF	0.50	0.50	0.50	0.75	0.42	0.70
Hourly Flow Rate, HFR	18	8	8	4	11	65
Percent Heavy Vehicles	25	0	0	0	0	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0	1	0	0	1	1
Configuration		LTR		LT	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR		LT		R
v (vph)	22	21		34		15		65
C(m) (vph)	981	1040		377		433		498
v/c	0.02	0.02		0.09		0.03		0.13
95% queue length	0.07	0.06		0.30		0.11		0.45
Control Delay	8.8	8.5		15.5		13.6		13.3
LOS	A	A		C		B		B
Approach Delay				15.5			13.4	
Approach LOS				C			B	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C
Agency/Co.:
Date Performed:
Analysis Time Period: 3:45 PM
Intersection: S.R. 11 and Eaton St.
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2021
Project ID: 2021, Future Build, PM
East/West Street: Eaton St.
North/South Street:
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	63	614	36	20	772	20
Peak-Hour Factor, PHF	0.85	0.90	0.69	0.64	1.00	0.75
Hourly Flow Rate, HFR	74	682	52	31	772	26
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	TWLTL			/ 9		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	21	4	25	4	5	44
Peak Hour Factor, PHF	0.68	0.50	0.41	1.00	0.63	0.71
Hourly Flow Rate, HFR	30	8	60	4	7	61
Percent Heavy Vehicles	5	0	0	25	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0	1	0	0	1	1
Configuration		LTR		LT	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR		LT		R
v (vph)	74	31		98		11		61
C(m) (vph)	833	880		306		254		396
v/c	0.09	0.04		0.32		0.04		0.15
95% queue length	0.29	0.11		1.34		0.14		0.54
Control Delay	9.7	9.2		22.2		19.8		15.7
LOS	A	A		C		C		C
Approach Delay				22.2			16.4	
Approach LOS				C			C	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 6:00 AM
Intersection: S.R. 11 and Bell Bend Entrance
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2021
Project ID: 2021, Future Build, AM
East/West Street: Bell Bend Site Entrance
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	121	374			266	44
Peak-Hour Factor, PHF	1.00	0.94			1.00	1.00
Hourly Flow Rate, HFR	121	397			266	44
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	TWLTL			/ 9		
RT Channelized?						
Lanes	1	1			1	0
Configuration	L	T				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				6		17
Peak Hour Factor, PHF				1.00		1.00
Hourly Flow Rate, HFR				6		17
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
Lanes				1	1	
Configuration				L	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	121					6		17
C(m) (vph)	1262					476		756
v/c	0.10					0.01		0.02
95% queue length	0.32					0.04		0.07
Control Delay	8.2					12.7		9.9
LOS	A					B		A
Approach Delay							10.6	
Approach LOS							B	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 3:00 PM
Intersection: S.R. 11 and Bell Bend Entrance
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2021
Project ID: 2021, Future Build, PM
East/West Street: Bell Bend Site Entrance
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	1	237			317	0
Peak-Hour Factor, PHF	1.00	0.87			0.92	1.00
Hourly Flow Rate, HFR	1	272			344	0
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	TWLTL			/ 9		
RT Channelized?						
Lanes	1	1			1	0
Configuration	L	T				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				38		105
Peak Hour Factor, PHF				1.00		1.00
Hourly Flow Rate, HFR				38		105
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	1					38		105
C(m) (vph)	1226					707		703
v/c	0.00					0.05		0.15
95% queue length	0.00					0.17		0.52
Control Delay	7.9					10.4		11.0
LOS	A					B		B
Approach Delay							10.8	
Approach LOS							B	

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HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 6:00 AM
Intersection: S.R. 11 and SSES Entrance
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2021
Project ID: 2021, Future Build, AM
East/West Street: SSES Entrance
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	220	160			190	149
Peak-Hour Factor, PHF	0.87	0.86			0.83	0.78
Hourly Flow Rate, HFR	252	186			228	191
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						No
Lanes	1	1			1	1
Configuration	L	T			T	R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				31		80
Peak Hour Factor, PHF				0.60		0.56
Hourly Flow Rate, HFR				51		142
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1	1	
Configuration				L	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	252					51		142
C(m) (vph)	1151					237		816
v/c	0.22					0.22		0.17
95% queue length	0.83					0.80		0.63
Control Delay	9.0					24.3		10.3
LOS	A					C		B
Approach Delay							14.0	
Approach LOS							B	

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HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 4:45 PM
Intersection: S.R. 11 and SSES Entrance
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2021
Project ID: 2021, Future Build, PM
East/West Street: SSES Entrance
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	33	239			219	32
Peak-Hour Factor, PHF	0.69	0.80			0.92	1.00
Hourly Flow Rate, HFR	47	298			238	32
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						No
Lanes	1	1			1	1
Configuration	L	T			T	R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				85		98
Peak Hour Factor, PHF				0.79		0.79
Hourly Flow Rate, HFR				107		124
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1	1	
Configuration				L	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	47					107		124
C(m) (vph)	1305					433		806
v/c	0.04					0.25		0.15
95% queue length	0.11					0.96		0.54
Control Delay	7.9					16.0		10.3
LOS	A					C		B
Approach Delay							12.9	
Approach LOS							B	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 7:00 AM
Intersection: S.R. 11 and S.R. 29
Jurisdiction: Nanticoke, PA
Units: U. S. Customary
Analysis Year: 2021
Project ID: 2021, Future Build, AM
East/West Street: S.R. 29
North/South Street: S.R. 11 (Poplar St.)
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume					166	
Peak-Hour Factor, PHF					0.79	
Hourly Flow Rate, HFR					210	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes					1	
Configuration					T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume			34	225		
Peak Hour Factor, PHF			0.57	0.79		
Hourly Flow Rate, HFR			59	284		
Percent Heavy Vehicles			6	3		
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes		1		1		
Configuration		R		L		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config					R	L		
v (vph)					59	284		
C(m) (vph)					1073	673		
v/c					0.05	0.42		
95% queue length					0.17	2.10		
Control Delay					8.6	14.2		
LOS					A	B		
Approach Delay				8.6			14.2	
Approach LOS				A			B	

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HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 4:30 PM
Intersection: S.R. 11 and S.R. 29
Jurisdiction: Nanticoke, PA
Units: U. S. Customary
Analysis Year: 2021
Project ID: 2021, Future Build, PM
East/West Street: S.R. 29
North/South Street: S.R. 11 (Poplar St.)
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume					303	
Peak-Hour Factor, PHF					0.90	
Hourly Flow Rate, HFR					336	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes					1	
Configuration					T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume			11	537		
Peak Hour Factor, PHF			1.00	0.87		
Hourly Flow Rate, HFR			11	617		
Percent Heavy Vehicles			0	1		
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes		1		1		
Configuration		R		L		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config					R	L		
v (vph)					11	617		
C(m) (vph)					1091	608		
v/c					0.01	1.01		
95% queue length					0.03	15.78		
Control Delay					8.3	66.4		
LOS					A	F		
Approach Delay				8.3			66.4	
Approach LOS				A			F	

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	1	1	1	1	0	0	0	0	1	2	1
Volume (vph)	0	133	96	219	115	0	0	0	0	146	557	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00					1.00	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		1792	1599	1787	1863					1736	3539	1615
Flt Permitted		1.00	1.00	0.66	1.00					0.95	1.00	1.00
Satd. Flow (perm)		1792	1599	1247	1863					1736	3539	1615
Peak-hour factor, PHF	1.00	0.90	0.88	0.82	0.70	1.00	1.00	1.00	1.00	0.83	0.78	0.80
Adj. Flow (vph)	0	148	109	267	164	0	0	0	0	176	714	65
RTOR Reduction (vph)	0	0	79	0	0	0	0	0	0	0	0	41
Lane Group Flow (vph)	0	148	30	267	164	0	0	0	0	176	714	24
Heavy Vehicles (%)	0%	6%	1%	1%	2%	0%	0%	0%	0%	4%	2%	0%
Turn Type			Perm	pm+pt						Split		Prot
Protected Phases		4		3	8					2	2	2
Permitted Phases			4	8								
Actuated Green, G (s)		16.5	16.5	30.0	28.5					22.0	22.0	22.0
Effective Green, g (s)		16.5	16.5	30.0	28.5					22.0	22.0	22.0
Actuated g/C Ratio		0.28	0.28	0.50	0.48					0.37	0.37	0.37
Clearance Time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Grp Cap (vph)		493	440	705	885					637	1298	592
v/s Ratio Prot		0.08		c0.06	0.09					0.10	c0.20	0.01
v/s Ratio Perm			0.02	c0.13								
v/c Ratio		0.30	0.07	0.38	0.19					0.28	0.55	0.04
Uniform Delay, d1		17.2	16.1	9.5	9.1					13.4	15.1	12.2
Progression Factor		0.75	0.45	0.02	0.02					0.79	0.80	0.66
Incremental Delay, d2		1.5	0.3	1.2	0.4					1.0	1.6	0.1
Delay (s)		14.3	7.5	1.4	0.5					11.6	13.6	8.2
Level of Service		B	A	A	A					B	B	A
Approach Delay (s)		11.4			1.0			0.0			12.9	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	2>	0	0	0	0	0	1	1	1	1	0
Volume (vph)	0	509	133	0	0	0	0	331	214	40	231	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			1%	
Total Lost time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Util. Factor		0.95						1.00	1.00	1.00	1.00	
Frt		0.97						1.00	0.85	1.00	1.00	
Flt Protected		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3411						1872	1607	1633	1835	
Flt Permitted		1.00						1.00	1.00	0.36	1.00	
Satd. Flow (perm)		3411						1872	1607	615	1835	
Peak-hour factor, PHF	1.00	0.91	0.87	1.00	1.00	1.00	1.00	0.78	0.66	0.77	0.80	1.00
Adj. Flow (vph)	0	559	153	0	0	0	0	424	324	52	289	0
RTOR Reduction (vph)	0	41	0	0	0	0	0	0	141	0	0	0
Lane Group Flow (vph)	0	671	0	0	0	0	0	424	183	52	289	0
Heavy Vehicles (%)	0%	2%	4%	0%	0%	0%	0%	2%	1%	10%	3%	0%
Turn Type									Perm	D.P+P		
Protected Phases		1						3		2	4	
Permitted Phases									3	3		
Actuated Green, G (s)		22.0						22.0	22.0	25.0	28.0	
Effective Green, g (s)		22.0						22.0	22.0	25.0	28.0	
Actuated g/C Ratio		0.37						0.37	0.37	0.42	0.47	
Clearance Time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		1251						686	589	307	856	
v/s Ratio Prot		c0.20						c0.23		0.01	c0.16	
v/s Ratio Perm									0.11	0.06		
v/c Ratio		0.54						0.62	0.31	0.17	0.34	
Uniform Delay, d1		15.0						15.6	13.6	10.9	10.1	
Progression Factor		0.74						1.00	1.00	0.67	0.64	
Incremental Delay, d2		1.6						4.1	1.4	1.2	1.0	
Delay (s)		12.7						19.7	14.9	8.5	7.6	
Level of Service		B						B	B	A	A	
Approach Delay (s)		12.7			0.0			17.6			7.7	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	45	71	140	10	62	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Total Lost time (s)	5.2		5.4	5.4	5.4	5.4
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.93		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1683		1845	1615	1761	1872
Flt Permitted	0.98		1.00	1.00	0.49	1.00
Satd. Flow (perm)	1683		1845	1615	908	1872
Peak-hour factor, PHF	0.57	0.85	0.86	0.62	0.74	0.80
Adj. Flow (vph)	79	84	163	16	84	409
RTOR Reduction (vph)	74	0	0	9	0	0
Lane Group Flow (vph)	89	0	163	7	84	409
Heavy Vehicles (%)	0%	5%	3%	0%	3%	2%
Turn Type				Perm	pm+pt	
Protected Phases	4		6		5	2
Permitted Phases				6	2	
Actuated Green, G (s)	4.6		16.1	16.1	24.3	24.3
Effective Green, g (s)	4.6		16.1	16.1	24.3	24.3
Actuated g/C Ratio	0.12		0.41	0.41	0.62	0.62
Clearance Time (s)	5.2		5.4	5.4	5.4	5.4
Vehicle Extension (s)	5.0		5.0	5.0	3.0	5.0
Lane Grp Cap (vph)	196		752	658	619	1152
v/s Ratio Prot	c0.05		0.09		0.01	c0.22
v/s Ratio Perm				0.00	0.07	
v/c Ratio	0.45		0.22	0.01	0.14	0.36
Uniform Delay, d1	16.3		7.6	7.0	3.5	3.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	3.4		0.3	0.0	0.1	0.4
Delay (s)	19.7		7.9	7.0	3.6	4.1
Level of Service	B		A	A	A	A
Approach Delay (s)	19.7		7.8			4.0
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	39.5	Sum of lost time (s)	10.6
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	0	<1>	0
Volume (vph)	155	26	105	12	14	2	68	240	12	2	182	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			1%	
Total Lost time (s)		5.0			5.0		5.0	5.0			5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.95			0.97		1.00	0.99			0.96	
Flt Protected		0.97			0.98		0.95	1.00			1.00	
Satd. Flow (prot)		1543			1545		1616	1623			1483	
Flt Permitted		0.81			0.83		0.41	1.00			0.99	
Satd. Flow (perm)		1286			1310		701	1623			1467	
Peak-hour factor, PHF	0.92	0.69	0.96	0.75	0.88	0.25	0.64	0.83	0.60	0.25	0.90	0.52
Adj. Flow (vph)	168	38	109	16	16	8	106	289	20	8	202	96
RTOR Reduction (vph)	0	36	0	0	6	0	0	5	0	0	30	0
Lane Group Flow (vph)	0	279	0	0	34	0	106	304	0	0	276	0
Heavy Vehicles (%)	2%	8%	1%	0%	14%	0%	0%	3%	16%	0%	10%	10%
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		14.1			14.1		23.5	23.5			15.5	
Effective Green, g (s)		14.1			14.1		23.5	23.5			15.5	
Actuated g/C Ratio		0.30			0.30		0.49	0.49			0.33	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		381			388		404	801			478	
v/s Ratio Prot							0.02	c0.19				
v/s Ratio Perm		c0.22			0.03		0.11				c0.19	
v/c Ratio		0.73			0.09		0.26	0.38			0.58	
Uniform Delay, d1		15.1			12.1		7.5	7.5			13.3	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		7.1			0.1		0.3	0.3			1.7	
Delay (s)		22.2			12.2		7.9	7.8			15.0	
Level of Service		C			B		A	A			B	
Approach Delay (s)		22.2			12.2			7.8			15.0	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	47.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	0	<1	1	0	<1>	0
Volume (vph)	0	449	25	37	572	0	51	0	25	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		3.0	5.0			4.0	4.0			
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00			
Frpb, ped/bikes		1.00		1.00	1.00			1.00	1.00			
Flpb, ped/bikes		1.00		1.00	1.00			0.99	1.00			
Frt		0.99		1.00	1.00			1.00	0.85			
Flt Protected		1.00		0.95	1.00			0.95	1.00			
Satd. Flow (prot)		1787		1626	1845			1693	1335			
Flt Permitted		1.00		0.95	1.00			0.76	1.00			
Satd. Flow (perm)		1787		1626	1845			1350	1335			
Peak-hour factor, PHF	1.00	0.85	0.64	0.71	0.88	1.00	0.57	1.00	0.64	1.00	1.00	1.00
Adj. Flow (vph)	0	528	39	52	650	0	89	0	39	0	0	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	563	0	52	650	0	0	89	39	0	0	0
Confl. Peds. (#/hr)							3					
Heavy Vehicles (%)	0%	5%	8%	11%	3%	0%	6%	0%	21%	0%	0%	0%
Turn Type	Perm			Prot			Perm		Perm	Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2						8		8	4		
Actuated Green, G (s)		27.0		16.0	46.0			20.0	20.0			
Effective Green, g (s)		27.0		16.0	46.0			20.0	20.0			
Actuated g/C Ratio		0.36		0.21	0.61			0.27	0.27			
Clearance Time (s)		5.0		3.0	5.0			4.0	4.0			
Lane Grp Cap (vph)		643		347	1132			360	356			
v/s Ratio Prot		c0.32		0.03	c0.35							
v/s Ratio Perm								c0.07	0.03			
v/c Ratio		0.88		0.15	0.57			0.25	0.11			
Uniform Delay, d1		22.4		24.0	8.7			21.6	20.8			
Progression Factor		1.00		0.65	0.62			1.00	1.00			
Incremental Delay, d2		15.5		0.7	1.7			1.6	0.6			
Delay (s)		37.9		16.2	7.0			23.2	21.4			
Level of Service		D		B	A			C	C			
Approach Delay (s)		37.9			7.7			22.7			0.0	
Approach LOS		D			A			C			A	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	1	1	0	1	0
Volume (vph)	0	451	615	0	84	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		-1%	0%		0%	
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1819	1845		1787	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1819	1845		1787	
Peak-hour factor, PHF	1.00	0.90	0.84	0.93	0.68	1.00
Adj. Flow (vph)	0	501	732	0	124	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	501	732	0	124	0
Heavy Vehicles (%)	0%	5%	3%	2%	1%	0%
Turn Type						
Protected Phases		2	6		8	
Permitted Phases						
Actuated Green, G (s)		54.0	54.0		13.0	
Effective Green, g (s)		54.0	54.0		13.0	
Actuated g/C Ratio		0.72	0.72		0.17	
Clearance Time (s)		4.0	4.0		4.0	
Lane Grp Cap (vph)		1310	1328		310	
v/s Ratio Prot		0.28	c0.40		c0.07	
v/s Ratio Perm						
v/c Ratio		0.38	0.55		0.40	
Uniform Delay, d1		4.1	4.9		27.5	
Progression Factor		0.37	0.50		1.00	
Incremental Delay, d2		0.8	1.6		3.8	
Delay (s)		2.2	4.0		31.4	
Level of Service		A	A		C	
Approach Delay (s)		2.2	4.0		31.4	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations	1	0	0	1	2>	0	0	1	0	0
Volume (vph)	49	0	0	9	645	22	0	67	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0			4.0		
Lane Util. Factor	1.00			1.00	0.95			1.00		
Frt	1.00			1.00	0.99			0.86		
Flt Protected	0.95			0.95	1.00			1.00		
Satd. Flow (prot)	1805			1805	3517			1627		
Flt Permitted	0.95			0.95	1.00			1.00		
Satd. Flow (perm)	1805			1805	3517			1627		
Peak-hour factor, PHF	0.54	0.90	1.00	0.75	0.84	0.56	1.00	0.76	0.92	0.92
Adj. Flow (vph)	91	0	0	12	768	39	0	88	0	0
RTOR Reduction (vph)	0	0	0	5	5	0	0	59	0	0
Lane Group Flow (vph)	91	0	0	7	802	0	0	29	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	1%	2%	2%
Turn Type	Prot			custom				custom		
Protected Phases	8			1	1			8		
Permitted Phases				1				8		
Actuated Green, G (s)	25.0			42.0	42.0			25.0		
Effective Green, g (s)	25.0			42.0	42.0			25.0		
Actuated g/C Ratio	0.33			0.56	0.56			0.33		
Clearance Time (s)	4.0			4.0	4.0			4.0		
Lane Grp Cap (vph)	602			1011	1970			542		
v/s Ratio Prot	c0.05			0.00	c0.23			0.02		
v/s Ratio Perm										
v/c Ratio	0.15			0.01	0.41			0.05		
Uniform Delay, d1	17.6			7.3	9.4			17.0		
Progression Factor	1.22			1.00	1.00			1.00		
Incremental Delay, d2	0.5			0.0	0.6			0.2		
Delay (s)	21.8			7.3	10.0			17.2		
Level of Service	C			A	B			B		
Approach Delay (s)		21.8			10.0		17.2		0.0	
Approach LOS		C			A		B		A	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	2>	0	1	1	0	0	0	1
Volume (vph)	0	0	0	0	637	19	26	72	0	0	0	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			1%	
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		1.00	1.00				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					3491		1796	1872				1635
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					3491		1796	1872				1635
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	0.72	0.64	0.67	0.79	1.00	1.00	1.00	0.71
Adj. Flow (vph)	0	0	0	0	885	30	39	91	0	0	0	25
RTOR Reduction (vph)	0	0	0	0	3	0	34	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	912	0	5	91	0	0	0	25
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	1%	0%	0%	0%	0%
Turn Type							Perm					custom
Protected Phases					1			2				
Permitted Phases							2					2
Actuated Green, G (s)					44.8		7.2	7.2				7.2
Effective Green, g (s)					44.8		7.2	7.2				7.2
Actuated g/C Ratio					0.75		0.12	0.12				0.12
Clearance Time (s)					4.0		4.0	4.0				4.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					2607		216	225				196
v/s Ratio Prot					c0.26			c0.05				
v/s Ratio Perm							0.00					0.02
v/c Ratio					0.35		0.02	0.40				0.13
Uniform Delay, d1					2.6		23.3	24.4				23.6
Progression Factor					0.96		1.00	1.00				1.00
Incremental Delay, d2					0.4		0.0	1.2				0.3
Delay (s)					2.9		23.3	25.6				23.9
Level of Service					A		C	C				C
Approach Delay (s)		0.0			2.9			24.9			23.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	0	1	1	0	0	<1>	0	0	<1>	0
Volume (vph)	9	526	1	6	620	3	20	12	5	25	2	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.98			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1805	1814		1805	1842			1815			1768	
Flt Permitted	0.27	1.00		0.38	1.00			0.98			0.97	
Satd. Flow (perm)	508	1814		718	1842			1815			1768	
Peak-hour factor, PHF	0.56	0.91	0.25	0.38	0.82	0.38	0.68	0.46	0.42	0.52	0.25	0.71
Adj. Flow (vph)	16	578	4	16	756	8	29	26	12	48	8	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	10	0	0	21	0
Lane Group Flow (vph)	16	582	0	16	764	0	0	57	0	0	60	0
Heavy Vehicles (%)	0%	4%	100%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Split			Split		
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	49.0	49.0		49.0	49.0			5.0			6.0	
Effective Green, g (s)	49.0	49.0		49.0	49.0			5.0			6.0	
Actuated g/C Ratio	0.65	0.65		0.65	0.65			0.07			0.08	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	332	1185		469	1203			121			141	
v/s Ratio Prot		0.32			c0.41			c0.03			c0.03	
v/s Ratio Perm	0.03			0.02								
v/c Ratio	0.05	0.49		0.03	0.64			0.47			0.42	
Uniform Delay, d1	4.7	6.6		4.6	7.7			33.7			32.9	
Progression Factor	0.07	0.18		0.13	0.10			1.00			1.00	
Incremental Delay, d2	0.2	0.9		0.1	2.2			12.5			9.1	
Delay (s)	0.5	2.1		0.7	3.0			46.2			41.9	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		2.0			3.0			46.2			41.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	24	766	21	7	30	0	0	33	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			1%			-1%	
Total Lost time (s)					6.0			5.0			5.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3536			1660			1684	
Flt Permitted					1.00			0.88			1.00	
Satd. Flow (perm)					3536			1474			1684	
Peak-hour factor, PHF	1.00	1.00	1.00	0.69	0.86	0.83	0.44	0.70	1.00	1.00	0.65	0.88
Adj. Flow (vph)	0	0	0	35	891	25	16	43	0	0	51	43
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	40	0
Lane Group Flow (vph)	0	0	0	0	947	0	0	59	0	0	54	0
Heavy Vehicles (%)	0%	0%	0%	4%	2%	0%	0%	17%	0%	0%	0%	14%
Turn Type				Perm			Perm					
Protected Phases					1			2			2	
Permitted Phases				1			2					
Actuated Green, G (s)					32.8			3.3			3.3	
Effective Green, g (s)					32.8			3.3			3.3	
Actuated g/C Ratio					0.70			0.07			0.07	
Clearance Time (s)					6.0			5.0			5.0	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2462			103			118	
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.27			c0.04				
v/c Ratio					0.38			0.57			0.46	
Uniform Delay, d1					3.0			21.2			21.0	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.1			7.5			2.8	
Delay (s)					3.1			28.7			23.8	
Level of Service					A			C			C	
Approach Delay (s)		0.0			3.1			28.7			23.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	47.1	Sum of lost time (s)	11.0
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	1	1>	0
Volume (vph)	27	63	25	21	85	8	38	144	13	13	202	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.99		1.00	0.98		1.00	0.97	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786			1860		1805	1853		1805	1844	
Flt Permitted		0.91			0.92		0.52	1.00		0.63	1.00	
Satd. Flow (perm)		1647			1739		989	1853		1191	1844	
Peak-hour factor, PHF	0.78	0.91	0.72	0.62	0.78	0.67	0.80	0.77	0.60	0.50	0.76	0.85
Adj. Flow (vph)	35	69	35	34	109	12	48	187	22	26	266	65
RTOR Reduction (vph)	0	20	0	0	5	0	0	7	0	0	14	0
Lane Group Flow (vph)	0	119	0	0	150	0	48	202	0	26	317	0
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2	2		1			1	1	
Actuated Green, G (s)		20.0			20.0		32.0	32.0		32.0	32.0	
Effective Green, g (s)		20.0			20.0		32.0	32.0		32.0	32.0	
Actuated g/C Ratio		0.33			0.33		0.53	0.53		0.53	0.53	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		549			580		527	988		635	983	
v/s Ratio Prot								0.11			c0.17	
v/s Ratio Perm		0.07			c0.09		0.05			0.02		
v/c Ratio		0.22			0.26		0.09	0.20		0.04	0.32	
Uniform Delay, d1		14.4			14.6		6.9	7.3		6.7	7.9	
Progression Factor		1.00			1.00		0.58	0.53		1.00	1.00	
Incremental Delay, d2		0.9			1.1		0.3	0.5		0.1	0.9	
Delay (s)		15.3			15.7		4.3	4.4		6.8	8.8	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		15.3			15.7			4.4			8.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	17	785	21	17	38	0	0	17	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			-4%	
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.90	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3554			1802			1738	
Flt Permitted					1.00			0.91			1.00	
Satd. Flow (perm)					3554			1664			1738	
Peak-hour factor, PHF	1.00	1.00	1.00	0.50	0.78	0.62	0.80	0.73	1.00	1.00	0.67	0.70
Adj. Flow (vph)	0	0	0	34	1006	34	21	52	0	0	25	81
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	63	0
Lane Group Flow (vph)	0	0	0	0	1070	0	0	73	0	0	43	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	12%	0%	0%	0%	0%	0%
Turn Type				Split			Perm					
Protected Phases				1	1			2			2	
Permitted Phases							2					
Actuated Green, G (s)					39.0			13.0			13.0	
Effective Green, g (s)					39.0			13.0			13.0	
Actuated g/C Ratio					0.65			0.22			0.22	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					2310			361			377	
v/s Ratio Prot					c0.30						0.02	
v/s Ratio Perm								c0.04				
v/c Ratio					0.46			0.20			0.11	
Uniform Delay, d1					5.3			19.3			18.9	
Progression Factor					0.37			0.82			1.00	
Incremental Delay, d2					0.6			1.2			0.6	
Delay (s)					2.5			17.0			19.5	
Level of Service					A			B			B	
Approach Delay (s)		0.0			2.5			17.0			19.5	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<2>	0	0	0	0	0	1>	0	0	<1	0
Volume (vph)	47	566	20	0	0	0	0	10	4	22	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			1%			-1%	
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.95			1.00	
Flt Protected		1.00						1.00			0.96	
Satd. Flow (prot)		3428						1693			1828	
Flt Permitted		1.00						1.00			0.80	
Satd. Flow (perm)		3428						1693			1524	
Peak-hour factor, PHF	0.72	0.92	0.68	1.00	1.00	1.00	1.00	0.62	0.50	0.66	0.50	1.00
Adj. Flow (vph)	65	615	29	0	0	0	0	16	8	33	4	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	704	0	0	0	0	0	18	0	0	37	0
Heavy Vehicles (%)	2%	4%	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%
Turn Type	Split									Perm		
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)		39.0						13.0			13.0	
Effective Green, g (s)		39.0						13.0			13.0	
Actuated g/C Ratio		0.65						0.22			0.22	
Clearance Time (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		2228						367			330	
v/s Ratio Prot		c0.21						0.01				
v/s Ratio Perm											c0.02	
v/c Ratio		0.32						0.05			0.11	
Uniform Delay, d1		4.6						18.6			18.9	
Progression Factor		1.00						1.00			0.89	
Incremental Delay, d2		0.4						0.2			0.7	
Delay (s)		5.0						18.9			17.4	
Level of Service		A						B			B	
Approach Delay (s)		5.0			0.0			18.9			17.4	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Volume (vph)	467	34	108	649	122	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1792	1404	1736	1827	1770	1583
Flt Permitted	1.00	1.00	0.27	1.00	0.95	1.00
Satd. Flow (perm)	1792	1404	489	1827	1770	1583
Peak-hour factor, PHF	0.84	0.57	0.77	0.78	0.85	0.84
Adj. Flow (vph)	556	60	140	832	144	223
RTOR Reduction (vph)	0	34	0	0	0	0
Lane Group Flow (vph)	556	26	140	832	144	223
Heavy Vehicles (%)	6%	15%	4%	4%	2%	2%
Turn Type		Perm	pm+pt			Prot
Protected Phases	4		3	8	2	2
Permitted Phases		4	8			
Actuated Green, G (s)	22.0	22.0	28.9	28.9	11.6	11.6
Effective Green, g (s)	22.0	22.0	28.9	28.9	11.6	11.6
Actuated g/C Ratio	0.43	0.43	0.57	0.57	0.23	0.23
Clearance Time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	773	606	358	1035	403	360
v/s Ratio Prot	0.31		0.03	c0.46	0.08	c0.14
v/s Ratio Perm		0.02	0.20			
v/c Ratio	0.72	0.04	0.39	0.80	0.36	0.62
Uniform Delay, d1	12.0	8.4	6.5	8.8	16.6	17.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	0.0	0.7	4.6	0.5	3.2
Delay (s)	15.2	8.4	7.2	13.4	17.1	20.9
Level of Service	B	A	A	B	B	C
Approach Delay (s)	14.5			12.5	19.4	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	51.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	2	245	49	42	352	2	144	11	46	4	4	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			0%	
Total Lost time (s)		6.5			6.5			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.97			0.93	
Flt Protected		1.00			0.99			0.97			0.99	
Satd. Flow (prot)		1773			1838			1709			1750	
Flt Permitted		0.99			0.92			0.77			0.90	
Satd. Flow (perm)		1752			1702			1365			1588	
Peak-hour factor, PHF	0.25	0.94	0.65	0.67	0.74	0.50	0.84	0.69	0.79	0.50	0.50	0.75
Adj. Flow (vph)	8	261	75	63	476	4	171	16	58	8	8	16
RTOR Reduction (vph)	0	16	0	0	0	0	0	19	0	0	12	0
Lane Group Flow (vph)	0	328	0	0	543	0	0	226	0	0	20	0
Heavy Vehicles (%)	0%	4%	4%	5%	3%	0%	2%	0%	11%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		31.6			31.6			13.2			13.2	
Effective Green, g (s)		31.6			31.6			13.2			13.2	
Actuated g/C Ratio		0.55			0.55			0.23			0.23	
Clearance Time (s)		6.5			6.5			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		966			939			314			366	
v/s Ratio Prot												
v/s Ratio Perm		0.19			c0.32			c0.17			0.01	
v/c Ratio		0.34			0.58			0.72			0.05	
Uniform Delay, d1		7.1			8.5			20.3			17.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.0			2.6			7.7			0.1	
Delay (s)		8.0			11.0			28.0			17.2	
Level of Service		A			B			C			B	
Approach Delay (s)		8.0			11.0			28.0			17.2	
Approach LOS		A			B			C			B	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	57.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	5	236	31	7	371	0	16	2	4	2	7	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.96			0.97	
Flt Protected		1.00			1.00			0.97			0.99	
Satd. Flow (prot)		1782			1826			1781			1824	
Flt Permitted		0.98			0.99			1.00			0.95	
Satd. Flow (perm)		1753			1808			1830			1740	
Peak-hour factor, PHF	0.42	0.99	0.50	0.44	0.76	1.00	0.67	0.25	0.33	0.50	0.35	0.62
Adj. Flow (vph)	12	238	62	16	488	0	24	8	12	4	20	8
RTOR Reduction (vph)	0	13	0	0	0	0	0	11	0	0	8	0
Lane Group Flow (vph)	0	299	0	0	504	0	0	33	0	0	24	0
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		40.0			40.0			2.4			2.4	
Effective Green, g (s)		40.0			40.0			2.4			2.4	
Actuated g/C Ratio		0.76			0.76			0.05			0.05	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1338			1380			84			80	
v/s Ratio Prot												
v/s Ratio Perm		0.17			c0.28			c0.02			0.01	
v/c Ratio		0.22			0.37			0.39			0.30	
Uniform Delay, d1		1.8			2.0			24.3			24.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.4			0.7			3.0			2.2	
Delay (s)		2.2			2.8			27.2			26.3	
Level of Service		A			A			C			C	
Approach Delay (s)		2.2			2.8			27.2			26.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	52.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1	1	1	1>	0	1	1	1
Volume (vph)	36	510	39	27	427	71	33	7	4	52	9	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	16	16
Grade (%)		1%			-1%			1%			2%	
Total Lost time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1744	1787		1744	1836	1623	1796	1796		1718	2132	1812
Flt Permitted	0.38	1.00		0.44	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Satd. Flow (perm)	695	1787		810	1836	1623	1890	1796		1809	2132	1812
Peak-hour factor, PHF	0.63	0.93	0.90	0.42	0.83	0.74	0.70	0.44	0.50	0.71	0.56	0.78
Adj. Flow (vph)	57	548	43	64	514	96	47	16	8	73	16	42
RTOR Reduction (vph)	0	6	0	0	0	42	0	7	0	0	0	39
Lane Group Flow (vph)	57	585	0	64	514	54	47	17	0	73	16	3
Heavy Vehicles (%)	3%	5%	0%	4%	4%	0%	0%	0%	0%	4%	0%	0%
Turn Type	pm+pt			Perm		Perm	Perm			Perm		Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	28.6	28.6		24.1	24.1	24.1	3.4	3.4		3.4	3.4	3.4
Effective Green, g (s)	28.6	28.6		24.1	24.1	24.1	3.4	3.4		3.4	3.4	3.4
Actuated g/C Ratio	0.67	0.67		0.57	0.57	0.57	0.08	0.08		0.08	0.08	0.08
Clearance Time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	492	1203		459	1041	920	151	144		145	171	145
v/s Ratio Prot	0.00	c0.33			0.28			0.01			0.01	
v/s Ratio Perm	0.08			0.08		0.03	0.02			c0.04		0.00
v/c Ratio	0.12	0.49		0.14	0.49	0.06	0.31	0.12		0.50	0.09	0.02
Uniform Delay, d1	2.7	3.4		4.3	5.5	4.1	18.4	18.2		18.7	18.1	18.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.3		0.1	0.4	0.0	1.2	0.4		2.7	0.2	0.1
Delay (s)	2.8	3.7		4.5	5.9	4.1	19.6	18.5		21.5	18.4	18.1
Level of Service	A	A		A	A	A	B	B		C	B	B
Approach Delay (s)		3.6			5.5			19.2			20.0	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	42.5	Sum of lost time (s)	10.5
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	0	1>	0	0	<1>	0	0	<1	1
Volume (vph)	30	790	29	7	295	116	6	1	30	181	3	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			0%			-1%	
Total Lost time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.99			0.96			0.89			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.99			0.95	1.00
Satd. Flow (prot)	1497	1836			1731			1541			1804	1531
Flt Permitted	0.47	1.00			0.87			0.99			0.95	1.00
Satd. Flow (perm)	748	1836			1509			1541			1804	1531
Peak-hour factor, PHF	0.91	0.86	0.64	0.58	0.90	0.79	0.75	0.25	0.66	0.80	0.38	0.67
Adj. Flow (vph)	33	919	45	12	328	147	8	4	45	226	8	24
RTOR Reduction (vph)	0	2	0	0	20	0	0	44	0	0	0	14
Lane Group Flow (vph)	33	962	0	0	467	0	0	13	0	0	234	10
Heavy Vehicles (%)	20%	2%	7%	14%	7%	2%	33%	0%	6%	1%	0%	6%
Turn Type	Perm			Perm			Split			Split		Perm
Protected Phases		2			6		8	8		4	4	
Permitted Phases	2	2		6								4
Actuated Green, G (s)	43.6	43.6			43.6			2.2			11.2	11.2
Effective Green, g (s)	43.6	43.6			43.6			2.2			11.2	11.2
Actuated g/C Ratio	0.59	0.59			0.59			0.03			0.15	0.15
Clearance Time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	440	1079			887			46			272	231
v/s Ratio Prot		c0.52						c0.01			c0.13	
v/s Ratio Perm	0.04				0.31							0.01
v/c Ratio	0.07	0.89			0.53			0.29			0.86	0.05
Uniform Delay, d1	6.6	13.3			9.1			35.2			30.7	26.9
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.1	9.5			0.6			3.5			23.1	0.1
Delay (s)	6.7	22.7			9.7			38.7			53.9	27.0
Level of Service	A	C			A			D			D	C
Approach Delay (s)		22.2			9.7			38.7			51.4	
Approach LOS		C			A			D			D	

Intersection Summary			
HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	74.2	Sum of lost time (s)	17.2
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	757	241	69	321	144	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-2%	0%	
Total Lost time (s)	7.0		7.0	7.0	7.0	7.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1799		1823	1881	1805	1599
Flt Permitted	1.00		0.06	1.00	0.95	1.00
Satd. Flow (perm)	1799		115	1881	1805	1599
Peak-hour factor, PHF	0.91	0.78	0.61	0.92	0.68	0.86
Adj. Flow (vph)	832	309	113	349	212	79
RTOR Reduction (vph)	13	0	0	0	0	0
Lane Group Flow (vph)	1128	0	113	349	212	79
Heavy Vehicles (%)	1%	2%	0%	2%	0%	1%
Turn Type			pm+pt			pt+ov
Protected Phases	4		3	8	2	2 3
Permitted Phases			8			
Actuated Green, G (s)	60.0		73.2	73.2	12.8	26.0
Effective Green, g (s)	60.0		73.2	73.2	12.8	26.0
Actuated g/C Ratio	0.60		0.73	0.73	0.13	0.26
Clearance Time (s)	7.0		7.0	7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1079		190	1377	231	416
v/s Ratio Prot	c0.63		c0.04	0.19	c0.12	0.05
v/s Ratio Perm			0.40			
v/c Ratio	1.05		0.59	0.25	0.92	0.19
Uniform Delay, d1	20.0		24.9	4.4	43.1	28.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	40.0		4.9	0.1	37.1	0.2
Delay (s)	60.0		29.8	4.5	80.2	29.0
Level of Service	E		C	A	F	C
Approach Delay (s)	60.0			10.7	66.3	
Approach LOS	E			B	E	

Intersection Summary			
HCM Average Control Delay	48.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	1	1	1	1	0	0	0	0	1	2	1
Volume (vph)	0	236	122	206	133	0	0	0	0	219	647	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00					1.00	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		1900	1599	1787	1900					1805	3539	1583
Flt Permitted		1.00	1.00	0.48	1.00					0.95	1.00	1.00
Satd. Flow (perm)		1900	1599	910	1900					1805	3539	1583
Peak-hour factor, PHF	1.00	0.83	0.85	0.79	0.71	1.00	1.00	1.00	1.00	0.93	0.91	0.73
Adj. Flow (vph)	0	284	144	261	187	0	0	0	0	235	711	108
RTOR Reduction (vph)	0	0	104	0	0	0	0	0	0	0	0	68
Lane Group Flow (vph)	0	284	40	261	187	0	0	0	0	235	711	40
Heavy Vehicles (%)	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	2%	2%
Turn Type			Perm	pm+pt						Split		Prot
Protected Phases		4		3	8					2	2	2
Permitted Phases			4	8								
Actuated Green, G (s)		16.5	16.5	30.0	28.5					22.0	22.0	22.0
Effective Green, g (s)		16.5	16.5	30.0	28.5					22.0	22.0	22.0
Actuated g/C Ratio		0.28	0.28	0.50	0.48					0.37	0.37	0.37
Clearance Time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Grp Cap (vph)		523	440	587	903					662	1298	580
v/s Ratio Prot		c0.15		c0.07	0.10					0.13	c0.20	0.03
v/s Ratio Perm			0.02	0.16								
v/c Ratio		0.54	0.09	0.44	0.21					0.35	0.55	0.07
Uniform Delay, d1		18.5	16.2	12.4	9.2					13.8	15.1	12.3
Progression Factor		0.79	0.82	0.17	0.06					0.78	0.84	0.73
Incremental Delay, d2		3.6	0.4	1.9	0.4					1.4	1.6	0.2
Delay (s)		18.2	13.7	3.9	1.0					12.2	14.2	9.3
Level of Service		B	B	A	A					B	B	A
Approach Delay (s)		16.7			2.7			0.0			13.2	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	2>	0	0	0	0	0	1	1	1	1	0
Volume (vph)	0	714	213	0	0	0	0	333	203	106	341	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			1%	
Total Lost time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Util. Factor		0.95						1.00	1.00	1.00	1.00	
Frt		0.96						1.00	0.85	1.00	1.00	
Flt Protected		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3457						1910	1591	1796	1890	
Flt Permitted		1.00						1.00	1.00	0.32	1.00	
Satd. Flow (perm)		3457						1910	1591	603	1890	
Peak-hour factor, PHF	1.00	0.94	0.92	1.00	1.00	1.00	1.00	0.80	0.82	0.71	0.91	1.00
Adj. Flow (vph)	0	760	232	0	0	0	0	416	248	149	375	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	992	0	0	0	0	0	416	248	149	375	0
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%
Turn Type									Perm	D.P+P		
Protected Phases		1						3		2	4	
Permitted Phases									3	3		
Actuated Green, G (s)		24.0						19.0	19.0	23.0	26.0	
Effective Green, g (s)		24.0						19.0	19.0	23.0	26.0	
Actuated g/C Ratio		0.40						0.32	0.32	0.38	0.43	
Clearance Time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		1383						605	504	311	819	
v/s Ratio Prot		c0.29						c0.22		0.03	c0.20	
v/s Ratio Perm									0.16	0.15		
v/c Ratio		0.72						0.69	0.49	0.48	0.46	
Uniform Delay, d1		15.1						17.9	16.6	13.0	12.0	
Progression Factor		0.70						1.00	1.00	0.53	0.55	
Incremental Delay, d2		2.9						6.3	3.4	4.7	1.7	
Delay (s)		13.6						24.2	20.0	11.6	8.3	
Level of Service		B						C	C	B	A	
Approach Delay (s)		13.6			0.0			22.6			9.2	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	21	133	302	66	121	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Total Lost time (s)	5.2		5.4	5.4	5.4	5.4
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.89		1.00	0.85	1.00	1.00
Flt Protected	0.99		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1545		1863	1615	1814	1801
Flt Permitted	0.99		1.00	1.00	0.41	1.00
Satd. Flow (perm)	1545		1863	1615	789	1801
Peak-hour factor, PHF	0.56	0.85	0.86	0.79	0.76	0.92
Adj. Flow (vph)	38	156	351	84	159	259
RTOR Reduction (vph)	136	0	0	48	0	0
Lane Group Flow (vph)	58	0	351	36	159	259
Heavy Vehicles (%)	15%	7%	2%	0%	0%	6%
Turn Type				Perm	pm+pt	
Protected Phases	4		6		5	2
Permitted Phases				6	2	
Actuated Green, G (s)	5.8		19.8	19.8	29.4	29.4
Effective Green, g (s)	5.8		19.8	19.8	29.4	29.4
Actuated g/C Ratio	0.13		0.43	0.43	0.64	0.64
Clearance Time (s)	5.2		5.4	5.4	5.4	5.4
Vehicle Extension (s)	5.0		5.0	5.0	3.0	5.0
Lane Grp Cap (vph)	196		805	698	600	1156
v/s Ratio Prot	c0.04		c0.19		0.02	c0.14
v/s Ratio Perm				0.02	0.15	
v/c Ratio	0.29		0.44	0.05	0.27	0.22
Uniform Delay, d1	18.1		9.1	7.5	3.7	3.4
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8		0.8	0.1	0.2	0.2
Delay (s)	19.9		9.9	7.6	4.0	3.6
Level of Service	B		A	A	A	A
Approach Delay (s)	19.9		9.4			3.8
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	45.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	0	<1>	0
Volume (vph)	51	24	114	28	29	6	222	239	27	3	255	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			1%	
Total Lost time (s)		5.0			5.0		5.0	5.0			5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.91			0.98		1.00	0.98			0.94	
Flt Protected		0.99			0.98		0.95	1.00			1.00	
Satd. Flow (prot)		1529			1636		1600	1658			1579	
Flt Permitted		0.91			0.74		0.29	1.00			1.00	
Satd. Flow (perm)		1406			1226		496	1658			1575	
Peak-hour factor, PHF	0.94	0.52	0.63	0.75	0.54	0.50	0.83	0.92	0.81	0.75	0.93	0.78
Adj. Flow (vph)	54	46	181	37	54	12	267	260	33	4	274	236
RTOR Reduction (vph)	0	109	0	0	8	0	0	8	0	0	58	0
Lane Group Flow (vph)	0	172	0	0	95	0	267	285	0	0	456	0
Heavy Vehicles (%)	0%	4%	0%	3%	0%	0%	1%	1%	0%	0%	2%	0%
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		9.9			9.9		30.1	30.1			18.9	
Effective Green, g (s)		9.9			9.9		30.1	30.1			18.9	
Actuated g/C Ratio		0.20			0.20		0.60	0.60			0.38	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		278			243		435	998			595	
v/s Ratio Prot							c0.08	0.17				
v/s Ratio Perm		c0.12			0.08		0.29				c0.29	
v/c Ratio		0.62			0.39		0.61	0.29			0.77	
Uniform Delay, d1		18.3			17.4		7.1	4.8			13.6	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		4.1			1.0		2.6	0.2			5.9	
Delay (s)		22.4			18.5		9.7	4.9			19.5	
Level of Service		C			B		A	A			B	
Approach Delay (s)		22.4			18.5			7.2			19.5	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	0	<1	1	0	<1>	0
Volume (vph)	18	732	32	49	782	6	134	46	88	28	43	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		3.0	5.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1805	1832		1703	1859			1826	1599		1792	
Flt Permitted	0.25	1.00		0.95	1.00			0.68	1.00		0.74	
Satd. Flow (perm)	473	1832		1703	1859			1283	1599		1343	
Peak-hour factor, PHF	0.61	0.86	0.81	0.75	0.84	0.38	0.69	0.66	0.83	0.81	0.89	0.61
Adj. Flow (vph)	30	851	40	65	931	16	194	70	106	35	48	39
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	19	0
Lane Group Flow (vph)	30	889	0	65	947	0	0	264	106	0	103	0
Confl. Peds. (#/hr)							3					
Heavy Vehicles (%)	0%	3%	3%	6%	2%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm			Prot			Perm		Perm	Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2						8		8	4		
Actuated Green, G (s)	43.0	43.0		15.0	61.0			20.0	20.0		20.0	
Effective Green, g (s)	43.0	43.0		15.0	61.0			20.0	20.0		20.0	
Actuated g/C Ratio	0.48	0.48		0.17	0.68			0.22	0.22		0.22	
Clearance Time (s)	5.0	5.0		3.0	5.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	226	875		284	1260			285	355		298	
v/s Ratio Prot		c0.49		0.04	c0.51							
v/s Ratio Perm	0.06							c0.21	0.07		0.08	
v/c Ratio	0.13	1.02		0.23	0.75			0.93	0.30		0.35	
Uniform Delay, d1	13.1	23.5		32.5	9.5			34.3	29.2		29.5	
Progression Factor	1.00	1.00		0.77	1.29			1.00	1.00		1.00	
Incremental Delay, d2	1.2	34.5		1.4	3.1			37.3	2.1		3.2	
Delay (s)	14.3	58.0		26.3	15.4			71.6	31.3		32.7	
Level of Service	B	E		C	B			E	C		C	
Approach Delay (s)		56.5			16.1			60.1			32.7	
Approach LOS		E			B			E			C	

Intersection Summary			
HCM Average Control Delay	39.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	1	1	0	1	0
Volume (vph)	0	829	863	0	177	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		-1%	0%		0%	
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1872	1863		1789	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1872	1863		1789	
Peak-hour factor, PHF	1.00	0.87	0.88	0.93	0.83	0.25
Adj. Flow (vph)	0	953	981	0	213	4
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	0	953	981	0	216	0
Heavy Vehicles (%)	0%	2%	2%	2%	1%	0%
Turn Type						
Protected Phases		2	6		8	
Permitted Phases						
Actuated Green, G (s)		67.0	67.0		15.0	
Effective Green, g (s)		67.0	67.0		15.0	
Actuated g/C Ratio		0.74	0.74		0.17	
Clearance Time (s)		4.0	4.0		4.0	
Lane Grp Cap (vph)		1394	1387		298	
v/s Ratio Prot		0.51	c0.53		c0.12	
v/s Ratio Perm						
v/c Ratio		0.68	0.71		0.73	
Uniform Delay, d1		6.0	6.2		35.5	
Progression Factor		0.40	0.62		1.00	
Incremental Delay, d2		2.2	2.8		14.3	
Delay (s)		4.6	6.6		49.8	
Level of Service		A	A		D	
Approach Delay (s)		4.6	6.6		49.8	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations	1	0	0	1	2>	0	0	1	0	0
Volume (vph)	82	0	0	18	1009	35	0	154	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0			4.0		
Lane Util. Factor	1.00			1.00	0.95			1.00		
Frt	1.00			1.00	0.99			0.86		
Flt Protected	0.95			0.95	1.00			1.00		
Satd. Flow (prot)	1805			1805	3553			1627		
Flt Permitted	0.95			0.95	1.00			1.00		
Satd. Flow (perm)	1805			1805	3553			1627		
Peak-hour factor, PHF	0.88	0.90	1.00	0.61	0.94	0.73	1.00	0.67	0.92	0.92
Adj. Flow (vph)	93	0	0	30	1073	48	0	230	0	0
RTOR Reduction (vph)	0	0	0	12	4	0	0	75	0	0
Lane Group Flow (vph)	93	0	0	18	1118	0	0	155	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	1%	2%	2%
Turn Type	Prot			custom				custom		
Protected Phases	8			1	1			8		
Permitted Phases				1				8		
Actuated Green, G (s)	27.0			55.0	55.0			27.0		
Effective Green, g (s)	27.0			55.0	55.0			27.0		
Actuated g/C Ratio	0.30			0.61	0.61			0.30		
Clearance Time (s)	4.0			4.0	4.0			4.0		
Lane Grp Cap (vph)	542			1103	2171			488		
v/s Ratio Prot	0.05			0.01	c0.31			c0.10		
v/s Ratio Perm										
v/c Ratio	0.17			0.02	0.51			0.32		
Uniform Delay, d1	23.2			6.9	9.9			24.4		
Progression Factor	0.84			1.00	1.00			1.00		
Incremental Delay, d2	0.5			0.0	0.9			1.7		
Delay (s)	20.1			6.9	10.8			26.1		
Level of Service	C			A	B			C		
Approach Delay (s)		20.1			10.7		26.1		0.0	
Approach LOS		C			B		C		A	

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	2>	0	1	1	0	0	0	1
Volume (vph)	0	0	0	0	841	44	54	133	0	0	0	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			1%	
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		1.00	1.00				1.00
Frt					0.99		1.00	1.00				0.86
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					3540		1796	1890				1635
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					3540		1796	1890				1635
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	0.89	0.64	0.78	0.74	1.00	1.00	1.00	0.71
Adj. Flow (vph)	0	0	0	0	945	69	69	180	0	0	0	56
RTOR Reduction (vph)	0	0	0	0	7	0	56	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1007	0	13	180	0	0	0	56
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type							Perm					custom
Protected Phases					1			2				
Permitted Phases							2					2
Actuated Green, G (s)					40.9		11.1	11.1				11.1
Effective Green, g (s)					40.9		11.1	11.1				11.1
Actuated g/C Ratio					0.68		0.18	0.18				0.18
Clearance Time (s)					4.0		4.0	4.0				4.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					2413		332	350				302
v/s Ratio Prot					c0.28			c0.10				
v/s Ratio Perm							0.01					0.03
v/c Ratio					0.42		0.04	0.51				0.19
Uniform Delay, d1					4.2		20.1	22.0				20.6
Progression Factor					0.96		1.00	1.00				1.00
Incremental Delay, d2					0.5		0.0	1.3				0.3
Delay (s)					4.6		20.1	23.3				20.9
Level of Service					A		C	C				C
Approach Delay (s)		0.0			4.6			22.4			20.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	0	1	1	0	0	<1>	0	0	<1>	0
Volume (vph)	14	746	1	4	743	1	28	25	27	31	7	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.94			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1687	1862		1805	1844			1763			1751	
Flt Permitted	0.23	1.00		0.27	1.00			0.98			0.98	
Satd. Flow (perm)	400	1862		516	1844			1763			1751	
Peak-hour factor, PHF	0.81	0.96	0.25	1.00	0.86	0.25	0.59	0.64	0.42	0.72	0.44	0.66
Adj. Flow (vph)	17	777	4	4	864	4	47	39	64	43	16	47
RTOR Reduction (vph)	0	0	0	0	0	0	0	30	0	0	32	0
Lane Group Flow (vph)	17	781	0	4	868	0	0	120	0	0	74	0
Heavy Vehicles (%)	7%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Split			Split		
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	62.0	62.0		62.0	62.0			7.0			6.0	
Effective Green, g (s)	62.0	62.0		62.0	62.0			7.0			6.0	
Actuated g/C Ratio	0.69	0.69		0.69	0.69			0.08			0.07	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	276	1283		355	1270			137			117	
v/s Ratio Prot		0.42			c0.47			c0.07			c0.04	
v/s Ratio Perm	0.04			0.01								
v/c Ratio	0.06	0.61		0.01	0.68			0.88			0.63	
Uniform Delay, d1	4.5	7.5		4.4	8.2			41.1			40.9	
Progression Factor	0.05	0.04		1.28	0.85			1.00			1.00	
Incremental Delay, d2	0.2	0.8		0.0	2.1			49.9			23.4	
Delay (s)	0.4	1.1		5.7	9.1			91.0			64.3	
Level of Service	A	A		A	A			F			E	
Approach Delay (s)		1.1			9.1			91.0			64.3	
Approach LOS		A			A			F			E	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	44	914	15	15	50	0	0	42	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			1%			-1%	
Total Lost time (s)					6.0			5.0			5.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.93	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3539			1741			1734	
Flt Permitted					1.00			0.85			1.00	
Satd. Flow (perm)					3539			1507			1734	
Peak-hour factor, PHF	1.00	1.00	1.00	0.68	0.95	0.88	0.44	0.64	1.00	1.00	0.70	0.87
Adj. Flow (vph)	0	0	0	65	962	17	34	78	0	0	60	64
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	54	0
Lane Group Flow (vph)	0	0	0	0	1043	0	0	112	0	0	70	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	7%	0%	10%	0%	0%	5%	0%
Turn Type				Perm			Perm					
Protected Phases					1			2			2	
Permitted Phases				1			2					
Actuated Green, G (s)					33.9			8.0			8.0	
Effective Green, g (s)					33.9			8.0			8.0	
Actuated g/C Ratio					0.64			0.15			0.15	
Clearance Time (s)					6.0			5.0			5.0	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2268			228			262	
v/s Ratio Prot											0.04	
v/s Ratio Perm					0.29			c0.07				
v/c Ratio					0.46			0.49			0.27	
Uniform Delay, d1					4.8			20.6			19.9	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.1			1.7			0.5	
Delay (s)					5.0			22.2			20.4	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.0			22.2			20.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	52.9	Sum of lost time (s)	11.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	1	1>	0
Volume (vph)	97	98	64	32	118	17	13	206	17	20	282	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.98		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1779			1850		1805	1877		1805	1819	
Flt Permitted		0.83			0.90		0.41	1.00		0.57	1.00	
Satd. Flow (perm)		1497			1689		788	1877		1081	1819	
Peak-hour factor, PHF	0.89	0.83	0.78	0.83	0.87	0.67	0.50	0.88	0.80	0.53	0.91	0.74
Adj. Flow (vph)	109	118	82	39	136	25	26	234	21	38	310	96
RTOR Reduction (vph)	0	22	0	0	9	0	0	6	0	0	19	0
Lane Group Flow (vph)	0	287	0	0	191	0	26	250	0	38	387	0
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2	2		1			1	1	
Actuated Green, G (s)		25.0			25.0		27.0	27.0		27.0	27.0	
Effective Green, g (s)		25.0			25.0		27.0	27.0		27.0	27.0	
Actuated g/C Ratio		0.42			0.42		0.45	0.45		0.45	0.45	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		624			704		355	845		486	819	
v/s Ratio Prot								0.13			c0.21	
v/s Ratio Perm		c0.19			0.11		0.03			0.04		
v/c Ratio		0.46			0.27		0.07	0.30		0.08	0.47	
Uniform Delay, d1		12.6			11.5		9.4	10.5		9.4	11.5	
Progression Factor		1.00			1.00		1.06	0.92		1.00	1.00	
Incremental Delay, d2		2.4			1.0		0.4	0.9		0.3	2.0	
Delay (s)		15.1			12.5		10.3	10.5		9.7	13.5	
Level of Service		B			B		B	B		A	B	
Approach Delay (s)		15.1			12.5			10.5			13.2	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	47	944	53	29	74	0	0	26	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			-4%	
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					0.99			1.00			0.90	
Flt Protected					1.00			0.98			1.00	
Satd. Flow (prot)					3536			1854			1729	
Flt Permitted					1.00			0.85			1.00	
Satd. Flow (perm)					3536			1604			1729	
Peak-hour factor, PHF	1.00	1.00	1.00	0.63	0.95	0.82	0.56	0.94	1.00	1.00	0.86	0.75
Adj. Flow (vph)	0	0	0	75	994	65	52	79	0	0	30	79
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	62	0
Lane Group Flow (vph)	0	0	0	0	1127	0	0	131	0	0	47	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	4%	0%
Turn Type				Split			Perm					
Protected Phases				1	1			2			2	
Permitted Phases							2					
Actuated Green, G (s)					39.0			13.0			13.0	
Effective Green, g (s)					39.0			13.0			13.0	
Actuated g/C Ratio					0.65			0.22			0.22	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					2298			348			375	
v/s Ratio Prot					c0.32						0.03	
v/s Ratio Perm								c0.08				
v/c Ratio					0.49			0.38			0.13	
Uniform Delay, d1					5.4			20.0			18.9	
Progression Factor					0.32			0.94			1.00	
Incremental Delay, d2					0.7			2.9			0.7	
Delay (s)					2.4			21.7			19.6	
Level of Service					A			C			B	
Approach Delay (s)		0.0			2.4			21.7			19.6	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<2>	0	0	0	0	0	1>	0	0	<1	0
Volume (vph)	87	826	37	0	0	0	0	19	13	50	15	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			1%			-1%	
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.94			1.00	
Flt Protected		1.00						1.00			0.96	
Satd. Flow (prot)		3521						1780			1810	
Flt Permitted		1.00						1.00			0.76	
Satd. Flow (perm)		3521						1780			1424	
Peak-hour factor, PHF	0.95	0.86	0.71	1.00	1.00	1.00	1.00	0.56	0.50	0.68	0.70	1.00
Adj. Flow (vph)	92	960	52	0	0	0	0	34	26	74	21	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	0	1098	0	0	0	0	0	40	0	0	95	0
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%
Turn Type	Split									Perm		
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)		38.0						14.0			14.0	
Effective Green, g (s)		38.0						14.0			14.0	
Actuated g/C Ratio		0.63						0.23			0.23	
Clearance Time (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		2230						415			332	
v/s Ratio Prot		c0.31						0.02				
v/s Ratio Perm											c0.07	
v/c Ratio		0.49						0.10			0.29	
Uniform Delay, d1		5.9						18.0			18.9	
Progression Factor		1.00						1.00			0.72	
Incremental Delay, d2		0.8						0.5			2.0	
Delay (s)		6.6						18.5			15.6	
Level of Service		A						B			B	
Approach Delay (s)		6.6			0.0			18.5			15.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Volume (vph)	639	102	223	632	80	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1599	1752	1845	1787	1583
Flt Permitted	1.00	1.00	0.14	1.00	0.95	1.00
Satd. Flow (perm)	1845	1599	261	1845	1787	1583
Peak-hour factor, PHF	0.90	0.78	0.93	0.86	0.77	0.90
Adj. Flow (vph)	710	131	240	735	104	266
RTOR Reduction (vph)	0	74	0	0	0	0
Lane Group Flow (vph)	710	57	240	735	104	266
Heavy Vehicles (%)	3%	1%	3%	3%	1%	2%
Turn Type		Perm	pm+pt			Prot
Protected Phases	4		3	8	2	2
Permitted Phases		4	8			
Actuated Green, G (s)	24.7	24.7	33.8	33.8	12.5	12.5
Effective Green, g (s)	24.7	24.7	33.8	33.8	12.5	12.5
Actuated g/C Ratio	0.43	0.43	0.60	0.60	0.22	0.22
Clearance Time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	802	695	300	1098	393	348
v/s Ratio Prot	c0.38		c0.08	0.40	0.06	c0.17
v/s Ratio Perm		0.04	0.40			
v/c Ratio	0.89	0.08	0.80	0.67	0.26	0.76
Uniform Delay, d1	14.7	9.4	9.8	7.7	18.3	20.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.5	0.1	14.1	1.6	0.4	9.6
Delay (s)	26.2	9.5	23.9	9.3	18.7	30.4
Level of Service	C	A	C	A	B	C
Approach Delay (s)	23.6			12.9	27.1	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	56.8	Sum of lost time (s)	14.1
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	5	369	137	31	332	2	112	16	47	8	9	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			0%	
Total Lost time (s)		6.5			6.5			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.97			0.98	
Flt Protected		1.00			1.00			0.97			0.98	
Satd. Flow (prot)		1833			1856			1780			1812	
Flt Permitted		0.99			0.92			0.80			0.81	
Satd. Flow (perm)		1817			1718			1457			1510	
Peak-hour factor, PHF	0.42	0.85	0.91	0.83	0.89	0.50	0.89	0.40	0.94	0.40	0.56	0.50
Adj. Flow (vph)	12	434	151	37	373	4	126	40	50	20	16	8
RTOR Reduction (vph)	0	22	0	0	0	0	0	20	0	0	6	0
Lane Group Flow (vph)	0	575	0	0	414	0	0	196	0	0	38	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	50%	0%	0%	2%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		31.5			31.5			10.2			10.2	
Effective Green, g (s)		31.5			31.5			10.2			10.2	
Actuated g/C Ratio		0.58			0.58			0.19			0.19	
Clearance Time (s)		6.5			6.5			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1056			998			274			284	
v/s Ratio Prot												
v/s Ratio Perm		c0.32			0.24			c0.13			0.02	
v/c Ratio		0.54			0.41			0.71			0.13	
Uniform Delay, d1		7.0			6.3			20.6			18.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.0			1.3			8.5			0.2	
Delay (s)		9.0			7.5			29.2			18.5	
Level of Service		A			A			C			B	
Approach Delay (s)		9.0			7.5			29.2			18.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	11	380	5	2	352	2	8	1	3	3	2	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.97			0.93	
Flt Protected		1.00			1.00			0.97			0.99	
Satd. Flow (prot)		1866			1859			1795			1750	
Flt Permitted		0.99			0.99			1.00			1.00	
Satd. Flow (perm)		1849			1847			1849			1772	
Peak-hour factor, PHF	0.92	0.86	0.62	0.25	0.90	0.50	0.67	0.25	0.75	0.38	0.25	0.69
Adj. Flow (vph)	12	442	8	8	391	4	12	4	4	8	8	16
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	16	0
Lane Group Flow (vph)	0	462	0	0	403	0	0	16	0	0	16	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		39.0			39.0			1.5			1.5	
Effective Green, g (s)		39.0			39.0			1.5			1.5	
Actuated g/C Ratio		0.77			0.77			0.03			0.03	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1428			1426			55			53	
v/s Ratio Prot												
v/s Ratio Perm		c0.25			0.22			0.01			c0.01	
v/c Ratio		0.32			0.28			0.29			0.31	
Uniform Delay, d1		1.7			1.7			24.0			24.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.6			0.5			3.0			3.3	
Delay (s)		2.3			2.2			26.9			27.3	
Level of Service		A			A			C			C	
Approach Delay (s)		2.3			2.2			26.9			27.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1	1	1	1>	0	1	1	1
Volume (vph)	89	573	26	21	590	215	54	9	22	200	4	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	16	16
Grade (%)		1%			-1%			1%			2%	
Total Lost time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1796	1807		1814	1854	1623	1796	1700		1787	2132	1812
Flt Permitted	0.19	1.00		0.38	1.00	1.00	0.75	1.00		0.73	1.00	1.00
Satd. Flow (perm)	355	1807		732	1854	1623	1422	1700		1364	2132	1812
Peak-hour factor, PHF	0.71	0.96	0.75	0.71	0.87	0.95	0.69	0.56	0.66	0.80	0.50	0.69
Adj. Flow (vph)	125	597	35	30	678	226	78	16	33	250	8	196
RTOR Reduction (vph)	0	3	0	0	0	114	0	25	0	0	0	146
Lane Group Flow (vph)	125	629	0	30	678	112	78	24	0	250	8	50
Heavy Vehicles (%)	0%	4%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt			Perm		Perm	Perm			Perm		Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	35.7	35.7		29.6	29.6	29.6	15.9	15.9		15.9	15.9	15.9
Effective Green, g (s)	35.7	35.7		29.6	29.6	29.6	15.9	15.9		15.9	15.9	15.9
Actuated g/C Ratio	0.57	0.57		0.48	0.48	0.48	0.26	0.26		0.26	0.26	0.26
Clearance Time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	264	1039		349	884	774	364	435		349	546	464
v/s Ratio Prot	0.02	c0.35			c0.37			0.01			0.00	
v/s Ratio Perm	0.25			0.04		0.07	0.05			c0.18		0.03
v/c Ratio	0.47	0.61		0.09	0.77	0.15	0.21	0.06		0.72	0.01	0.11
Uniform Delay, d1	9.1	8.6		8.9	13.4	9.1	18.2	17.4		21.0	17.3	17.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.3	1.0		0.1	4.0	0.1	0.3	0.1		6.8	0.0	0.1
Delay (s)	10.4	9.6		9.0	17.4	9.2	18.5	17.5		27.9	17.3	17.8
Level of Service	B	A		A	B	A	B	B		C	B	B
Approach Delay (s)		9.7			15.2			18.1			23.3	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	15.8
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	0	1>	0	0	<1>	0	0	<1	1
Volume (vph)	29	397	11	8	780	242	11	1	8	151	4	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			0%			-1%	
Total Lost time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.99			0.97			0.94			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)	1796	1845			1812			1747			1772	1399
Flt Permitted	0.24	1.00			0.99			0.98			0.95	1.00
Satd. Flow (perm)	462	1845			1799			1747			1772	1399
Peak-hour factor, PHF	0.64	0.88	0.69	0.50	0.93	0.91	0.69	0.25	0.50	0.90	0.50	0.60
Adj. Flow (vph)	45	451	16	16	839	266	16	4	16	168	8	20
RTOR Reduction (vph)	0	1	0	0	12	0	0	16	0	0	0	13
Lane Group Flow (vph)	45	466	0	0	1109	0	0	20	0	0	176	7
Heavy Vehicles (%)	0%	2%	0%	12%	2%	1%	0%	0%	0%	3%	0%	16%
Turn Type	Perm			Perm			Split			Split		Perm
Protected Phases		2			6		8	8		4	4	
Permitted Phases	2	2		6								4
Actuated Green, G (s)	56.6	56.6			56.6			2.2			9.1	9.1
Effective Green, g (s)	56.6	56.6			56.6			2.2			9.1	9.1
Actuated g/C Ratio	0.67	0.67			0.67			0.03			0.11	0.11
Clearance Time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	307	1227			1197			45			189	150
v/s Ratio Prot		0.25						c0.01			c0.10	
v/s Ratio Perm	0.10				c0.62							0.00
v/c Ratio	0.15	0.38			0.93			0.45			0.93	0.04
Uniform Delay, d1	5.3	6.4			12.4			40.9			37.7	34.1
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.2	0.2			12.1			7.1			46.0	0.1
Delay (s)	5.5	6.6			24.5			48.0			83.7	34.2
Level of Service	A	A			C			D			F	C
Approach Delay (s)		6.5			24.5			48.0			78.7	
Approach LOS		A			C			D			E	

Intersection Summary			
HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	85.1	Sum of lost time (s)	17.2
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	419	216	124	725	225	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-2%	0%	
Total Lost time (s)	7.0		7.0	7.0	7.0	7.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1771		1823	1900	1805	1615
Flt Permitted	1.00		0.12	1.00	0.95	1.00
Satd. Flow (perm)	1771		223	1900	1805	1615
Peak-hour factor, PHF	0.95	0.79	0.90	0.89	0.83	0.82
Adj. Flow (vph)	441	273	138	815	271	84
RTOR Reduction (vph)	32	0	0	0	0	0
Lane Group Flow (vph)	682	0	138	815	271	84
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Turn Type			pm+pt			pt+ov
Protected Phases	4		3	8	2	2 3
Permitted Phases			8			
Actuated Green, G (s)	27.4		39.6	39.6	12.4	24.6
Effective Green, g (s)	27.4		39.6	39.6	12.4	24.6
Actuated g/C Ratio	0.42		0.60	0.60	0.19	0.37
Clearance Time (s)	7.0		7.0	7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	735		260	1140	339	602
v/s Ratio Prot	c0.39		0.04	c0.43	c0.15	0.05
v/s Ratio Perm			0.28			
v/c Ratio	0.93		0.53	0.71	0.80	0.14
Uniform Delay, d1	18.4		11.5	9.2	25.6	13.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	17.8		2.1	2.2	12.4	0.1
Delay (s)	36.2		13.6	11.4	38.0	13.8
Level of Service	D		B	B	D	B
Approach Delay (s)	36.2			11.7	32.3	
Approach LOS	D			B	C	

Intersection Summary			
HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	66.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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Appendix J
Material Shipment Arrivals

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Civil Material			
Construction Equipment	500 on+500 off	1,000	shipments
Concrete Material	8,48,362 tons / 15 tons per shipment	56,558	shipments
Formwork	2393 tons/15 tons per shipment	160	shipments
Rebar	55,331 tons/15 tons per shipment	3,689	shipments
Structural Steel	6,261 tons/15 tons per shipment	418	shipments
Misc. Steel	1,016 tons/15 tons per shipment	68	shipments
Mod Steel	225 tons/15 tons per shipment	15	shipments
Steel Liner	1,412 tons/15 tons per shipment	94	shipments
Embedded Steel	1,903 tons/15 tons per shipment	127	shipments
Siding & Roofing	2,056 tons/15 tons per shipment	137	shipments
Pre engineered building	60 tons/15 tons per shipment	4	shipments
Construction Debris	12,000 tons/15 tons per shipment	800	shipments
Piping and Mechanical Material			
Large and Small bore pipe	7,500 tons/15 tons per shipment	500	shipments
Large bore hangers	2,788 tons/15 tons per shipment	186	shipments
Nuclear Island EM package Equipment	15,377 tons/15 tons per shipment	1,025	shipments
Turbine Island and BOP Mechanical Equipment		1,000	shipments
Consumables		1,000	shipments
Electrical Equipment			
Conduit	1,356 tons/15 tons per shipment	90	shipments
Cable Tray	73 tons/15 tons per shipment	5	shipments
Power & Control wire	4,406 tons/15 tons per shipment	294	shipments
NI Electrical Equipment	5,000 ton/15 tons per shipment	333	shipments
TI Electrical Equipment	5,000 ton/15 tons per shipment	333	shipments
Grand Total		67,879	shipments

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Appendix K
Census Data

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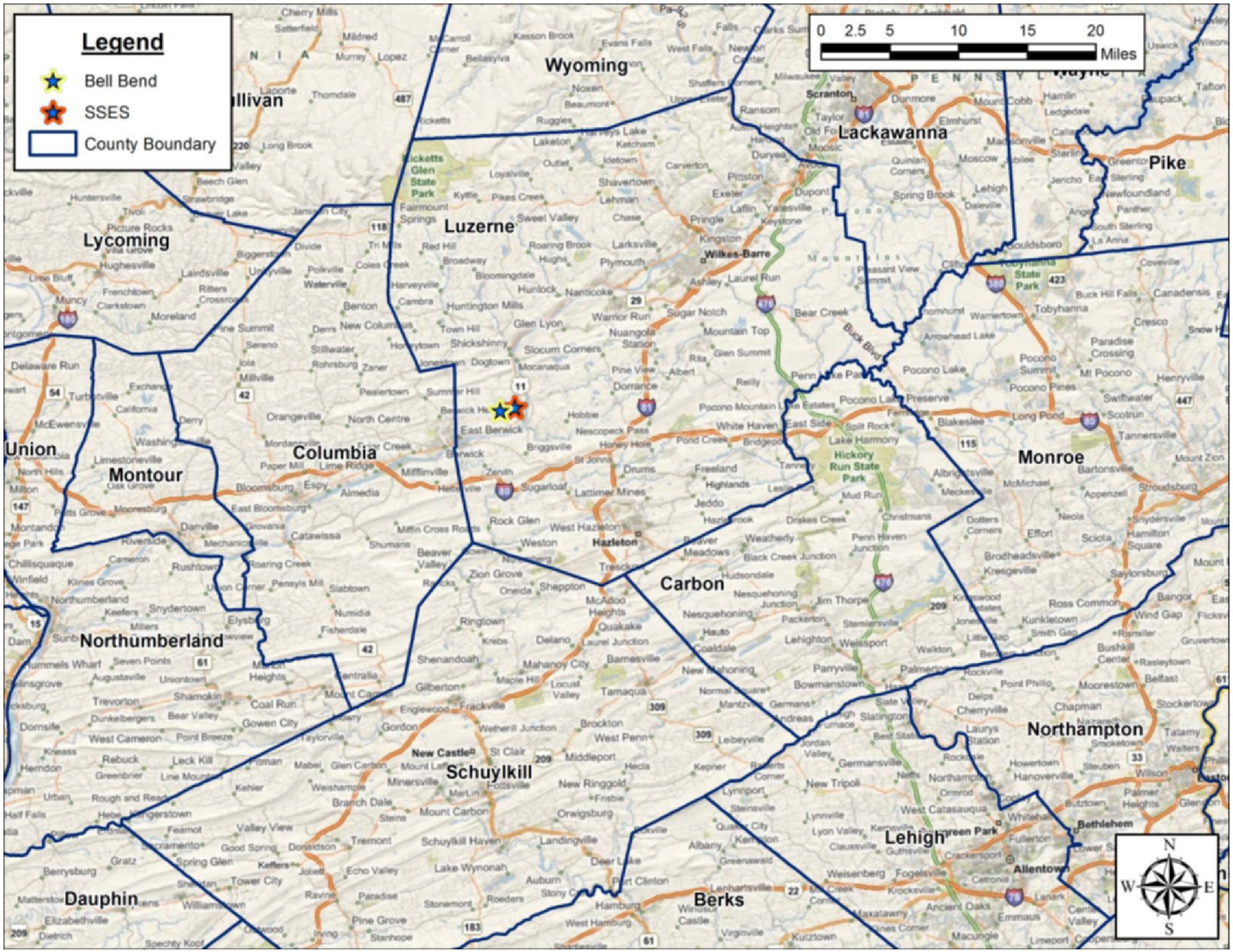

Figure K-1 – Areas Surrounding the Bell Bend Location

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Appendix K – Census Data

This Appendix contains the following information:

- Census data related to housing in the vicinity of the Bell Bend site. This data set is derived from the 2000 census and was analyzed in ArcGIS, and
- Journey to Work Census data sets, which was analyzed to determine the Average Vehicle Occupancy for construction workers

Table K- 1 – Census Data

Area Description	Area Number	Housing Units	Vacant Housing Units	Owner Occupied Housing Units	Renter Occupied Housing Units	Population (2000)	Population 2007
Berwick Area	1	6187	441	3794	1952	13539	13515
Between Plant and Mill Rd	2	2950	338	2179	433	6680	6947
Commuter Shed E. on 239	3	4831	663	2943	1225	10657	11725
Rest of Columbia County	4	22090	2335	14688	5067	51938	54363
Rest of Luzerne County	5	136109	12942	86207	36960	300191	294976
	Grand Total	172167	16719	109811	45637	383005	381526

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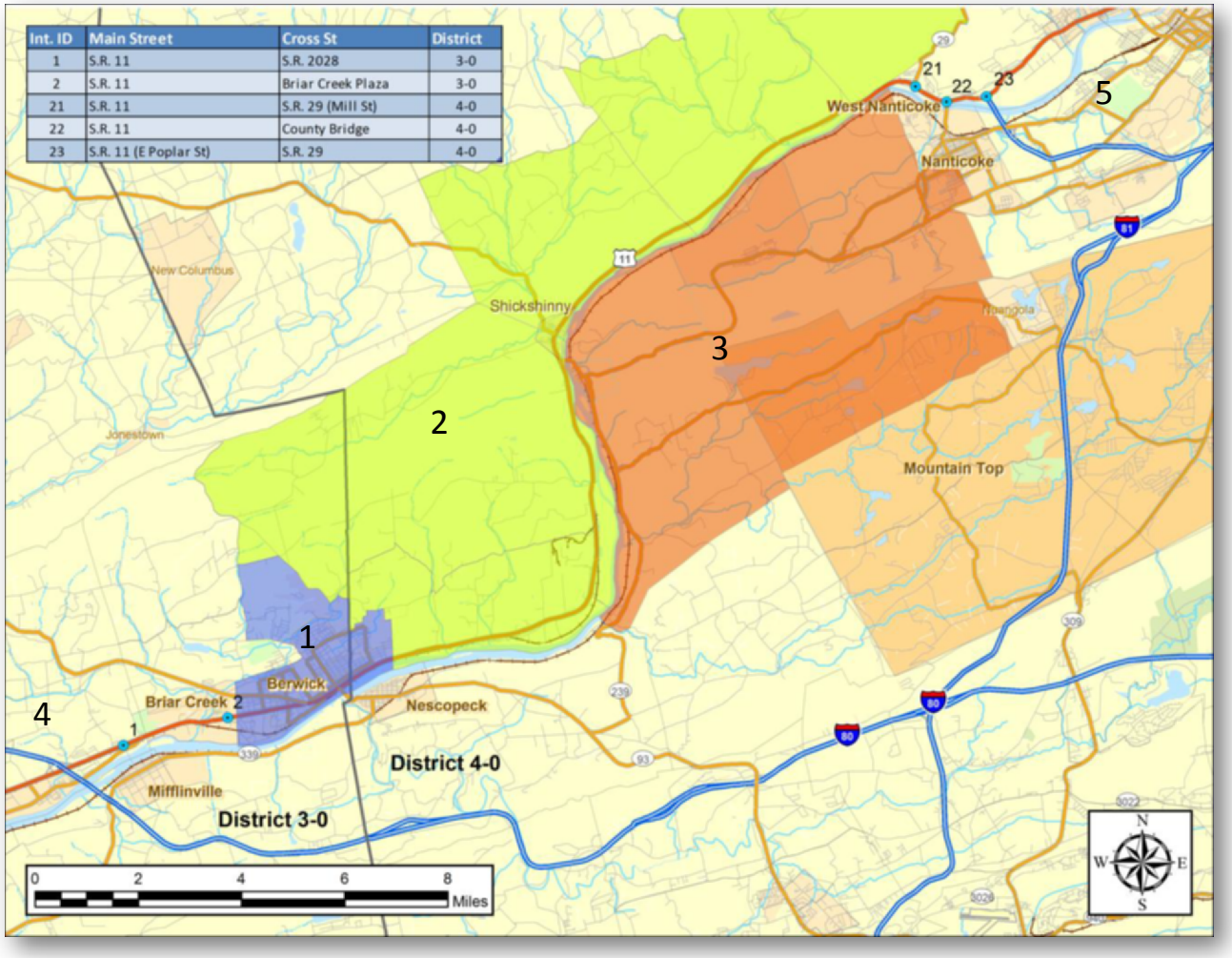

Figure K-2- Map of Census Areas Analyzed for Housing

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Construction Workers Automobile Usage

From the Journey-To-Work Census Data (2000)

CTPP 2000: Part 2 Table 9: Occupation by Means of transportation to work – For the state of Pennsylvania

TAB9X221	All workers; having Construction and excavation occupations; For All 11 Categories of Means of transportation to work	271060
TAB9X222	All workers; having Construction and excavation occupations; who drove alone	203045
TAB9X223	All workers; having Construction and excavation occupations; who travel to work by 2-person carpool	39330
TAB9X224	All workers; having Construction and excavation occupations; who travel to work by 3-person carpool	8075
TAB9X225	All workers; having Construction and excavation occupations; who travel to work by 4-or-more-person carpool	4460
TAB9X226	All workers; having Construction and excavation occupations; who travel to work by Bus or trolley bus	3545
TAB9X227	All workers; having Construction and excavation occupations; who travel to work by Streetcar, trolley car, subway, or elevated	1050
TAB9X228	All workers; having Construction and excavation occupations; who travel to work by Railroad or ferryboat	475
TAB9X229	All workers; having Construction and excavation occupations; who travel to work by Bicycle or walked	5170
TAB9X230	All workers; having Construction and excavation occupations; who travel to work by Taxicab, motorcycle or other means	2270
TAB9X231	All workers; having Construction and excavation occupations; who worked at home	3635

(Data Source: http://www.transtats.bts.gov/DL_SelectFields.asp?Table_ID=1344&DB_Short_Name=CTPP%202000)

Based on the table above, considering the automobile mode of travel

	Workers	Vehicle Occupancy	Vehicles
	203045	1	203045
	39330	2	19665
	8075	3	2692
	4460	4	1115
Total	254910		226517

Average Vehicle Occupancy = No.OfWorkers/No.OfVehicles = 254910/226517 = ***1.13***

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Construction Workers Automobile Usage

From the Journey-To-Work Census Data (2000)

CTPP 2000: Part 2 Table 9: Occupation by Means of transportation to work – For Columbia County (FIPS 037), Pennsylvania

TAB9X221	All workers; having Construction and excavation occupations; For All 11 Categories of Means of transportation to work	1450
TAB9X222	All workers; having Construction and excavation occupations; who drove alone	1150
TAB9X223	All workers; having Construction and excavation occupations; who travel to work by 2-person carpool	170
TAB9X224	All workers; having Construction and excavation occupations; who travel to work by 3-person carpool	35
TAB9X225	All workers; having Construction and excavation occupations; who travel to work by 4-or-more-person carpool	10
TAB9X226	All workers; having Construction and excavation occupations; who travel to work by Bus or trolley bus	0
TAB9X227	All workers; having Construction and excavation occupations; who travel to work by Streetcar, trolley car, subway, or elevated	0
TAB9X228	All workers; having Construction and excavation occupations; who travel to work by Railroad or ferryboat	0
TAB9X229	All workers; having Construction and excavation occupations; who travel to work by Bicycle or walked	70
TAB9X230	All workers; having Construction and excavation occupations; who travel to work by Taxicab, motorcycle or other means	4
TAB9X231	All workers; having Construction and excavation occupations; who worked at home	15

(Data Source: http://www.transtats.bts.gov/DL_SelectFields.asp?Table_ID=1344&DB_Short_Name=CTPP%202000)

Based on the table above, considering the automobile mode of travel

	Workers	Vehicle Occupancy	Vehicles
	1150	1	1150
	170	2	85
	35	3	12
	10	4	3
Total	1365		1250

Average Vehicle Occupancy = No.OfWorkers/No.OfVehicles = 1365/1250 = ***1.09***

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Construction Workers Automobile Usage

From the Journey-To-Work Census Data (2000)

CTPP 2000: Part 2 Table 9: Occupation by Means of transportation to work – For Luzerne County (FIPS 079), Pennsylvania

TAB9X221	All workers; having Construction and excavation occupations; For All 11 Categories of Means of transportation to work	6660
TAB9X222	All workers; having Construction and excavation occupations; who drove alone	5245
TAB9X223	All workers; having Construction and excavation occupations; who travel to work by 2-person carpool	900
TAB9X224	All workers; having Construction and excavation occupations; who travel to work by 3-person carpool	180
TAB9X225	All workers; having Construction and excavation occupations; who travel to work by 4-or-more-person carpool	85
TAB9X226	All workers; having Construction and excavation occupations; who travel to work by Bus or trolley bus	25
TAB9X227	All workers; having Construction and excavation occupations; who travel to work by Streetcar, trolley car, subway, or elevated	0
TAB9X228	All workers; having Construction and excavation occupations; who travel to work by Railroad or ferryboat	0
TAB9X229	All workers; having Construction and excavation occupations; who travel to work by Bicycle or walked	115
TAB9X230	All workers; having Construction and excavation occupations; who travel to work by Taxicab, motorcycle or other means	45
TAB9X231	All workers; having Construction and excavation occupations; who worked at home	65

(Data Source: http://www.transtats.bts.gov/DL_SelectFields.asp?Table_ID=1344&DB_Short_Name=CTPP%202000)

Based on the table above, considering the automobile mode of travel

	Workers	Vehicle Occupancy	Vehicles
	5245	1	5245
	900	2	450
	180	3	60
	85	4	21
Total	6410		5776

Average Vehicle Occupancy = No.OfWorkers/No.OfVehicles = 6410/5776 = ***1.11***

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Construction Workers Automobile Usage

From the Journey-To-Work Census Data (2000)

CTPP 2000: Part 2 Table 9: Occupation by Means of transportation to work – For Schuykill County (FIPS 107), Pennsylvania

TAB9X221	All workers; having Construction and excavation occupations; For All 11 Categories of Means of transportation to work	3005
TAB9X222	All workers; having Construction and excavation occupations; who drove alone	2350
TAB9X223	All workers; having Construction and excavation occupations; who travel to work by 2-person carpool	425
TAB9X224	All workers; having Construction and excavation occupations; who travel to work by 3-person carpool	55
TAB9X225	All workers; having Construction and excavation occupations; who travel to work by 4-or-more-person carpool	40
TAB9X226	All workers; having Construction and excavation occupations; who travel to work by Bus or trolley bus	0
TAB9X227	All workers; having Construction and excavation occupations; who travel to work by Streetcar, trolley car, subway, or elevated	0
TAB9X228	All workers; having Construction and excavation occupations; who travel to work by Railroad or ferryboat	0
TAB9X229	All workers; having Construction and excavation occupations; who travel to work by Bicycle or walked	85
TAB9X230	All workers; having Construction and excavation occupations; who travel to work by Taxicab, motorcycle or other means	30
TAB9X231	All workers; having Construction and excavation occupations; who worked at home	20

(Data Source: http://www.transtats.bts.gov/DL_SelectFields.asp?Table_ID=1344&DB_Short_Name=CTPP%202000)

Based on the table above, considering the automobile mode of travel

	Workers	Vehicle Occupancy	Vehicles
	2350	1	2350
	425	2	213
	55	3	18
	40	4	10
Total	2870		2591

Average Vehicle Occupancy = No.OfWorkers/No.OfVehicles = 2870/2591 = ***1.11***

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Construction Workers Automobile Usage

From the Journey-To-Work Census Data (2000)

CTPP 2000: Part 2 Table 9: Occupation by Means of transportation to work – For Carbon County (FIPS 025), Pennsylvania

TAB9X221	All workers; having Construction and excavation occupations; For All 11 Categories of Means of transportation to work	955
TAB9X222	All workers; having Construction and excavation occupations; who drove alone	670
TAB9X223	All workers; having Construction and excavation occupations; who travel to work by 2-person carpool	165
TAB9X224	All workers; having Construction and excavation occupations; who travel to work by 3-person carpool	40
TAB9X225	All workers; having Construction and excavation occupations; who travel to work by 4-or-more-person carpool	30
TAB9X226	All workers; having Construction and excavation occupations; who travel to work by Bus or trolley bus	0
TAB9X227	All workers; having Construction and excavation occupations; who travel to work by Streetcar, trolley car, subway, or elevated	0
TAB9X228	All workers; having Construction and excavation occupations; who travel to work by Railroad or ferryboat	0
TAB9X229	All workers; having Construction and excavation occupations; who travel to work by Bicycle or walked	15
TAB9X230	All workers; having Construction and excavation occupations; who travel to work by Taxicab, motorcycle or other means	10
TAB9X231	All workers; having Construction and excavation occupations; who worked at home	25

(Data Source: http://www.transtats.bts.gov/DL_SelectFields.asp?Table_ID=1344&DB_Short_Name=CTPP%202000)

Based on the table above, considering the automobile mode of travel

	Workers	Vehicle Occupancy	Vehicles
	670	1	670
	165	2	83
	40	3	13
	30	4	8
Total	905		774

Average Vehicle Occupancy = No.OfWorkers/No.OfVehicles = 905/774 = ***1.17***

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Construction Workers Automobile Usage

From the Journey-To-Work Census Data (2000)

CTPP 2000: Part 2 Table 9: Occupation by Means of transportation to work – For Monroe County (FIPS 089), Pennsylvania

TAB9X221	All workers; having Construction and excavation occupations; For All 11 Categories of Means of transportation to work	3500
TAB9X222	All workers; having Construction and excavation occupations; who drove alone	2535
TAB9X223	All workers; having Construction and excavation occupations; who travel to work by 2-person carpool	630
TAB9X224	All workers; having Construction and excavation occupations; who travel to work by 3-person carpool	165
TAB9X225	All workers; having Construction and excavation occupations; who travel to work by 4-or-more-person carpool	70
TAB9X226	All workers; having Construction and excavation occupations; who travel to work by Bus or trolley bus	15
TAB9X227	All workers; having Construction and excavation occupations; who travel to work by Streetcar, trolley car, subway, or elevated	0
TAB9X228	All workers; having Construction and excavation occupations; who travel to work by Railroad or ferryboat	0
TAB9X229	All workers; having Construction and excavation occupations; who travel to work by Bicycle or walked	25
TAB9X230	All workers; having Construction and excavation occupations; who travel to work by Taxicab, motorcycle or other means	20
TAB9X231	All workers; having Construction and excavation occupations; who worked at home	40

(Data Source: http://www.transtats.bts.gov/DL_SelectFields.asp?Table_ID=1344&DB_Short_Name=CTPP%202000)

Based on the table above, considering the automobile mode of travel

	Workers	Vehicle Occupancy	Vehicles
	2535	1	2535
	630	2	315
	165	3	55
	70	4	18
Total	3400		2923

Average Vehicle Occupancy = No.OfWorkers/No.OfVehicles = 3400/2923 = ***1.16***

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Construction Workers Automobile Usage

From the Journey-To-Work Census Data (2000)

CTPP 2000: Part 2 Table 9: Occupation by Means of transportation to work – For Lakawanna County (FIPS 069), Pennsylvania

TAB9X221	All workers; having Construction and excavation occupations; For All 11 Categories of Means of transportation to work	4550
TAB9X222	All workers; having Construction and excavation occupations; who drove alone	3630
TAB9X223	All workers; having Construction and excavation occupations; who travel to work by 2-person carpool	655
TAB9X224	All workers; having Construction and excavation occupations; who travel to work by 3-person carpool	105
TAB9X225	All workers; having Construction and excavation occupations; who travel to work by 4-or-more-person carpool	80
TAB9X226	All workers; having Construction and excavation occupations; who travel to work by Bus or trolley bus	4
TAB9X227	All workers; having Construction and excavation occupations; who travel to work by Streetcar, trolley car, subway, or elevated	0
TAB9X228	All workers; having Construction and excavation occupations; who travel to work by Railroad or ferryboat	0
TAB9X229	All workers; having Construction and excavation occupations; who travel to work by Bicycle or walked	25
TAB9X230	All workers; having Construction and excavation occupations; who travel to work by Taxicab, motorcycle or other means	10
TAB9X231	All workers; having Construction and excavation occupations; who worked at home	35

(Data Source: http://www.transtats.bts.gov/DL_SelectFields.asp?Table_ID=1344&DB_Short_Name=CTPP%202000)

Based on the table above, considering the automobile mode of travel

	Workers	Vehicle Occupancy	Vehicles
	3630	1	3630
	655	2	328
	105	3	35
	80	4	20
Total	4470		4013

Average Vehicle Occupancy = No.OfWorkers/No.OfVehicles = 4470/4013 = ***1.11***

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Appendix L
Capacity Analysis – Future Year Construction Conditions

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Appendix L

This appendix contains all supporting worksheets and materials relating to capacity analysis for the Future Build scenario. Table L-1 summarizes the LOS and delay at each intersection. Stick diagrams depicting the volumes used as inputs are again provided. Synchro HCM signalized reports are given to support calculations at signalized intersections and HCS+ reports are given for all unsignalized intersections.

Queue storage calculations employing the PennDOT method are provided. The volumes shown in these worksheets are PCE (Passenger Car Equivalent) volumes which are factored up to account for the presence of heavy vehicles. The maximum hourly left turn volumes were used to determine the necessary storage.

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Table L-1 – LOS and Average Delay (sec/veh): Future Year Construction Conditions

Int No	*PennDOT*	*County*	*Municipality*	*Intersection*	*FNB AM*[1]	*Const AM*[1]	*FNB PM*[1]	*Const PM*[1]
1	3-0	Columbia	South Centre	S.R. 11 and S.R. 2028	B (14.9)	**E (59.8)**	C (23.1)	**E (62.1)**
2			Briar Creek	S.R. 11 and Briar Creek Plaza Driveways	A (6.6)	**C (21.4)**	C (20.9)	**E (61.2)**
3			Berwick	S.R. 11 (Front Street) and Eaton Street	A (1.1)	A (0.8)	A (2.3)	**F (No-Gap)**
4				S.R. 11 (Front Street) and Poplar Street	C (27)	**F (176.3)**	D (40)	**F (144.9)**
5				S.R. 11 (Front Street) and Orchard Street	A (6.7)	**B (16.9)**	B (17.7)	**D (48.6)**
6				S.R. 11 (Front Street) and S.R. 93 (Orange Street)	A (5.9)	B (11.1)	B (11)	**D (51.7)**
7				S.R. 11 (Second Street) and LaSalle Street	B (11.8)	B (11.4)	B (14.1)	C (22.9)
8				S.R. 11 (Second Street) and Oak Street	A (6.2)	A (5.5)	A (8)	B (10.7)
9				S.R. 11 (Second Street) and Mulberry Street	A (4.8)	A (3.1)	A (5.7)	A (6.3)
10				S.R. 11 (Front Street) and Mulberry Street	A (6.1)	A (2.1)	A (8)	B (10.4)
11				S.R. 1025 (Market Street) and Third Street	A (9.6)	A (8)	B (12.8)	B (15.2)
12				S.R. 11 (Second Street) and Market Street	A (9.7)	**B (19.8)**	B (11.7)	B (18.1)
13				S.R. 11 (Front Street) and Market Street	B (14.2)	**E (63)**	B (15.3)	**C (30.6)**
14				S.R. 11 (Second Street) and Pine Street	A (6)	A (5)	A (8.6)	B (16.6)
15	4-0	Luzerne	Nescopeck	S.R. 93 (Third Street) and S.R. 339 (Broad Street)	B (14.1)	C (23.3)	B (12.3)	**C (22.3)**
16				S.R. 93 (Third Street) and Dewey Street	A (4.6)	A (4.4)	A (3.7)	A (5.3)
17			Salem Township	S.R. 11 and Bell Bend Site Entrance		**F (No-Gap)**		**F (No-Gap)**
18				S.R. 11 and SSES Site Entrance	E (47.1)	**F (No-Gap)**	A (5.2)	**F (129.3)**
19			Shickshinny	S.R. 11 (S. Main Street) and S.R. 239	A (7.8)	**C (22.5)**	A (9.4)	**E (69.3)**
20				S.R. 11 (Main Street) and S.R. 239 (Union Street)	B (14.7)	**F (110.8)**	B (15.5)	**F (108.9)**
21			Nanticoke	S.R. 11 and S.R. 29 (Mill Street)	C (23.6)	**D (36)**	C (26.3)	**F (270.8)**
22				S.R. 11 and County Bridge	D (49.5)	C (22.6)	C (24.2)	**F (155.3)**
23				S.R. 11 (E. Poplar Street) and S.R. 29	A (2.9)	**F (108.9)**	D (30.3)	**F (325.1)**

Note 1: "FNB" corresponds to Future Year No-Build Condition and "Const" corresponds to Future Year Construction without any mitigation.

Note 2: Highlighted cells indicate cases in which the change in LOS is higher than the acceptable level of LOS degradation.

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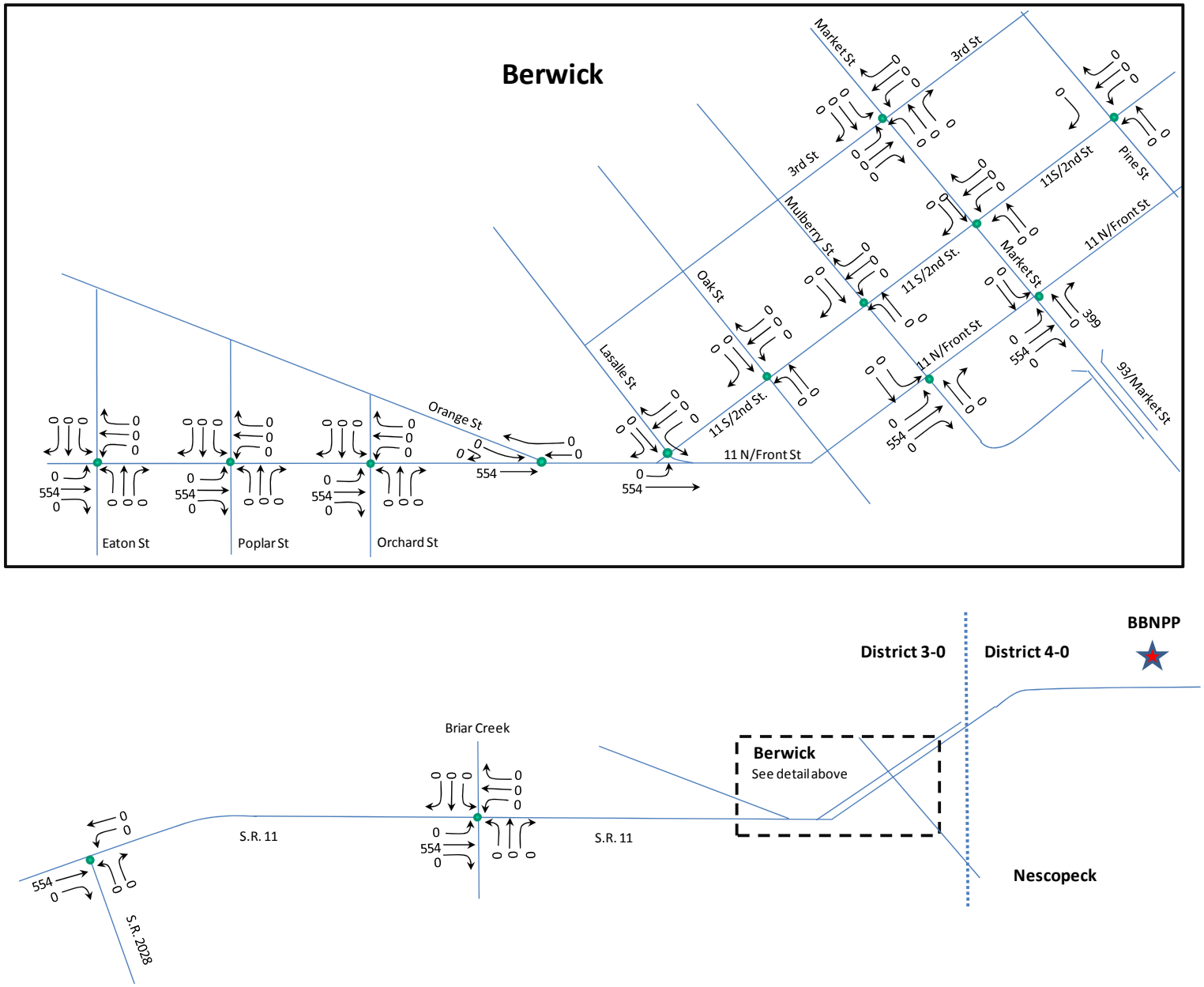

Figure L-1 - Weekday AM Peak Hour Volumes (6:30-7:30): Construction Traffic only During Peak Construction

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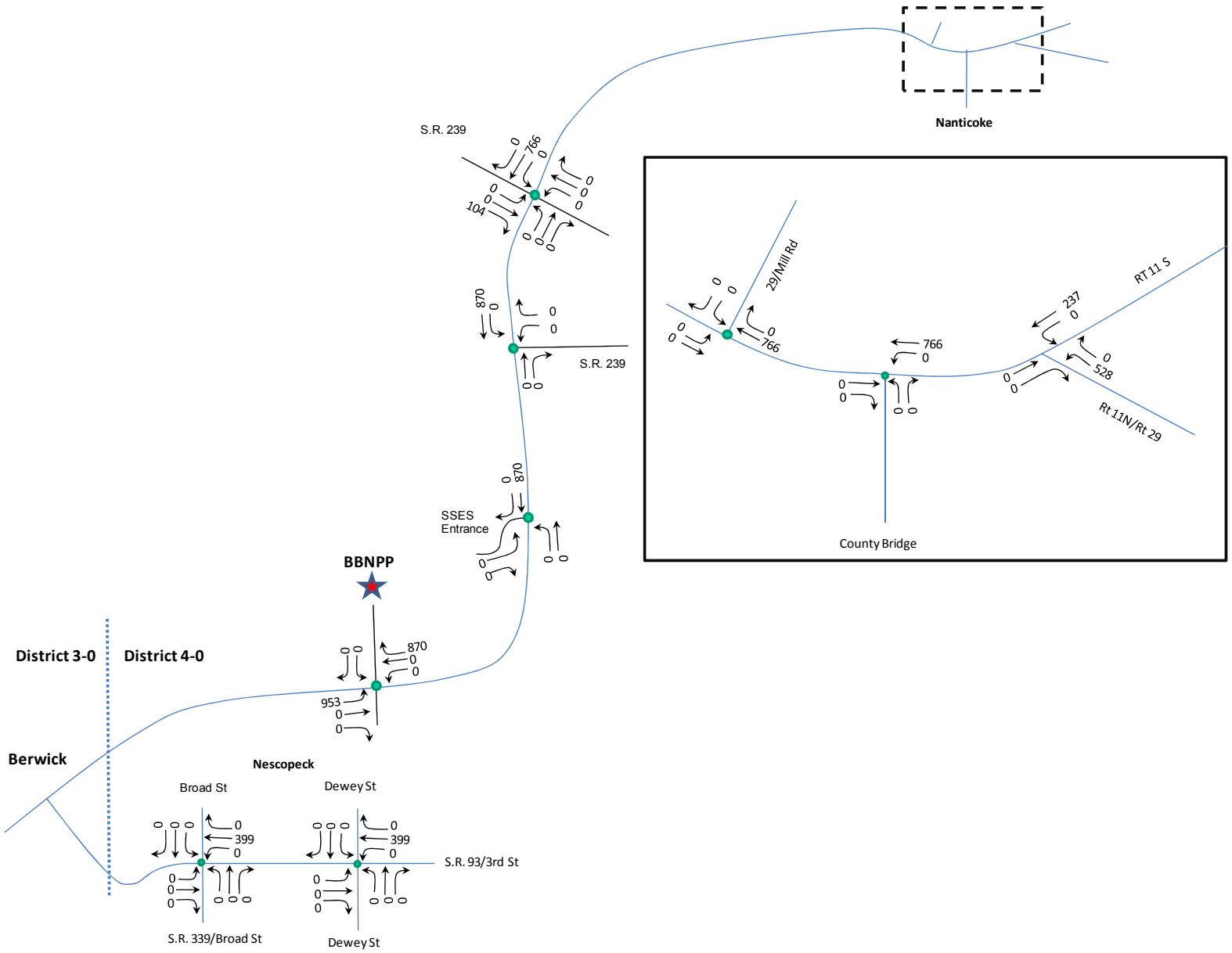
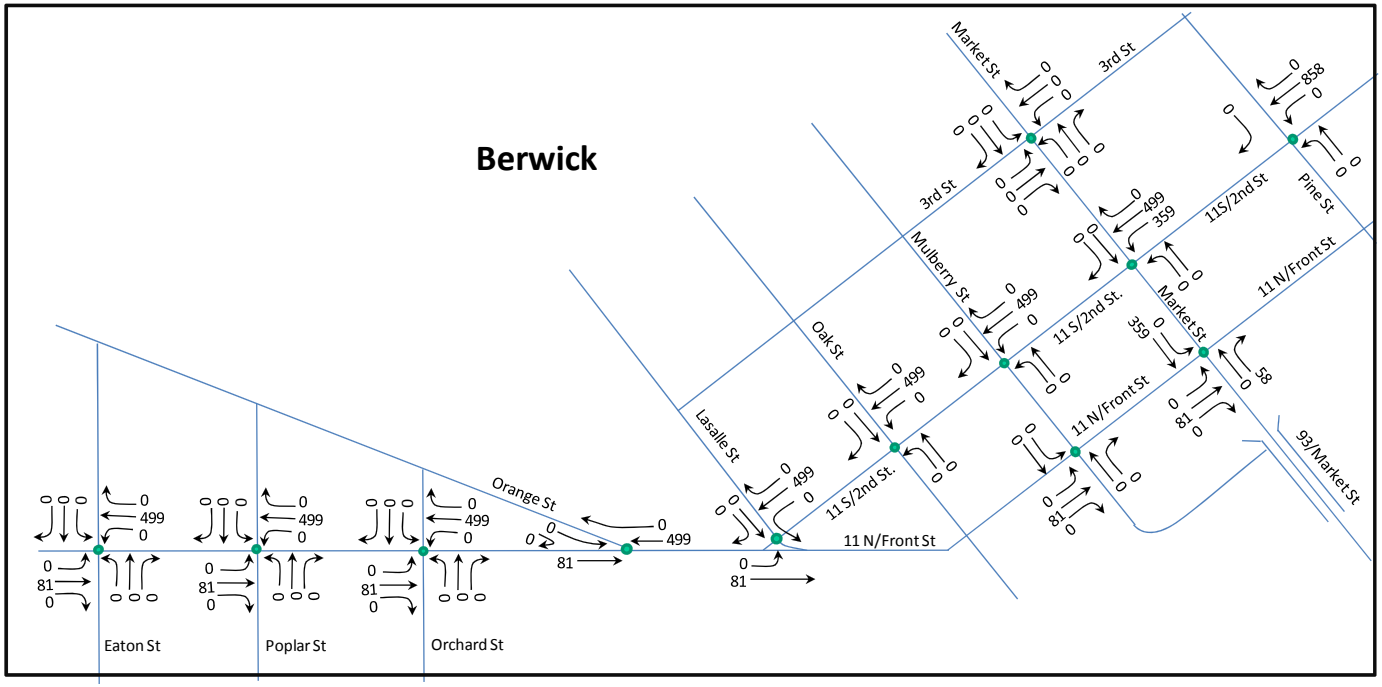


Figure L-1 - Weekday AM Peak Hour Volumes (6:30-7:30): Construction Traffic only During Peak Construction

Controlled Document



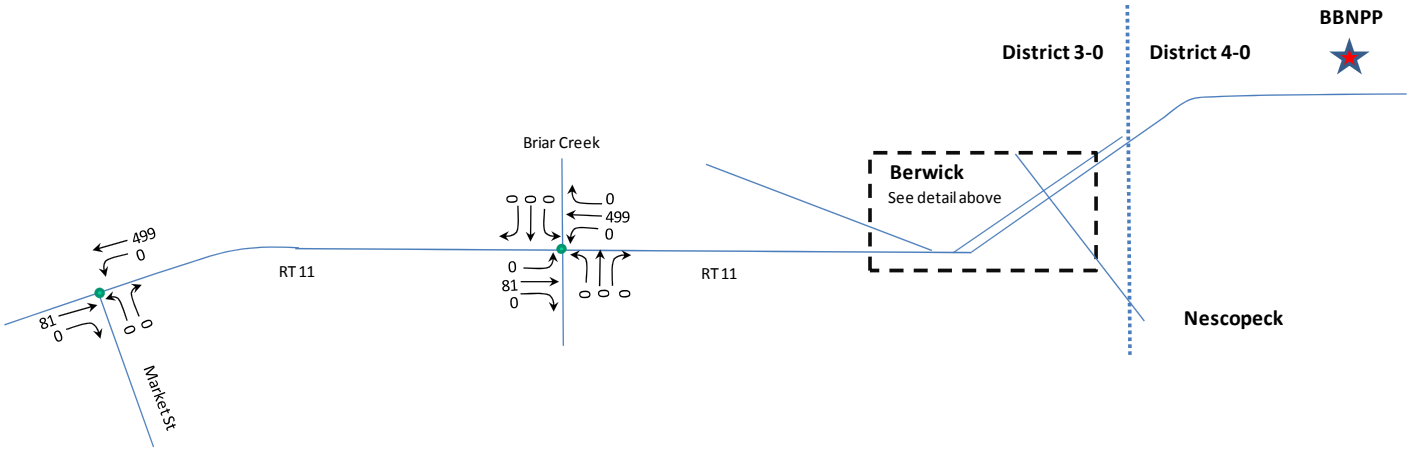


Figure L-2 - Weekday PM Peak Hour Volumes (3:45-4:45): Construction Traffic only During Peak Construction

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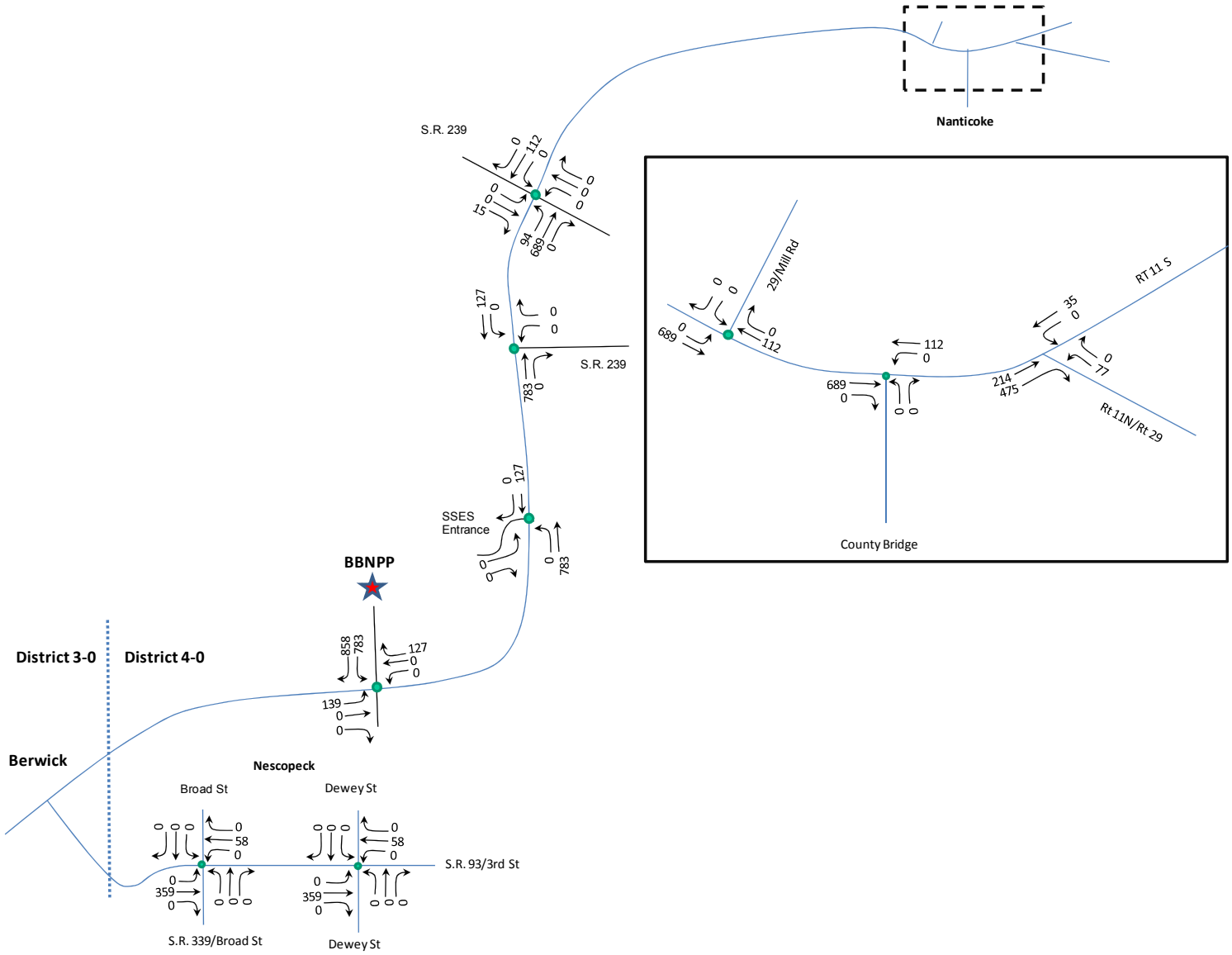

Figure L-2 - Weekday PM Peak Hour Volumes (3:45-4:45): Construction Traffic only During Peak Construction

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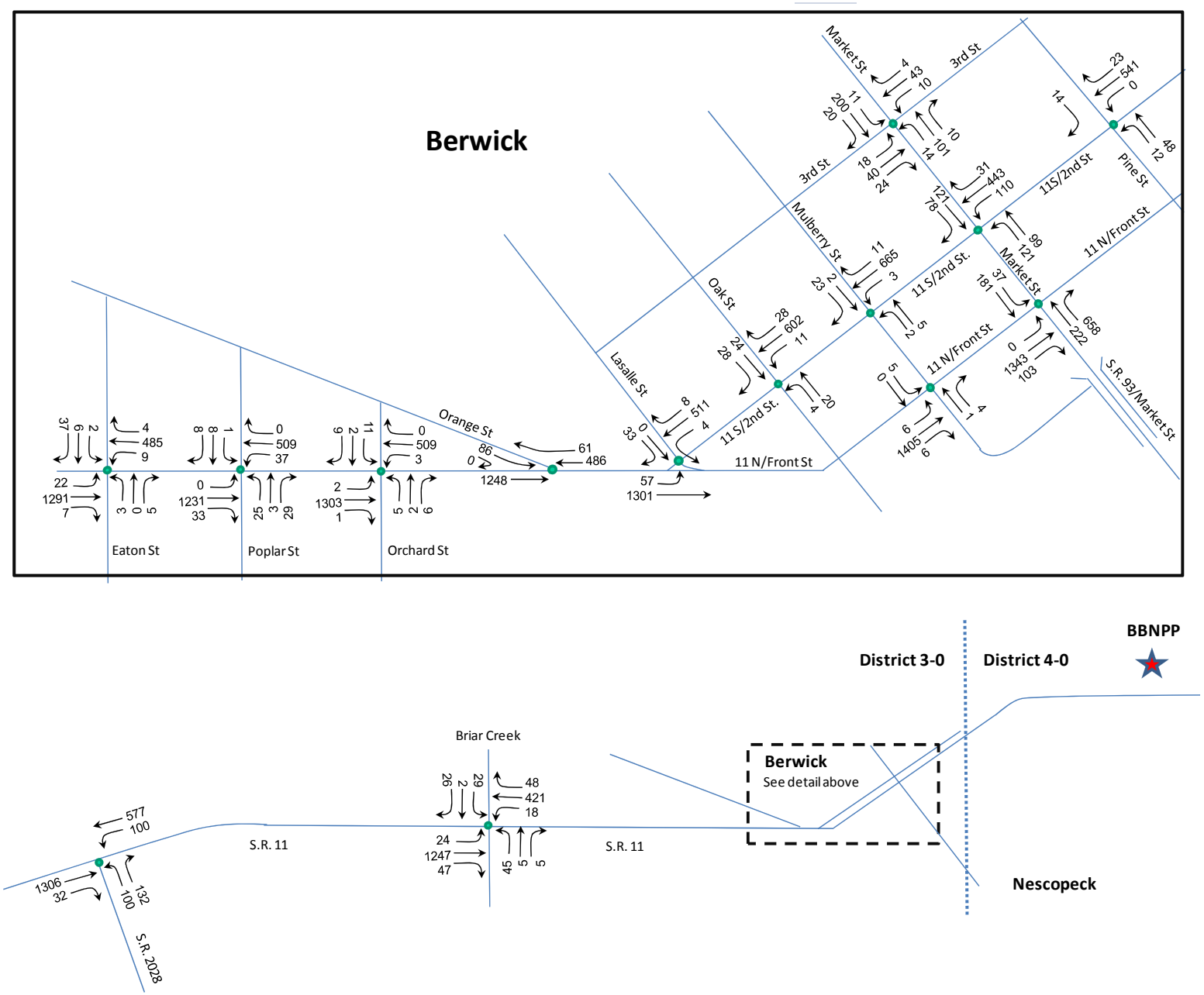

Figure L-3 - Weekday AM Peak Hour Volumes (6:30-7:30): During Construction

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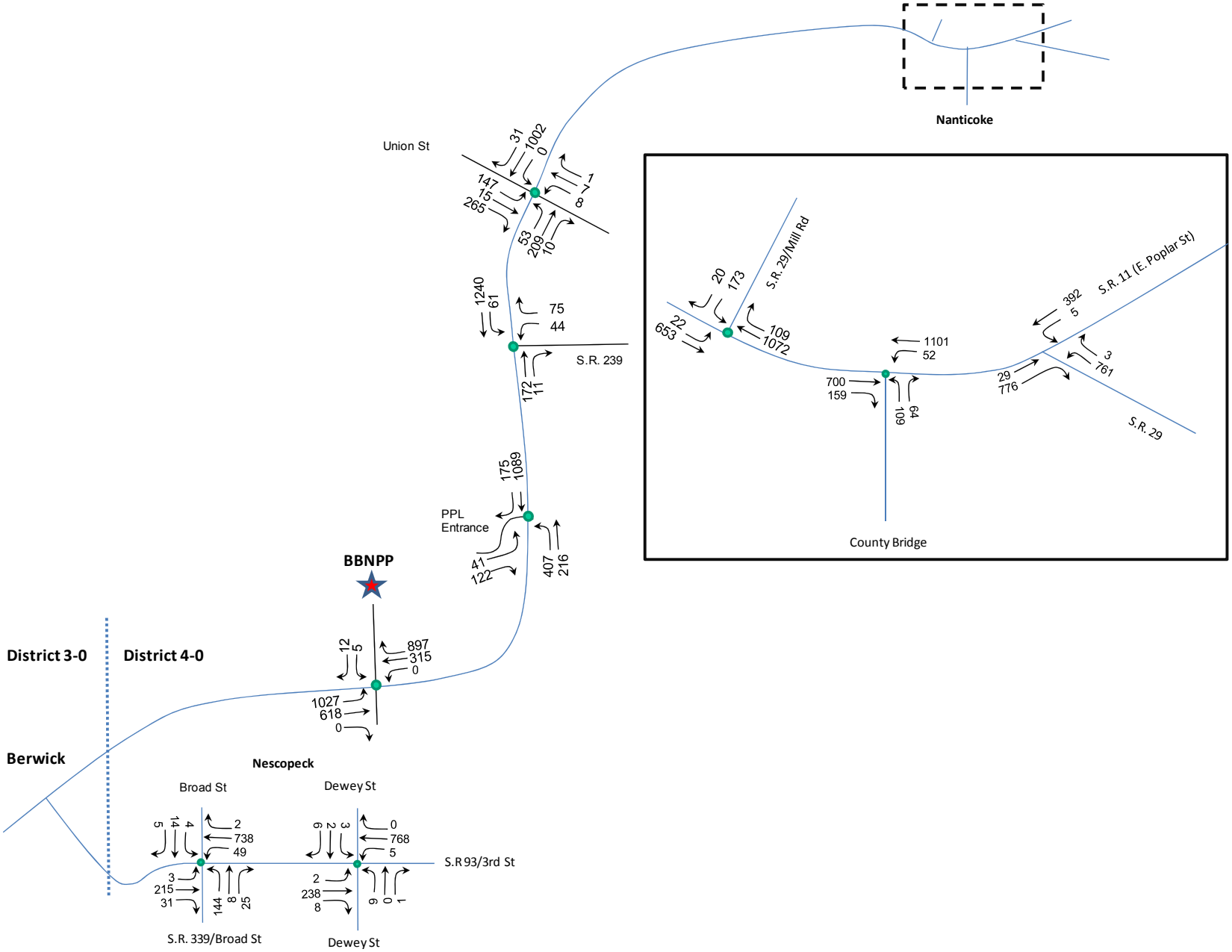

Figure L-3 - Weekday AM Peak Hour Volumes (6:30-7:30): During Construction

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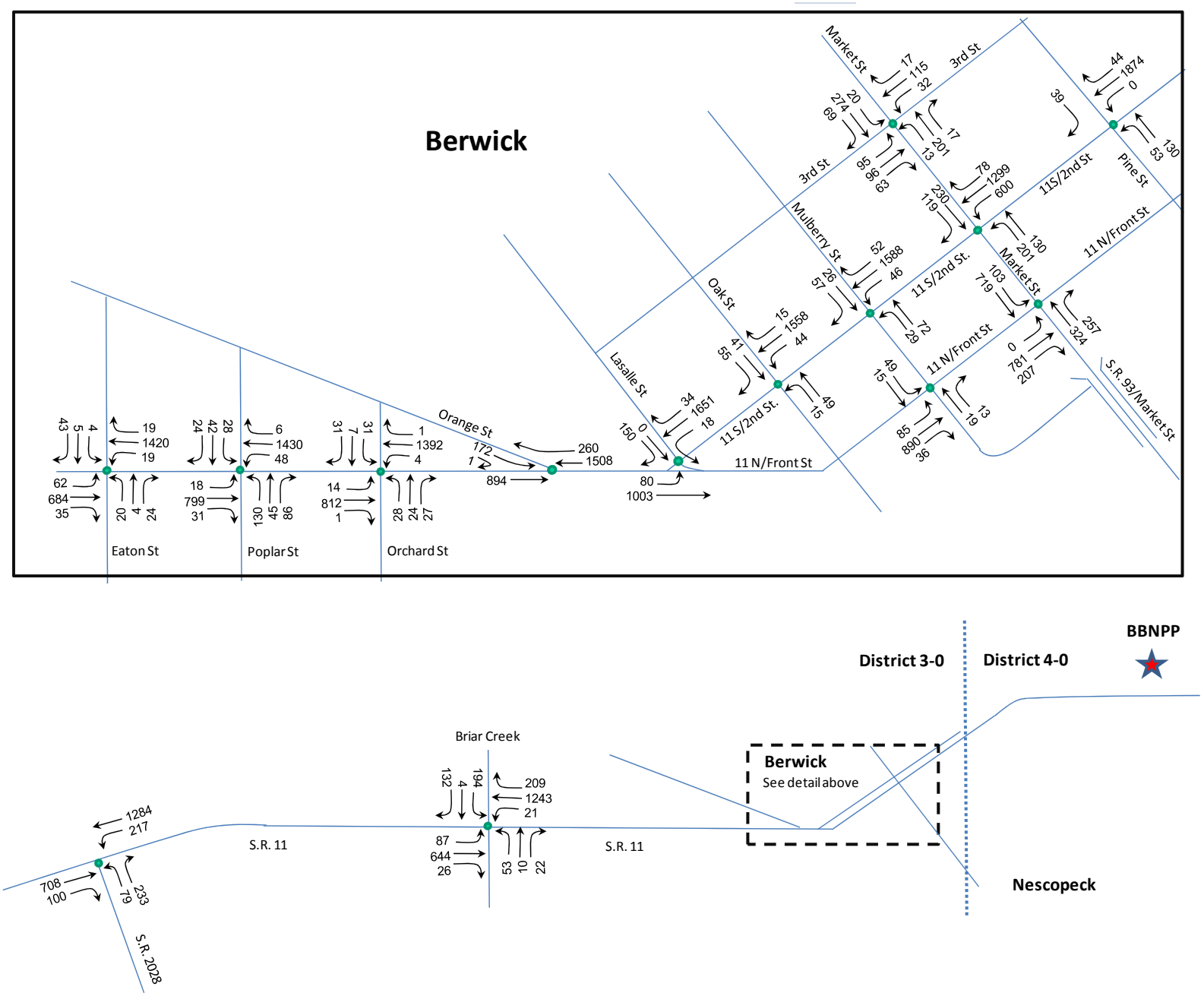

Figure L-4 - Weekday PM Peak Hour Volumes (3:45-4:45): During Construction

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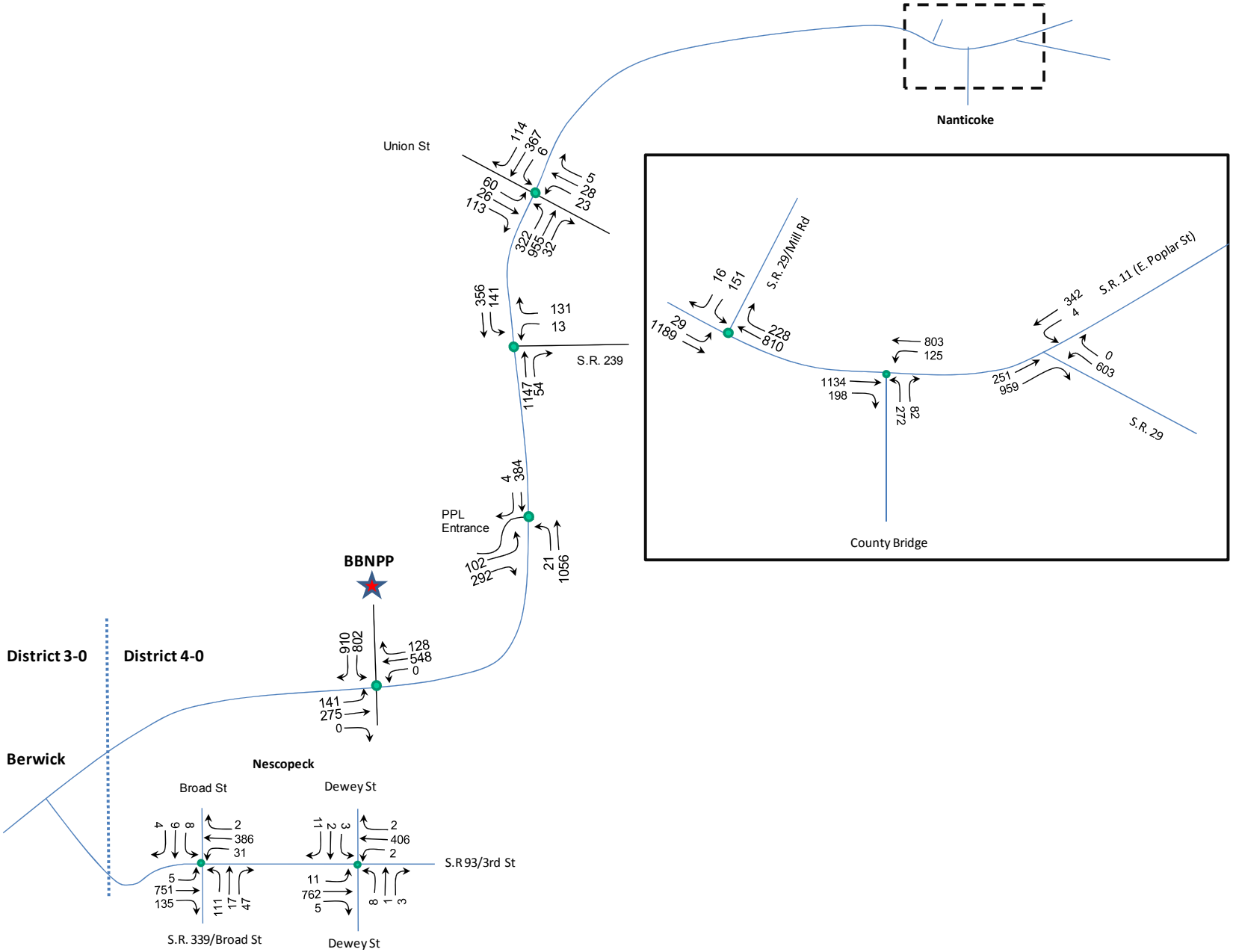

Figure L-4 - Weekday PM Peak Hour Volumes (3:45-4:45): During Construction

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and S.R. 2028
Scenario: 2018, Construction, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	129	813	16%	150	5.4	250	125	75	325	325	165
SBL	PM	231	1945	12%	150	9.6	375	125	75	450	450	165
Speed (MPH)	45			>10%		Condition:	B or C*					
WBL	AM	124	313	39%	150	5.2	250	#N/A	#N/A	#N/A	250	275
WBL	PM	100	343	29%	150	4.2	200	#N/A	#N/A	#N/A	200	275
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and Briar Creek Plaza Driveways
Scenario: 2018, Construction, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	40	929	4%	90	1.0	100	#N/A	#N/A	#N/A	100	175
NBL	PM	107	893	12%	140	4.2	200	#N/A	#N/A	#N/A	200	175
Speed (MPH)	35			>10%		Condition:	A					
SBL	AM	42	545	8%	90	1.0	100	#N/A	#N/A	#N/A	100	135
SBL	PM	21	1376	2%	140	0.8	75	#N/A	#N/A	#N/A	75	135
Speed (MPH)	35			<=10%		Condition:	A					
EBL	AM	54	97	56%	90	1.4	100	#N/A	#N/A	#N/A	100	175
EBL	PM	204	318	64%	140	7.9	325	#N/A	#N/A	#N/A	325	175
Speed (MPH)	30			>10%		Condition:	A					
WBL	AM	45	57	79%	90	1.1	100	#N/A	#N/A	#N/A	100	75
WBL	PM	54	84	65%	140	2.1	150	#N/A	#N/A	#N/A	150	75
Speed (MPH)	30			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Eaton Street
Scenario: 2018, Construction, with Outage
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	24	889	3%	60	0.4	75	#N/A	#N/A	#N/A	75	150
NBL	PM	64	1070	6%	60	1.1	100	#N/A	#N/A	#N/A	100	150
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	14	631	2%	60	0.2	75	#N/A	#N/A	#N/A	75	150
SBL	PM	63	788	8%	60	1.1	100	#N/A	#N/A	#N/A	100	150
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Poplar Street
Scenario: 2018, Construction, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	0	181	0%	110	0.0	75	#N/A	#N/A	#N/A	75	75
NBL	PM	23	765	3%	90	0.6	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	57	684	8%	110	1.7	100	#N/A	#N/A	#N/A	100	105
SBL	PM	75	1220	6%	90	1.9	100	#N/A	#N/A	#N/A	100	105
Speed (MPH)	35			<=10%		Condition:	A					
WBL	AM	66	107	61%	110	2.0	150	#N/A	#N/A	#N/A	150	250
WBL	PM	136	267	51%	90	3.4	175	#N/A	#N/A	#N/A	175	250
Speed (MPH)	30			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Orchard Street
Scenario: 2018, Construction, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	12	599	2%	110	0.4	75	#N/A	#N/A	#N/A	75	75
NBL	PM	15	862	2%	180	0.8	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	9	680	1%	110	0.3	75	#N/A	#N/A	#N/A	75	75
SBL	PM	10	1163	1%	180	0.5	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and LaSalle Street
Scenario: 2018, Construction, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	58	1324	4%	60	1.0	75	#N/A	#N/A	#N/A	75	100
NBL	PM	92	1060	9%	180	4.6	200	#N/A	#N/A	#N/A	200	100
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	11	718	2%	60	0.2	75	#N/A	#N/A	#N/A	75	100
SBL	PM	19	1457	1%	180	1.0	75	#N/A	#N/A	#N/A	75	100
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 1025 (Market Street) and Third Street
Scenario: 2018, Construction, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
EBL	AM	14	306	5%	55	0.2	75	#N/A	#N/A	#N/A	75	90
EBL	PM	24	374	7%	90	0.6	75	#N/A	#N/A	#N/A	75	90
Speed (MPH)	25			<=10%		Condition:	A					
WBL	AM	40	184	22%	55	0.6	75	#N/A	#N/A	#N/A	75	175
WBL	PM	28	230	12%	90	0.7	75	#N/A	#N/A	#N/A	75	175
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and Market Street
Scenario: 2018, Construction, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	189	865	22%	110	5.8	250	#N/A	#N/A	#N/A	250	100
SBL	PM	649	2052	32%	90	16.2	600	#N/A	#N/A	#N/A	600	100
Speed (MPH)	35			>10%		Condition:	A					
WBL	AM	234	344	68%	110	7.1	325	#N/A	#N/A	#N/A	325	170
WBL	PM	256	367	70%	90	6.4	275	#N/A	#N/A	#N/A	275	170
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and Pine Street
Scenario: 2018, Construction, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
WBL	AM	26	97	26%	60	0.4	75	#N/A	#N/A	#N/A	75	175
WBL	PM	65	207	31%	90	1.6	100	#N/A	#N/A	#N/A	100	175
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and SSES Site Entrance
Scenario: 2018, Construction, with Outage
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	686	869	79%	90	17.2	625	235	114	739	739	200
NBL	PM	69	581	12%	90	1.7	100	235	114	214	235	200
Speed (MPH)	55			>10%		Condition:	B or C*					
EBL	AM	55	199	27%	90	1.4	100	#N/A	#N/A	#N/A	100	450
EBL	PM	204	714	29%	90	5.1	250	#N/A	#N/A	#N/A	250	450
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Main Street) and S.R. 239 (Union Street)
Scenario: 2018, Construction, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	93	407	23%	150	3.9	175	#N/A	#N/A	#N/A	175	150
NBL	PM	345	1389	25%	120	11.5	450	#N/A	#N/A	#N/A	450	150
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and S.R. 29 (Mill Street)
Scenario: 2018, Construction, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	39	930	4%	110	1.2	100	#N/A	#N/A	#N/A	100	100
NBL	PM	31	535	6%	140	1.2	100	#N/A	#N/A	#N/A	100	100
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and County Bridge
Scenario: 2018, Construction, with Outage
Mitigation: Unmitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	94	417	23%	90	2.4	150	#N/A	#N/A	#N/A	150	200
SBL	PM	131	828	16%	150	5.4	250	#N/A	#N/A	#N/A	250	200
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (E. Poplar Street) and S.R. 29
Scenario: 2018, Construction, with Outage
Mitigation: Unmitigated
Control: Unsignalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	53	927	6%	90	1.3	100	#N/A	#N/A	#N/A	100	300
NBL	PM	265	1281	21%	90	6.6	275	#N/A	#N/A	#N/A	275	300
Speed (MPH)	35			>10%		Condition:	A					
WBL	AM	772	775	100%	90	19.3	675	#N/A	#N/A	#N/A	675	300
WBL	PM	803	806	100%	90	20.1	725	#N/A	#N/A	#N/A	725	300
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C
Agency/Co.:
Date Performed:
Analysis Time Period: 6:30 AM
Intersection: S.R. 11 and Eaton St.
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2018
Project ID: 2018, Construction, with Outage, AM
East/West Street: Eaton St.
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	22	1291	7	8	485	4
Peak-Hour Factor, PHF	0.53	0.85	0.44	0.67	0.86	0.50
Hourly Flow Rate, HFR	41	1518	15	11	563	8
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	TWLTL			/ 9		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	3	0	5	2	6	37
Peak Hour Factor, PHF	0.25	1.00	0.42	0.25	0.75	0.73
Hourly Flow Rate, HFR	12	0	11	8	8	50
Percent Heavy Vehicles	33	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0	1	0	0	1	1
Configuration		LTR		LT	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR		LT		R
v (vph)	41	11		23		16		50
C(m) (vph)	1012	440		122		122		527
v/c	0.04	0.03		0.19		0.13		0.09
95% queue length	0.13	0.08		0.66		0.44		0.31
Control Delay	8.7	13.4		41.2		38.9		12.5
LOS	A	B		E		E		B
Approach Delay				41.2			18.9	
Approach LOS				E			C	

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HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C
Agency/Co.:
Date Performed:
Analysis Time Period: 3:45 PM
Intersection: S.R. 11 and Eaton St.
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2018
Project ID: 2018, Construction, with Outage, PM
East/West Street: S.R. 11
North/South Street: Eaton St.
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	62	684	35	19	1420	19
Peak-Hour Factor, PHF	0.85	0.69	0.69	0.64	0.79	0.75
Hourly Flow Rate, HFR	72	991	50	29	1797	25
Percent Heavy Vehicles	0	--	--	17	--	--
Median Type/Storage	TWLTL			/ 9		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	20	4	24	4	5	43
Peak Hour Factor, PHF	0.68	0.50	0.41	1.00	0.63	0.71
Hourly Flow Rate, HFR	29	8	58	4	7	60
Percent Heavy Vehicles	5	0	0	25	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0	1	0	0	1	1
Configuration		LTR		LT	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR		LT		R
v (vph)	72	29		95		11		60
C(m) (vph)	341	614		0		96		99
v/c	0.21	0.05				0.11		0.61
95% queue length	0.78	0.15				0.38		2.90
Control Delay	18.4	11.2				47.3		86.0
LOS	C	B		F		E		F
Approach Delay							80.0	
Approach LOS							F	

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HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 6:30 AM
Intersection: S.R. 11 and Bell Bend Entrance
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2018
Project ID: 2018, Construction, with Outage, AM
East/West Street: Bell Bend Site Entrance
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	1027	618			315	897
Peak-Hour Factor, PHF	0.95	0.72			1.00	0.98
Hourly Flow Rate, HFR	1081	858			315	915
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	TWLTL		/ 9			
RT Channelized?						
Lanes	1	1			1	0
Configuration	L	T				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				5		12
Peak Hour Factor, PHF				0.72		0.70
Hourly Flow Rate, HFR				6		17
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	1081					6		17
C(m) (vph)	574							403
v/c	1.88							0.04
95% queue length	69.23							0.13
Control Delay	421.7							14.3
LOS	F							B
Approach Delay								
Approach LOS								

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 3:45 PM
Intersection: S.R. 11 and Bell Bend Entrance
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2018
Project ID: 2018, Construction, with Outage, PM
East/West Street: Bell Bend Site Entrance
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	141	275			548	128
Peak-Hour Factor, PHF	0.25	0.84			0.75	0.25
Hourly Flow Rate, HFR	564	327			730	512
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	TWLTL		/ 9			
RT Channelized?						
Lanes	1	1			1	0
Configuration	L	T				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				802		910
Peak Hour Factor, PHF				0.57		0.58
Hourly Flow Rate, HFR				1407		1568
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	564					1407		1568
C(m) (vph)	568					2		303
v/c	0.99					703.50		5.17
95% queue length	14.30					178.58		161.76
Control Delay	63.0							1910
LOS	F					F		F
Approach Delay								
Approach LOS							F	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 6:30 AM
Intersection: S.R. 11 and SSES Entrance
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2018
Project ID: 2018, Construction, with Outage, AM
East/West Street: SSES Entrance
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	407	216			1087	175
Peak-Hour Factor, PHF	0.60	0.67			0.99	0.55
Hourly Flow Rate, HFR	678	322			1097	318
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						No
Lanes	1	1			1	1
Configuration	L	T			T	R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				41		122
Peak Hour Factor, PHF				0.54		1.00
Hourly Flow Rate, HFR				75		122
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1	1	
Configuration				L	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	678					75		122
C(m) (vph)	488					0		262
v/c	1.39							0.47
95% queue length	31.76							2.31
Control Delay	210.8							30.2
LOS	F					F		D
Approach Delay								
Approach LOS								

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 3:45 PM
Intersection: S.R. 11 and SSES Entrance
Jurisdiction: Berwick, PA
Units: U. S. Customary
Analysis Year: 2018
Project ID: 2018, Construction, with Outage, PM
East/West Street: SSES Entrance
North/South Street: S.R. 11
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	21	1056			384	4
Peak-Hour Factor, PHF	0.59	0.67			0.50	0.66
Hourly Flow Rate, HFR	35	1576			768	6
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						No
Lanes	1	1			1	1
Configuration	L	T			T	R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				102		292
Peak Hour Factor, PHF				0.59		0.62
Hourly Flow Rate, HFR				172		470
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1	1	
Configuration				L	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	35					172		470
C(m) (vph)	851					35		405
v/c	0.04					4.91		1.16
95% queue length	0.13					20.30		17.95
Control Delay	9.4					1990		127.1
LOS	A					F		F
Approach Delay							626.2	
Approach LOS							F	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 6:30 AM
Intersection: S.R. 11 and S.R. 29
Jurisdiction: Nanticoke, PA
Units: U. S. Customary
Analysis Year: 2018
Project ID: 2018, Construction, with Outage, AM
East/West Street: S.R. 29
North/South Street: S.R. 11 (Poplar St.)
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume					392	
Peak-Hour Factor, PHF					0.97	
Hourly Flow Rate, HFR					404	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes					1	
Configuration					T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume			29	761		
Peak Hour Factor, PHF			0.48	0.97		
Hourly Flow Rate, HFR			60	784		
Percent Heavy Vehicles			0	1		
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes		1		1		
Configuration		R		L		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config					R	L		
v (vph)					60	784		
C(m) (vph)					1091	505		
v/c					0.05	1.55		
95% queue length					0.17	41.89		
Control Delay					8.5	279.4		
LOS					A	F		
Approach Delay				8.5			279.4	
Approach LOS				A			F	

Controlled Document

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: KLD Engineering, P.C.
Agency/Co.:
Date Performed:
Analysis Time Period: 3:45 PM
Intersection: S.R. 11 and S.R. 29
Jurisdiction: Nanticoke, PA
Units: U. S. Customary
Analysis Year: 2018
Project ID: 2018, Construction, with Outage, PM
East/West Street: S.R. 29
North/South Street: S.R. 11 (Poplar St.)
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume					342	
Peak-Hour Factor, PHF					0.74	
Hourly Flow Rate, HFR					462	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes					1	
Configuration					T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume			251	603		
Peak Hour Factor, PHF			0.60	0.76		
Hourly Flow Rate, HFR			418	793		
Percent Heavy Vehicles			0	0		
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes			1	1		
Configuration			R	L		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config					R	L		
v (vph)					418	793		
C(m) (vph)					1091	230		
v/c					0.38	3.45		
95% queue length					1.82	74.37		
Control Delay					10.3	1144		
LOS					B	F		
Approach Delay				10.3			1144	
Approach LOS				B			F	

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	1	1	1	1	0	0	0	0	1	2	1
Volume (vph)	0	121	77	121	98	0	0	0	0	110	442	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00					1.00	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		1792	1583	1787	1881					1752	3505	1615
Flt Permitted		1.00	1.00	0.57	1.00					0.95	1.00	1.00
Satd. Flow (perm)		1792	1583	1067	1881					1752	3505	1615
Peak-hour factor, PHF	1.00	0.86	0.91	0.81	0.86	1.00	1.00	1.00	1.00	0.83	0.84	0.72
Adj. Flow (vph)	0	141	85	149	114	0	0	0	0	133	526	42
RTOR Reduction (vph)	0	0	61	0	0	0	0	0	0	0	0	24
Lane Group Flow (vph)	0	141	24	149	114	0	0	0	0	133	526	18
Heavy Vehicles (%)	0%	6%	2%	1%	1%	0%	0%	0%	0%	3%	3%	0%
Turn Type			Perm	pm+pt						Split		Prot
Protected Phases		4		3	8					2	2	2
Permitted Phases			4	8								
Actuated Green, G (s)		31.5	31.5	53.5	53.5					47.0	47.0	47.0
Effective Green, g (s)		31.5	31.5	53.5	53.5					47.0	47.0	47.0
Actuated g/C Ratio		0.29	0.29	0.49	0.49					0.43	0.43	0.43
Clearance Time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Grp Cap (vph)		513	453	643	915					749	1498	690
v/s Ratio Prot		c0.08		c0.04	0.06					0.08	c0.15	0.01
v/s Ratio Perm			0.02	0.07								
v/c Ratio		0.27	0.05	0.23	0.12					0.18	0.35	0.03
Uniform Delay, d1		30.4	28.4	16.0	15.4					19.5	21.2	18.2
Progression Factor		0.89	0.95	0.67	0.67					0.95	0.96	0.91
Incremental Delay, d2		1.3	0.2	0.8	0.3					0.5	0.6	0.1
Delay (s)		28.2	27.2	11.4	10.7					19.1	21.1	16.7
Level of Service		C	C	B	B					B	C	B
Approach Delay (s)		27.8			11.1			0.0			20.5	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	106.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	2>	0	0	0	0	0	1	1	1	1	0
Volume (vph)	0	1343	103	0	0	0	0	222	657	37	181	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			1%	
Total Lost time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Util. Factor		0.95						1.00	1.00	1.00	1.00	
Frt		0.99						1.00	0.85	1.00	1.00	
Flt Protected		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3535						1891	1623	1663	1835	
Flt Permitted		1.00						1.00	1.00	0.51	1.00	
Satd. Flow (perm)		3535						1891	1623	901	1835	
Peak-hour factor, PHF	1.00	0.86	0.84	1.00	1.00	1.00	1.00	0.84	0.88	0.80	0.76	1.00
Adj. Flow (vph)	0	1562	123	0	0	0	0	264	747	46	238	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	34	0	0	0
Lane Group Flow (vph)	0	1679	0	0	0	0	0	264	713	46	238	0
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%	0%	1%	0%	8%	3%	0%
Turn Type									Perm	D.P+P		
Protected Phases		1						3		2	4	
Permitted Phases									3	3		
Actuated Green, G (s)		49.0						45.0	45.0	48.0	51.0	
Effective Green, g (s)		49.0						45.0	45.0	48.0	51.0	
Actuated g/C Ratio		0.45						0.41	0.41	0.44	0.46	
Clearance Time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		1575						774	664	414	851	
v/s Ratio Prot		c0.48						0.14		0.00	c0.13	
v/s Ratio Perm									c0.44	0.05		
v/c Ratio		1.07						0.34	1.07	0.11	0.28	
Uniform Delay, d1		30.5						22.3	32.5	18.2	18.2	
Progression Factor		0.84						1.00	1.00	0.39	0.37	
Incremental Delay, d2		41.5						1.2	56.3	0.5	0.8	
Delay (s)		67.1						23.5	88.8	7.5	7.5	
Level of Service		E						C	F	A	A	
Approach Delay (s)		67.1			0.0			71.7			7.5	
Approach LOS		E			A			E			A	

Intersection Summary			
HCM Average Control Delay	63.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	106.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	43	75	172	11	61	1239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Total Lost time (s)	5.2		5.4	5.4	5.4	5.4
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.93		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1659		1827	1482	1761	1910
Flt Permitted	0.98		1.00	1.00	0.59	1.00
Satd. Flow (perm)	1659		1827	1482	1089	1910
Peak-hour factor, PHF	0.55	0.90	0.90	0.55	0.87	0.86
Adj. Flow (vph)	78	83	191	20	70	1441
RTOR Reduction (vph)	43	0	0	6	0	0
Lane Group Flow (vph)	118	0	191	14	70	1441
Heavy Vehicles (%)	2%	6%	4%	9%	3%	0%
Turn Type				Perm	pm+pt	
Protected Phases	4		6		5	2
Permitted Phases				6	2	
Actuated Green, G (s)	7.8		63.3	63.3	72.8	72.8
Effective Green, g (s)	7.8		63.3	63.3	72.8	72.8
Actuated g/C Ratio	0.09		0.69	0.69	0.80	0.80
Clearance Time (s)	5.2		5.4	5.4	5.4	5.4
Vehicle Extension (s)	5.0		5.0	5.0	3.0	5.0
Lane Grp Cap (vph)	142		1268	1029	900	1525
v/s Ratio Prot	c0.07		0.10		0.00	c0.75
v/s Ratio Perm				0.01	0.06	
v/c Ratio	0.83		0.15	0.01	0.08	0.94
Uniform Delay, d1	41.1		4.8	4.3	2.1	7.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	34.9		0.1	0.0	0.0	12.6
Delay (s)	75.9		4.9	4.3	2.1	20.2
Level of Service	E		A	A	A	C
Approach Delay (s)	75.9		4.8			19.3
Approach LOS	E		A			B

Intersection Summary			
HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	91.2	Sum of lost time (s)	10.6
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	0	<1>	0
Volume (vph)	146	14	265	8	7	1	53	208	10	0	1001	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			1%	
Total Lost time (s)		5.0			5.0		5.0	5.0			5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.91			0.98		1.00	0.99			1.00	
Flt Protected		0.98			0.98		0.95	1.00			1.00	
Satd. Flow (prot)		1518			1642		1616	1636			1673	
Flt Permitted		0.88			0.79		0.04	1.00			1.00	
Satd. Flow (perm)		1362			1321		74	1636			1673	
Peak-hour factor, PHF	0.88	0.88	0.77	0.67	0.58	0.25	0.91	0.87	0.50	1.00	0.92	0.75
Adj. Flow (vph)	166	16	344	12	12	4	58	239	20	0	1088	41
RTOR Reduction (vph)	0	45	0	0	3	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	481	0	0	25	0	58	257	0	0	1128	0
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	3%	0%	0%	1%	6%
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		44.0			44.0		95.3	95.3			87.1	
Effective Green, g (s)		44.0			44.0		95.3	95.3			87.1	
Actuated g/C Ratio		0.29			0.29		0.64	0.64			0.58	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		401			389		80	1044			976	
v/s Ratio Prot							c0.02	0.16			c0.67	
v/s Ratio Perm		c0.35			0.02		0.45					
v/c Ratio		1.20			0.06		0.72	0.25			1.16	
Uniform Delay, d1		52.7			37.9		37.0	11.6			31.1	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		111.4			0.1		27.6	0.1			81.9	
Delay (s)		164.0			37.9		64.6	11.7			113.0	
Level of Service		F			D		E	B			F	
Approach Delay (s)		164.0			37.9			21.4			113.0	
Approach LOS		F			D			C			F	

Intersection Summary			
HCM Average Control Delay	110.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	149.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	0	<1	1	0	<1>	0
Volume (vph)	0	1230	33	36	508	0	24	3	29	1	7	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		3.0	5.0			4.0	4.0		4.0	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes		1.00		1.00	1.00			1.00	1.00		1.00	
Flpb, ped/bikes		1.00		1.00	1.00			0.99	1.00		1.00	
Frt		1.00		1.00	1.00			1.00	0.85		0.94	
Flt Protected		1.00		0.95	1.00			0.96	1.00		1.00	
Satd. Flow (prot)		1873		1671	1863			1755	1324		1775	
Flt Permitted		1.00		0.95	1.00			0.78	1.00		0.98	
Satd. Flow (perm)		1873		1671	1863			1431	1324		1755	
Peak-hour factor, PHF	1.00	0.78	0.97	0.57	0.89	1.00	0.64	0.38	0.56	0.25	0.35	0.35
Adj. Flow (vph)	0	1577	34	63	571	0	38	8	52	4	20	20
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	16	0
Lane Group Flow (vph)	0	1610	0	63	571	0	0	46	52	0	28	0
Confl. Peds. (#/hr)							3					
Heavy Vehicles (%)	0%	1%	6%	8%	2%	0%	4%	0%	22%	0%	0%	0%
Turn Type	Perm			Prot			Perm		Perm	Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2						8		8	4		
Actuated Green, G (s)		63.0		15.0	81.0			20.0	20.0		20.0	
Effective Green, g (s)		63.0		15.0	81.0			20.0	20.0		20.0	
Actuated g/C Ratio		0.57		0.14	0.74			0.18	0.18		0.18	
Clearance Time (s)		5.0		3.0	5.0			4.0	4.0		4.0	
Lane Grp Cap (vph)		1073		228	1372			260	241		319	
v/s Ratio Prot		c0.86		0.04	c0.31							
v/s Ratio Perm								0.03	c0.04		0.02	
v/c Ratio		1.50		0.28	0.42			0.18	0.22		0.09	
Uniform Delay, d1		23.5		42.6	5.5			38.0	38.3		37.4	
Progression Factor		1.00		1.24	0.84			1.00	1.00		1.00	
Incremental Delay, d2		230.2		2.8	0.9			1.5	2.0		0.5	
Delay (s)		253.7		55.8	5.5			39.5	40.4		37.9	
Level of Service		F		E	A			D	D		D	
Approach Delay (s)		253.7			10.5			40.0			37.9	
Approach LOS		F			B			D			D	

Intersection Summary			
HCM Average Control Delay	176.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	110.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	1	1	0	1	0
Volume (vph)	0	1247	486	0	86	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		-1%	0%		0%	
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1872	1845		1805	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1872	1845		1805	
Peak-hour factor, PHF	1.00	0.82	0.85	0.93	0.71	1.00
Adj. Flow (vph)	0	1521	572	0	121	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1521	572	0	121	0
Heavy Vehicles (%)	0%	2%	3%	2%	0%	0%
Turn Type						
Protected Phases		2	6		8	
Permitted Phases						
Actuated Green, G (s)		94.0	94.0		8.0	
Effective Green, g (s)		94.0	94.0		8.0	
Actuated g/C Ratio		0.85	0.85		0.07	
Clearance Time (s)		4.0	4.0		4.0	
Lane Grp Cap (vph)		1600	1577		131	
v/s Ratio Prot		c0.81	0.31		c0.07	
v/s Ratio Perm						
v/c Ratio		0.95	0.36		0.92	
Uniform Delay, d1		6.2	1.7		50.7	
Progression Factor		0.35	1.00		1.00	
Incremental Delay, d2		4.3	0.6		60.3	
Delay (s)		6.5	2.3		111.0	
Level of Service		A	A		F	
Approach Delay (s)		6.5	2.3		111.0	
Approach LOS		A	A		F	

Intersection Summary			
HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations	1	0	0	1	2>	0	0	1	0	0
Volume (vph)	57	0	0	4	510	7	0	33	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0			4.0		
Lane Util. Factor	1.00			1.00	0.95			1.00		
Frt	1.00			1.00	1.00			0.86		
Flt Protected	0.95			0.95	1.00			1.00		
Satd. Flow (prot)	1805			1805	3493			1644		
Flt Permitted	0.95			0.95	1.00			1.00		
Satd. Flow (perm)	1805			1805	3493			1644		
Peak-hour factor, PHF	0.66	0.90	1.00	0.33	0.90	0.44	1.00	0.70	0.92	0.92
Adj. Flow (vph)	86	0	0	12	567	16	0	47	0	0
RTOR Reduction (vph)	0	0	0	8	5	0	0	25	0	0
Lane Group Flow (vph)	86	0	0	4	578	0	0	22	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	2%
Turn Type	Prot			custom				custom		
Protected Phases	8			1	1			8		
Permitted Phases				1				8		
Actuated Green, G (s)	21.0			16.0	16.0			21.0		
Effective Green, g (s)	21.0			16.0	16.0			21.0		
Actuated g/C Ratio	0.47			0.36	0.36			0.47		
Clearance Time (s)	4.0			4.0	4.0			4.0		
Lane Grp Cap (vph)	842			642	1242			767		
v/s Ratio Prot	c0.05			0.00	c0.17			0.01		
v/s Ratio Perm										
v/c Ratio	0.10			0.01	0.47			0.03		
Uniform Delay, d1	6.7			9.4	11.2			6.5		
Progression Factor	1.00			1.00	1.00			1.00		
Incremental Delay, d2	0.2			0.0	1.3			0.1		
Delay (s)	7.0			9.4	12.5			6.6		
Level of Service	A			A	B			A		
Approach Delay (s)		7.0			12.4		6.6		0.0	
Approach LOS		A			B		A		A	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	24.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	2>	0	1	1	0	0	0	1
Volume (vph)	0	0	0	0	541	23	11	47	0	0	0	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			1%	
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		1.00	1.00				1.00
Frt					0.99		1.00	1.00				0.86
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					3543		1796	1890				1635
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					3543		1796	1890				1635
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	0.85	0.55	0.92	0.70	1.00	1.00	1.00	0.65
Adj. Flow (vph)	0	0	0	0	636	42	12	67	0	0	0	20
RTOR Reduction (vph)	0	0	0	0	6	0	11	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	672	0	1	67	0	0	0	20
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type							Perm					custom
Protected Phases					1			2				
Permitted Phases							2					2
Actuated Green, G (s)					41.9		5.1	5.1				5.1
Effective Green, g (s)					41.9		5.1	5.1				5.1
Actuated g/C Ratio					0.76		0.09	0.09				0.09
Clearance Time (s)					4.0		4.0	4.0				4.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					2699		167	175				152
v/s Ratio Prot					c0.19			c0.04				
v/s Ratio Perm							0.00					0.01
v/c Ratio					0.25		0.01	0.38				0.13
Uniform Delay, d1					1.9		22.7	23.5				22.9
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					0.2		0.0	1.4				0.4
Delay (s)					2.2		22.7	24.9				23.3
Level of Service					A		C	C				C
Approach Delay (s)		0.0			2.2			24.5			23.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	32.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	0	1	1	0	0	<1>	0	0	<1>	0
Volume (vph)	2	1302	1	3	508	0	5	2	6	10	2	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.94			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1805	1880		1805	1845			1765			1765	
Flt Permitted	0.40	1.00		0.05	1.00			0.99			0.97	
Satd. Flow (perm)	765	1880		87	1845			1765			1765	
Peak-hour factor, PHF	0.50	0.87	0.25	0.38	0.84	1.00	0.62	0.25	0.50	0.50	0.50	0.67
Adj. Flow (vph)	4	1497	4	8	605	0	8	8	12	20	4	12
RTOR Reduction (vph)	0	0	0	0	0	0	0	12	0	0	11	0
Lane Group Flow (vph)	4	1501	0	8	605	0	0	16	0	0	25	0
Heavy Vehicles (%)	0%	1%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Split			Split		
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	87.0	87.0		87.0	87.0			2.0			6.0	
Effective Green, g (s)	87.0	87.0		87.0	87.0			2.0			6.0	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.02			0.05	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	605	1487		69	1459			32			96	
v/s Ratio Prot		c0.80			0.33			c0.01			c0.01	
v/s Ratio Perm	0.01			0.09								
v/c Ratio	0.01	1.01		0.12	0.41			0.51			0.26	
Uniform Delay, d1	2.4	11.5		2.6	3.6			53.5			49.9	
Progression Factor	0.00	0.88		1.00	1.01			1.00			1.00	
Incremental Delay, d2	0.0	9.5		3.2	0.8			47.6			6.4	
Delay (s)	0.0	19.6		5.9	4.4			101.1			56.2	
Level of Service	A	B		A	A			F			E	
Approach Delay (s)		19.5			4.5			101.1			56.2	
Approach LOS		B			A			F			E	

Intersection Summary			
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	10	602	27	4	20	0	0	24	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			1%			-1%	
Total Lost time (s)					6.0			5.0			5.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					0.99			1.00			0.93	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3495			1734			1656	
Flt Permitted					1.00			0.97			1.00	
Satd. Flow (perm)					3495			1706			1656	
Peak-hour factor, PHF	1.00	1.00	1.00	0.50	0.86	0.59	0.50	0.68	1.00	1.00	0.64	0.72
Adj. Flow (vph)	0	0	0	20	700	46	8	29	0	0	38	38
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	36	0
Lane Group Flow (vph)	0	0	0	0	757	0	0	37	0	0	40	0
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	10%	0%	0%	4%	11%
Turn Type				Perm			Perm					
Protected Phases					1			2			2	
Permitted Phases				1			2					
Actuated Green, G (s)					35.7			2.5			2.5	
Effective Green, g (s)					35.7			2.5			2.5	
Actuated g/C Ratio					0.73			0.05			0.05	
Clearance Time (s)					6.0			5.0			5.0	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2536			87			84	
v/s Ratio Prot											c0.02	
v/s Ratio Perm					0.22			0.02				
v/c Ratio					0.30			0.43			0.48	
Uniform Delay, d1					2.4			22.7			22.7	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.1			3.3			4.2	
Delay (s)					2.4			26.0			26.9	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.4			26.0			26.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	49.2	Sum of lost time (s)	11.0
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	1	1>	0
Volume (vph)	18	40	24	9	42	4	13	100	9	10	199	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.95			0.99		1.00	0.99		1.00	0.98	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1788			1815		1805	1876		1805	1817	
Flt Permitted		0.95			0.95		0.58	1.00		0.67	1.00	
Satd. Flow (perm)		1709			1734		1102	1876		1266	1817	
Peak-hour factor, PHF	0.71	0.68	0.57	0.56	0.77	0.50	0.65	0.77	0.75	0.50	0.84	0.59
Adj. Flow (vph)	25	59	42	16	55	8	20	130	12	20	237	34
RTOR Reduction (vph)	0	28	0	0	5	0	0	6	0	0	9	0
Lane Group Flow (vph)	0	98	0	0	74	0	20	136	0	20	262	0
Heavy Vehicles (%)	0%	0%	0%	11%	0%	0%	0%	0%	0%	0%	3%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2	2		1			1	1	
Actuated Green, G (s)		18.0			18.0		29.0	29.0		29.0	29.0	
Effective Green, g (s)		18.0			18.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio		0.33			0.33		0.53	0.53		0.53	0.53	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		559			567		581	989		668	958	
v/s Ratio Prot								0.07			c0.14	
v/s Ratio Perm		c0.06			0.04		0.02			0.02		
v/c Ratio		0.17			0.13		0.03	0.14		0.03	0.27	
Uniform Delay, d1		13.2			13.0		6.3	6.6		6.2	7.2	
Progression Factor		1.00			1.00		0.21	0.15		1.00	1.00	
Incremental Delay, d2		0.7			0.5		0.1	0.3		0.1	0.7	
Delay (s)		13.9			13.5		1.4	1.3		6.3	7.9	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		13.9			13.5			1.3			7.8	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	3	664	10	2	5	0	0	2	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			-4%	
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3564			1864			1733	
Flt Permitted					1.00			0.94			1.00	
Satd. Flow (perm)					3564			1773			1733	
Peak-hour factor, PHF	1.00	1.00	1.00	0.38	0.95	0.83	0.25	0.25	1.00	1.00	0.25	0.79
Adj. Flow (vph)	0	0	0	8	699	12	8	20	0	0	8	29
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	23	0
Lane Group Flow (vph)	0	0	0	0	717	0	0	28	0	0	14	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Split			Perm					
Protected Phases				1	1			2			2	
Permitted Phases							2					
Actuated Green, G (s)					36.0			11.0			11.0	
Effective Green, g (s)					36.0			11.0			11.0	
Actuated g/C Ratio					0.65			0.20			0.20	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					2333			355			347	
v/s Ratio Prot					c0.20						0.01	
v/s Ratio Perm								c0.02				
v/c Ratio					0.31			0.08			0.04	
Uniform Delay, d1					4.1			17.9			17.7	
Progression Factor					0.35			0.98			1.00	
Incremental Delay, d2					0.3			0.4			0.2	
Delay (s)					1.8			17.9			18.0	
Level of Service					A			B			B	
Approach Delay (s)		0.0			1.8			17.9			18.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	3.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<2>	0	0	0	0	0	1>	0	0	<1	0
Volume (vph)	6	1404	6	0	0	0	0	1	4	5	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			1%			-1%	
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.90			1.00	
Flt Protected		1.00						1.00			0.95	
Satd. Flow (prot)		3585						1699			1814	
Flt Permitted		1.00						1.00			0.75	
Satd. Flow (perm)		3585						1699			1426	
Peak-hour factor, PHF	0.25	0.89	0.50	1.00	1.00	1.00	1.00	0.25	0.33	0.31	1.00	1.00
Adj. Flow (vph)	24	1578	12	0	0	0	0	4	12	16	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	1614	0	0	0	0	0	5	0	0	16	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Split									Perm		
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)		94.0						8.0			8.0	
Effective Green, g (s)		94.0						8.0			8.0	
Actuated g/C Ratio		0.85						0.07			0.07	
Clearance Time (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		3064						124			104	
v/s Ratio Prot		c0.45						0.00				
v/s Ratio Perm											c0.01	
v/c Ratio		0.53						0.04			0.15	
Uniform Delay, d1		2.1						47.4			47.8	
Progression Factor		0.44						1.00			0.89	
Incremental Delay, d2		0.3						0.6			3.1	
Delay (s)		1.2						48.0			45.8	
Level of Service		A						D			D	
Approach Delay (s)		1.2			0.0			48.0			45.8	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	2.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Volume (vph)	1306	31	99	576	99	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1881	1568	1752	1827	1770	1583
Flt Permitted	1.00	1.00	0.03	1.00	0.95	1.00
Satd. Flow (perm)	1881	1568	62	1827	1770	1583
Peak-hour factor, PHF	0.83	0.50	0.81	0.89	0.78	0.86
Adj. Flow (vph)	1573	62	122	647	127	152
RTOR Reduction (vph)	0	7	0	0	0	0
Lane Group Flow (vph)	1573	55	122	647	127	152
Heavy Vehicles (%)	1%	3%	3%	4%	2%	2%
Turn Type		Perm	pm+pt			Prot
Protected Phases	4		3	8	2	2
Permitted Phases		4	8			
Actuated Green, G (s)	115.0	115.0	125.0	125.0	14.5	14.5
Effective Green, g (s)	115.0	115.0	125.0	125.0	14.5	14.5
Actuated g/C Ratio	0.77	0.77	0.83	0.83	0.10	0.10
Clearance Time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1442	1202	124	1523	171	153
v/s Ratio Prot	c0.84		c0.04	0.35	0.07	c0.10
v/s Ratio Perm		0.04	0.78			
v/c Ratio	1.09	0.05	0.98	0.42	0.74	0.99
Uniform Delay, d1	17.5	4.2	59.6	3.2	65.9	67.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	52.5	0.0	75.3	0.2	15.9	70.5
Delay (s)	70.0	4.2	134.9	3.4	81.9	138.2
Level of Service	E	A	F	A	F	F
Approach Delay (s)	67.5			24.3	112.5	
Approach LOS	E			C	F	

Intersection Summary			
HCM Average Control Delay	59.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.1
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	3	214	31	48	738	2	143	8	24	4	14	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			0%	
Total Lost time (s)		6.5			6.5			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			1.00			0.98			0.97	
Flt Protected		1.00			1.00			0.96			0.99	
Satd. Flow (prot)		1775			1865			1734			1823	
Flt Permitted		0.96			0.94			0.74			0.92	
Satd. Flow (perm)		1708			1767			1338			1703	
Peak-hour factor, PHF	0.25	0.89	0.62	0.62	0.88	0.25	0.69	0.67	0.67	0.50	0.70	0.62
Adj. Flow (vph)	12	240	50	77	839	8	207	12	36	8	20	8
RTOR Reduction (vph)	0	10	0	0	0	0	0	9	0	0	6	0
Lane Group Flow (vph)	0	292	0	0	924	0	0	246	0	0	30	0
Heavy Vehicles (%)	0%	5%	3%	6%	1%	50%	2%	0%	12%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		43.5			43.5			14.0			14.0	
Effective Green, g (s)		43.5			43.5			14.0			14.0	
Actuated g/C Ratio		0.62			0.62			0.20			0.20	
Clearance Time (s)		6.5			6.5			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1061			1098			268			341	
v/s Ratio Prot												
v/s Ratio Perm		0.17			c0.52			c0.18			0.02	
v/c Ratio		0.28			0.84			0.92			0.09	
Uniform Delay, d1		6.0			10.5			27.4			22.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.6			7.8			33.8			0.1	
Delay (s)		6.7			18.3			61.2			22.9	
Level of Service		A			B			E			C	
Approach Delay (s)		6.7			18.3			61.2			22.9	
Approach LOS		A			B			E			C	

Intersection Summary			
HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	2	237	8	5	767	0	9	0	1	3	2	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.97			0.93	
Flt Protected		1.00			1.00			0.96			0.99	
Satd. Flow (prot)		1766			1880			1778			1757	
Flt Permitted		0.99			0.99			1.00			1.00	
Satd. Flow (perm)		1753			1869			1849			1772	
Peak-hour factor, PHF	0.50	0.91	0.29	0.31	0.89	1.00	0.56	1.00	0.25	0.75	0.25	0.50
Adj. Flow (vph)	4	260	28	16	862	0	16	0	4	4	8	12
RTOR Reduction (vph)	0	5	0	0	0	0	0	4	0	0	12	0
Lane Group Flow (vph)	0	287	0	0	878	0	0	16	0	0	12	0
Heavy Vehicles (%)	0%	5%	12%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		42.9			42.9			1.2			1.2	
Effective Green, g (s)		42.9			42.9			1.2			1.2	
Actuated g/C Ratio		0.79			0.79			0.02			0.02	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1390			1482			41			39	
v/s Ratio Prot												
v/s Ratio Perm		0.16			c0.47			c0.01			0.01	
v/c Ratio		0.21			0.59			0.39			0.31	
Uniform Delay, d1		1.4			2.2			26.1			26.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			1.7			6.1			4.6	
Delay (s)		1.7			3.9			32.2			30.6	
Level of Service		A			A			C			C	
Approach Delay (s)		1.7			3.9			32.2			30.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1	1	1	1>	0	1	1	1
Volume (vph)	24	1246	46	18	420	47	44	5	5	28	2	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	16	16
Grade (%)		1%			-1%			1%			2%	
Total Lost time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1663	1859		1728	1836	1591	1796	1645		1787	2132	1678
Flt Permitted	0.47	1.00		0.05	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	822	1859		99	1836	1591	1800	1645		1791	2132	1678
Peak-hour factor, PHF	0.52	0.84	0.85	0.61	0.93	0.70	0.70	0.42	0.62	0.68	0.25	0.60
Adj. Flow (vph)	46	1483	54	30	452	67	63	12	8	41	8	42
RTOR Reduction (vph)	0	1	0	0	0	14	0	8	0	0	0	40
Lane Group Flow (vph)	46	1536	0	30	452	53	63	12	0	41	8	2
Heavy Vehicles (%)	8%	1%	6%	5%	4%	2%	0%	0%	20%	0%	0%	8%
Turn Type	pm+pt			Perm		Perm	Perm			Perm		Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	79.2	79.2		73.7	73.7	73.7	4.2	4.2		4.2	4.2	4.2
Effective Green, g (s)	79.2	79.2		73.7	73.7	73.7	4.2	4.2		4.2	4.2	4.2
Actuated g/C Ratio	0.84	0.84		0.78	0.78	0.78	0.04	0.04		0.04	0.04	0.04
Clearance Time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	711	1568		78	1441	1249	81	74		80	95	75
v/s Ratio Prot	0.00	c0.83			0.25			0.01			0.00	
v/s Ratio Perm	0.05			0.30		0.03	c0.03			0.02		0.00
v/c Ratio	0.06	0.98		0.38	0.31	0.04	0.78	0.17		0.51	0.08	0.03
Uniform Delay, d1	1.3	6.6		3.1	2.9	2.2	44.4	43.2		43.8	43.0	42.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.0	17.8		3.1	0.1	0.0	36.4	1.1		5.4	0.4	0.1
Delay (s)	1.4	24.4		6.2	3.0	2.3	80.8	44.2		49.3	43.4	43.0
Level of Service	A	C		A	A	A	F	D		D	D	D
Approach Delay (s)		23.7			3.1			72.0			45.9	
Approach LOS		C			A			E			D	

Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	93.9	Sum of lost time (s)	10.5
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	0	1>	0	0	<1>	0	0	<1	1
Volume (vph)	21	653	30	5	1072	108	3	1	34	173	6	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			0%			-1%	
Total Lost time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.99			0.99			0.89			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.99			0.95	1.00
Satd. Flow (prot)	1497	1833			1861			1543			1804	1531
Flt Permitted	0.21	1.00			0.99			0.99			0.95	1.00
Satd. Flow (perm)	334	1833			1852			1543			1804	1531
Peak-hour factor, PHF	0.75	0.84	0.66	0.62	0.96	0.85	0.38	0.25	0.63	0.77	0.75	0.79
Adj. Flow (vph)	28	777	45	8	1117	127	8	4	54	225	8	24
RTOR Reduction (vph)	0	2	0	0	4	0	0	52	0	0	0	10
Lane Group Flow (vph)	28	820	0	0	1248	0	0	14	0	0	233	14
Heavy Vehicles (%)	20%	2%	7%	14%	1%	2%	33%	0%	6%	1%	0%	6%
Turn Type	Perm			Perm			Split			Split		Perm
Protected Phases		2			6		8	8		4	4	
Permitted Phases	2	2		6								4
Actuated Green, G (s)	74.7	74.7			74.7			3.1			13.0	13.0
Effective Green, g (s)	74.7	74.7			74.7			3.1			13.0	13.0
Actuated g/C Ratio	0.69	0.69			0.69			0.03			0.12	0.12
Clearance Time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	231	1268			1281			44			217	184
v/s Ratio Prot		0.45						c0.01			c0.13	
v/s Ratio Perm	0.08				c0.67							0.01
v/c Ratio	0.12	0.65			0.97			0.31			1.07	0.08
Uniform Delay, d1	5.6	9.3			15.7			51.4			47.5	42.2
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.2	1.1			19.1			4.0			82.0	0.2
Delay (s)	5.8	10.4			34.9			55.4			129.5	42.4
Level of Service	A	B			C			E			F	D
Approach Delay (s)		10.3			34.9			55.4			121.4	
Approach LOS		B			C			E			F	

Intersection Summary			
HCM Average Control Delay	36.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	108.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	700	159	51	1100	108	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-2%	0%	
Total Lost time (s)	7.0		7.0	7.0	7.0	7.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1824		1787	1919	1787	1599
Flt Permitted	1.00		0.07	1.00	0.95	1.00
Satd. Flow (perm)	1824		132	1919	1787	1599
Peak-hour factor, PHF	0.87	0.84	0.69	0.97	0.67	0.86
Adj. Flow (vph)	805	189	74	1134	161	74
RTOR Reduction (vph)	9	0	0	0	0	0
Lane Group Flow (vph)	985	0	74	1134	161	74
Heavy Vehicles (%)	1%	1%	2%	0%	1%	1%
Turn Type			pm+pt			pt+ov
Protected Phases	4		3	8	2	2 3
Permitted Phases			8			
Actuated Green, G (s)	50.2		62.2	62.2	9.9	21.9
Effective Green, g (s)	50.2		62.2	62.2	9.9	21.9
Actuated g/C Ratio	0.58		0.72	0.72	0.11	0.25
Clearance Time (s)	7.0		7.0	7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1063		191	1386	205	407
v/s Ratio Prot	c0.54		0.02	c0.59	c0.09	0.05
v/s Ratio Perm			0.26			
v/c Ratio	0.93		0.39	0.82	0.79	0.18
Uniform Delay, d1	16.3		16.5	8.1	37.1	25.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	13.3		1.3	3.9	17.7	0.2
Delay (s)	29.6		17.8	12.0	54.8	25.3
Level of Service	C		B	B	D	C
Approach Delay (s)	29.6			12.4	45.5	
Approach LOS	C			B	D	

Intersection Summary			
HCM Average Control Delay	22.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	86.1	Sum of lost time (s)	21.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	1	1	1	1	0	0	0	0	1	2	1
Volume (vph)	0	229	119	200	129	0	0	0	0	600	1298	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00					1.00	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		1900	1599	1787	1900					1805	3574	1583
Flt Permitted		1.00	1.00	0.23	1.00					0.95	1.00	1.00
Satd. Flow (perm)		1900	1599	438	1900					1805	3574	1583
Peak-hour factor, PHF	1.00	0.83	0.85	0.79	0.71	1.00	1.00	1.00	1.00	0.70	0.78	0.73
Adj. Flow (vph)	0	276	140	253	182	0	0	0	0	857	1664	105
RTOR Reduction (vph)	0	0	34	0	0	0	0	0	0	0	0	32
Lane Group Flow (vph)	0	276	106	253	182	0	0	0	0	857	1664	73
Heavy Vehicles (%)	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	1%	2%
Turn Type			Perm	pm+pt						Split		Prot
Protected Phases		4		3	8					2	2	2
Permitted Phases			4	8								
Actuated Green, G (s)		16.5	16.5	29.5	29.5					51.0	51.0	51.0
Effective Green, g (s)		16.5	16.5	29.5	29.5					51.0	51.0	51.0
Actuated g/C Ratio		0.18	0.18	0.33	0.33					0.57	0.57	0.57
Clearance Time (s)		4.5	4.5	3.0	4.5					5.0	5.0	5.0
Lane Grp Cap (vph)		348	293	293	623					1023	2025	897
v/s Ratio Prot		0.15		c0.10	0.10					c0.47	0.47	0.05
v/s Ratio Perm			0.07	c0.19								
v/c Ratio		0.79	0.36	0.86	0.29					0.84	0.82	0.08
Uniform Delay, d1		35.1	32.1	24.7	22.5					16.1	15.8	8.9
Progression Factor		0.74	0.62	1.00	0.88					0.65	0.64	0.44
Incremental Delay, d2		15.6	3.2	23.6	1.0					3.7	1.7	0.1
Delay (s)		41.6	23.1	48.2	20.7					14.1	11.9	4.0
Level of Service		D	C	D	C					B	B	A
Approach Delay (s)		35.3			36.7			0.0			12.3	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	100.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	2>	0	0	0	0	0	1	1	1	1	0
Volume (vph)	0	781	207	0	0	0	0	324	257	103	719	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			1%	
Total Lost time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Util. Factor		0.95						1.00	1.00	1.00	1.00	
Frt		0.97						1.00	0.85	1.00	1.00	
Flt Protected		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3482						1910	1607	1796	1890	
Flt Permitted		1.00						1.00	1.00	0.33	1.00	
Satd. Flow (perm)		3482						1910	1607	624	1890	
Peak-hour factor, PHF	1.00	0.78	0.92	1.00	1.00	1.00	1.00	0.80	0.70	0.71	0.74	1.00
Adj. Flow (vph)	0	1001	225	0	0	0	0	405	367	145	972	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1226	0	0	0	0	0	405	367	145	972	0
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
Turn Type									Perm	D.P+P		
Protected Phases		1						3		2	4	
Permitted Phases									3	3		
Actuated Green, G (s)		33.0						32.0	32.0	44.0	47.0	
Effective Green, g (s)		33.0						32.0	32.0	44.0	47.0	
Actuated g/C Ratio		0.37						0.36	0.36	0.49	0.52	
Clearance Time (s)		5.0						5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		1277						679	571	461	987	
v/s Ratio Prot		c0.35						0.21		0.04	c0.51	
v/s Ratio Perm									0.23	0.11		
v/c Ratio		0.96						0.60	0.64	0.31	0.98	
Uniform Delay, d1		27.9						23.7	24.2	13.7	21.1	
Progression Factor		0.66						1.00	1.00	0.47	0.62	
Incremental Delay, d2		16.0						3.8	5.5	1.0	17.6	
Delay (s)		34.4						27.6	29.7	7.4	30.8	
Level of Service		C						C	C	A	C	
Approach Delay (s)		34.4			0.0			28.6			27.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	100.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	12	131	1147	54	140	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Total Lost time (s)	5.2		5.4	5.4	5.4	5.4
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.88		1.00	0.85	1.00	1.00
Flt Protected	0.99		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1576		1900	1615	1814	1854
Flt Permitted	0.99		1.00	1.00	0.03	1.00
Satd. Flow (perm)	1576		1900	1615	60	1854
Peak-hour factor, PHF	0.60	0.85	0.67	0.72	0.84	0.47
Adj. Flow (vph)	20	154	1712	75	167	755
RTOR Reduction (vph)	113	0	0	9	0	0
Lane Group Flow (vph)	61	0	1712	66	167	755
Heavy Vehicles (%)	25%	3%	0%	0%	0%	3%
Turn Type				Perm	pm+pt	
Protected Phases	4		6		5	2
Permitted Phases				6	2	
Actuated Green, G (s)	5.8		121.6	121.6	133.6	133.6
Effective Green, g (s)	5.8		121.6	121.6	133.6	133.6
Actuated g/C Ratio	0.04		0.81	0.81	0.89	0.89
Clearance Time (s)	5.2		5.4	5.4	5.4	5.4
Vehicle Extension (s)	5.0		5.0	5.0	3.0	5.0
Lane Grp Cap (vph)	61		1540	1309	131	1651
v/s Ratio Prot	c0.04		0.90		c0.06	0.41
v/s Ratio Perm				0.04	c1.08	
v/c Ratio	0.99		1.11	0.05	1.27	0.46
Uniform Delay, d1	72.1		14.2	2.8	63.3	1.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	112.6		60.0	0.0	170.0	0.4
Delay (s)	184.7		74.2	2.8	233.3	1.9
Level of Service	F		E	A	F	A
Approach Delay (s)	184.7		71.2			43.8
Approach LOS	F		E			D

Intersection Summary			
HCM Average Control Delay	69.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.6
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	0	<1>	0
Volume (vph)	60	26	113	22	28	5	322	954	32	6	367	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			1%	
Total Lost time (s)		5.0			5.0		5.0	5.0			5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.92			0.98		1.00	0.99			0.98	
Flt Protected		0.99			0.98		0.95	1.00			1.00	
Satd. Flow (prot)		1525			1616		1616	1675			1638	
Flt Permitted		0.89			0.59		0.32	1.00			0.56	
Satd. Flow (perm)		1370			970		544	1675			914	
Peak-hour factor, PHF	0.72	0.57	0.62	0.79	0.84	0.42	0.79	0.67	0.55	0.50	0.55	0.91
Adj. Flow (vph)	83	46	182	28	33	12	408	1424	58	12	667	124
RTOR Reduction (vph)	0	42	0	0	6	0	0	1	0	0	6	0
Lane Group Flow (vph)	0	269	0	0	67	0	408	1481	0	0	797	0
Heavy Vehicles (%)	3%	4%	0%	4%	0%	0%	0%	1%	0%	0%	2%	0%
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		16.0			16.0		94.0	94.0			85.0	
Effective Green, g (s)		16.0			16.0		94.0	94.0			85.0	
Actuated g/C Ratio		0.13			0.13		0.78	0.78			0.71	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		183			129		462	1312			647	
v/s Ratio Prot							0.03	c0.88				
v/s Ratio Perm		c0.20			0.07		0.66				c0.87	
v/c Ratio		1.47			0.52		0.88	1.13			1.23	
Uniform Delay, d1		52.0			48.4		12.7	13.0			17.5	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		237.7			3.5		17.8	68.1			117.8	
Delay (s)		289.7			51.9		30.5	81.1			135.3	
Level of Service		F			D		C	F			F	
Approach Delay (s)		289.7			51.9			70.2			135.3	
Approach LOS		F			D			E			F	

Intersection Summary			
HCM Average Control Delay	108.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	115.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	0	<1	1	0	<1>	0
Volume (vph)	18	798	31	48	1429	6	130	45	86	28	42	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		3.0	5.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1805	1835		1703	1879			1826	1599		1793	
Flt Permitted	0.10	1.00		0.95	1.00			0.68	1.00		0.76	
Satd. Flow (perm)	185	1835		1703	1879			1290	1599		1375	
Peak-hour factor, PHF	0.61	0.73	0.81	0.75	0.88	0.38	0.69	0.66	0.83	0.81	0.89	0.61
Adj. Flow (vph)	30	1093	38	64	1624	16	188	68	104	35	47	38
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	19	0
Lane Group Flow (vph)	30	1129	0	64	1640	0	0	256	104	0	101	0
Confl. Peds. (#/hr)							3					
Heavy Vehicles (%)	0%	3%	3%	6%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm			Prot			Perm		Perm	Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2						8		8	4		
Actuated Green, G (s)	41.0	41.0		17.0	61.0			20.0	20.0		20.0	
Effective Green, g (s)	41.0	41.0		17.0	61.0			20.0	20.0		20.0	
Actuated g/C Ratio	0.46	0.46		0.19	0.68			0.22	0.22		0.22	
Clearance Time (s)	5.0	5.0		3.0	5.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	84	836		322	1274			287	355		306	
v/s Ratio Prot		0.62		0.04	c0.87							
v/s Ratio Perm	0.16							c0.20	0.07		0.07	
v/c Ratio	0.36	1.35		0.20	1.29			0.89	0.29		0.33	
Uniform Delay, d1	15.9	24.5		30.8	14.5			34.0	29.1		29.4	
Progression Factor	1.00	1.00		1.12	1.24			1.00	1.00		1.00	
Incremental Delay, d2	11.5	165.8		0.1	129.8			31.4	2.1		2.9	
Delay (s)	27.4	190.3		34.5	147.8			65.4	31.2		32.3	
Level of Service	C	F		C	F			E	C		C	
Approach Delay (s)		186.1			143.6			55.5			32.3	
Approach LOS		F			F			E			C	

Intersection Summary			
HCM Average Control Delay	144.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	99.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	1	1	0	1	0
Volume (vph)	0	893	1508	0	172	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		-1%	0%		0%	
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1872	1881		1789	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1872	1881		1789	
Peak-hour factor, PHF	1.00	0.78	0.85	0.93	0.83	0.25
Adj. Flow (vph)	0	1145	1774	0	207	4
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1145	1774	0	211	0
Heavy Vehicles (%)	0%	2%	1%	2%	1%	0%
Turn Type						
Protected Phases		2	6		8	
Permitted Phases						
Actuated Green, G (s)		153.0	153.0		19.0	
Effective Green, g (s)		153.0	153.0		19.0	
Actuated g/C Ratio		0.85	0.85		0.11	
Clearance Time (s)		4.0	4.0		4.0	
Lane Grp Cap (vph)		1591	1599		189	
v/s Ratio Prot		0.61	c0.94		c0.12	
v/s Ratio Perm						
v/c Ratio		0.72	1.11		1.12	
Uniform Delay, d1		5.2	13.5		80.5	
Progression Factor		0.03	0.94		1.00	
Incremental Delay, d2		1.9	55.7		100.2	
Delay (s)		2.0	68.4		180.7	
Level of Service		A	E		F	
Approach Delay (s)		2.0	68.4		180.7	
Approach LOS		A	E		F	

Intersection Summary			
HCM Average Control Delay	51.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations	1	0	0	1	2>	0	0	1	0	0
Volume (vph)	79	0	0	18	1650	34	0	149	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0			4.0		
Lane Util. Factor	1.00			1.00	0.95			1.00		
Frt	1.00			1.00	1.00			0.86		
Flt Protected	0.95			0.95	1.00			1.00		
Satd. Flow (prot)	1805			1805	3563			1627		
Flt Permitted	0.95			0.95	1.00			1.00		
Satd. Flow (perm)	1805			1805	3563			1627		
Peak-hour factor, PHF	0.88	0.90	1.00	0.61	0.83	0.73	1.00	0.67	0.92	0.92
Adj. Flow (vph)	90	0	0	30	1988	47	0	222	0	0
RTOR Reduction (vph)	0	0	0	3	1	0	0	23	0	0
Lane Group Flow (vph)	90	0	0	27	2034	0	0	199	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	1%	2%	2%
Turn Type	Prot			custom				custom		
Protected Phases	8			1	1			8		
Permitted Phases				1				8		
Actuated Green, G (s)	39.0			133.0	133.0			39.0		
Effective Green, g (s)	39.0			133.0	133.0			39.0		
Actuated g/C Ratio	0.22			0.74	0.74			0.22		
Clearance Time (s)	4.0			4.0	4.0			4.0		
Lane Grp Cap (vph)	391			1334	2633			353		
v/s Ratio Prot	0.05			0.01	c0.57			c0.12		
v/s Ratio Perm										
v/c Ratio	0.23			0.02	0.77			0.56		
Uniform Delay, d1	58.1			6.2	14.3			62.9		
Progression Factor	0.98			1.00	1.00			1.00		
Incremental Delay, d2	0.9			0.0	2.3			6.4		
Delay (s)	57.6			6.3	16.6			69.3		
Level of Service	E			A	B			E		
Approach Delay (s)		57.6			16.4		69.3		0.0	
Approach LOS		E			B		E		A	

Intersection Summary			
HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	2>	0	1	1	0	0	0	1
Volume (vph)	0	0	0	0	1874	43	53	129	0	0	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			1%	
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		1.00	1.00				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					3596		1796	1890				1635
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					3596		1796	1890				1635
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	0.73	0.64	0.78	0.74	1.00	1.00	1.00	0.71
Adj. Flow (vph)	0	0	0	0	2567	67	68	174	0	0	0	55
RTOR Reduction (vph)	0	0	0	0	2	0	11	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2632	0	57	174	0	0	0	55
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type							Perm					custom
Protected Phases					1			2				
Permitted Phases							2					2
Actuated Green, G (s)					71.4		10.6	10.6				10.6
Effective Green, g (s)					71.4		10.6	10.6				10.6
Actuated g/C Ratio					0.79		0.12	0.12				0.12
Clearance Time (s)					4.0		4.0	4.0				4.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					2853		212	223				193
v/s Ratio Prot					c0.73			c0.09				
v/s Ratio Perm							0.03					0.03
v/c Ratio					0.92		0.27	0.78				0.28
Uniform Delay, d1					7.2		36.2	38.6				36.2
Progression Factor					0.95		1.00	1.00				1.00
Incremental Delay, d2					6.4		0.7	16.1				0.8
Delay (s)					13.2		36.8	54.6				37.1
Level of Service					B		D	D				D
Approach Delay (s)		0.0			13.2			49.6			37.1	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	0	1	1	0	0	<1>	0	0	<1>	0
Volume (vph)	13	812	1	4	1392	1	27	24	26	30	7	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.94			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1687	1862		1805	1881			1763			1752	
Flt Permitted	0.03	1.00		0.21	1.00			0.98			0.98	
Satd. Flow (perm)	48	1862		397	1881			1763			1752	
Peak-hour factor, PHF	0.81	0.78	0.25	1.00	0.84	0.25	0.59	0.64	0.42	0.72	0.44	0.66
Adj. Flow (vph)	16	1041	4	4	1657	4	46	38	62	42	16	45
RTOR Reduction (vph)	0	0	0	0	0	0	0	15	0	0	15	0
Lane Group Flow (vph)	16	1045	0	4	1661	0	0	131	0	0	88	0
Heavy Vehicles (%)	7%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Split			Split		
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	147.0	147.0		147.0	147.0			11.0			7.0	
Effective Green, g (s)	147.0	147.0		147.0	147.0			11.0			7.0	
Actuated g/C Ratio	0.82	0.82		0.82	0.82			0.06			0.04	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	39	1521		324	1536			108			68	
v/s Ratio Prot		0.56			c0.88			c0.07			c0.05	
v/s Ratio Perm	0.33			0.01								
v/c Ratio	0.41	0.69		0.01	1.08			1.21			1.29	
Uniform Delay, d1	4.5	6.9		3.1	16.5			84.5			86.5	
Progression Factor	1.79	1.61		0.05	0.17			1.00			1.00	
Incremental Delay, d2	2.9	0.2		0.0	38.0			154.6			204.8	
Delay (s)	11.0	11.3		0.1	40.7			239.1			291.3	
Level of Service	B	B		A	D			F			F	
Approach Delay (s)		11.3			40.6			239.1			291.3	
Approach LOS		B			D			F			F	

Intersection Summary			
HCM Average Control Delay	48.6	HCM Level of Service	D
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	43	1557	14	14	48	0	0	41	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			1%			-1%	
Total Lost time (s)					6.0			5.0			5.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.93	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3581			1741			1734	
Flt Permitted					1.00			0.86			1.00	
Satd. Flow (perm)					3581			1511			1734	
Peak-hour factor, PHF	1.00	1.00	1.00	0.68	0.84	0.88	0.44	0.64	1.00	1.00	0.70	0.87
Adj. Flow (vph)	0	0	0	63	1854	16	32	75	0	0	59	63
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	23	0
Lane Group Flow (vph)	0	0	0	0	1932	0	0	107	0	0	99	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	7%	0%	10%	0%	0%	5%	0%
Turn Type				Perm			Perm					
Protected Phases					1			2			2	
Permitted Phases				1			2					
Actuated Green, G (s)					32.8			4.1			4.1	
Effective Green, g (s)					32.8			4.1			4.1	
Actuated g/C Ratio					0.68			0.09			0.09	
Clearance Time (s)					6.0			5.0			5.0	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2452			129			148	
v/s Ratio Prot											0.06	
v/s Ratio Perm					0.54			c0.07				
v/c Ratio					0.79			0.83			0.67	
Uniform Delay, d1					5.2			21.6			21.2	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					1.7			33.6			10.9	
Delay (s)					6.9			55.2			32.2	
Level of Service					A			E			C	
Approach Delay (s)		0.0			6.9			55.2			32.2	
Approach LOS		A			A			E			C	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	47.9	Sum of lost time (s)	11.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	1	1>	0
Volume (vph)	94	95	62	31	114	17	12	200	17	20	274	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.98		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1779			1849		1805	1876		1805	1819	
Flt Permitted		0.83			0.90		0.42	1.00		0.56	1.00	
Satd. Flow (perm)		1511			1689		791	1876		1056	1819	
Peak-hour factor, PHF	0.89	0.83	0.78	0.83	0.87	0.67	0.50	0.88	0.80	0.53	0.91	0.74
Adj. Flow (vph)	106	114	79	37	131	25	24	227	21	38	301	93
RTOR Reduction (vph)	0	14	0	0	6	0	0	4	0	0	13	0
Lane Group Flow (vph)	0	285	0	0	187	0	24	244	0	38	381	0
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2	2		1			1	1	
Actuated Green, G (s)		39.0			39.0		43.0	43.0		43.0	43.0	
Effective Green, g (s)		39.0			39.0		43.0	43.0		43.0	43.0	
Actuated g/C Ratio		0.43			0.43		0.48	0.48		0.48	0.48	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		655			732		378	896		505	869	
v/s Ratio Prot								0.13			c0.21	
v/s Ratio Perm		c0.19			0.11		0.03			0.04		
v/c Ratio		0.43			0.26		0.06	0.27		0.08	0.44	
Uniform Delay, d1		17.8			16.2		12.7	14.1		12.7	15.5	
Progression Factor		1.00			1.00		0.43	0.39		1.00	1.00	
Incremental Delay, d2		2.1			0.8		0.3	0.7		0.3	1.6	
Delay (s)		19.9			17.1		5.8	6.2		13.0	17.1	
Level of Service		B			B		A	A		B	B	
Approach Delay (s)		19.9			17.1			6.2			16.8	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	45	1587	52	28	72	0	0	25	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			-4%	
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.90	
Flt Protected					1.00			0.98			1.00	
Satd. Flow (prot)					3586			1854			1730	
Flt Permitted					1.00			0.84			1.00	
Satd. Flow (perm)					3586			1589			1730	
Peak-hour factor, PHF	1.00	1.00	1.00	0.63	0.86	0.82	0.56	0.94	1.00	1.00	0.86	0.75
Adj. Flow (vph)	0	0	0	71	1845	63	50	77	0	0	29	76
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	35	0
Lane Group Flow (vph)	0	0	0	0	1976	0	0	127	0	0	70	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%
Turn Type				Split			Perm					
Protected Phases				1	1			2			2	
Permitted Phases							2					
Actuated Green, G (s)					68.0			14.0			14.0	
Effective Green, g (s)					68.0			14.0			14.0	
Actuated g/C Ratio					0.76			0.16			0.16	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					2709			247			269	
v/s Ratio Prot					c0.55						0.04	
v/s Ratio Perm								c0.08				
v/c Ratio					0.73			0.51			0.26	
Uniform Delay, d1					6.0			34.9			33.5	
Progression Factor					0.32			0.78			1.00	
Incremental Delay, d2					1.0			7.0			2.4	
Delay (s)					2.9			34.2			35.8	
Level of Service					A			C			D	
Approach Delay (s)		0.0			2.9			34.2			35.8	
Approach LOS		A			A			C			D	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<2>	0	0	0	0	0	1>	0	0	<1	0
Volume (vph)	85	889	36	0	0	0	0	19	12	48	14	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			1%			-1%	
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.94			1.00	
Flt Protected		1.00						1.00			0.96	
Satd. Flow (prot)		3526						1785			1810	
Flt Permitted		1.00						1.00			0.75	
Satd. Flow (perm)		3526						1785			1416	
Peak-hour factor, PHF	0.95	0.79	0.71	1.00	1.00	1.00	1.00	0.56	0.50	0.68	0.70	1.00
Adj. Flow (vph)	89	1125	51	0	0	0	0	34	24	71	20	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	19	0	0	0	0
Lane Group Flow (vph)	0	1262	0	0	0	0	0	39	0	0	91	0
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%
Turn Type	Split									Perm		
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)		64.0						18.0			18.0	
Effective Green, g (s)		64.0						18.0			18.0	
Actuated g/C Ratio		0.71						0.20			0.20	
Clearance Time (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		2507						357			283	
v/s Ratio Prot		c0.36						0.02				
v/s Ratio Perm											c0.06	
v/c Ratio		0.50						0.11			0.32	
Uniform Delay, d1		5.8						29.4			30.8	
Progression Factor		1.28						1.00			0.94	
Incremental Delay, d2		0.5						0.6			2.4	
Delay (s)		8.0						30.1			31.4	
Level of Service		A						C			C	
Approach Delay (s)		8.0			0.0			30.1			31.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Volume (vph)	708	99	216	1283	78	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1599	1752	1881	1787	1583
Flt Permitted	1.00	1.00	0.14	1.00	0.95	1.00
Satd. Flow (perm)	1845	1599	264	1881	1787	1583
Peak-hour factor, PHF	0.72	0.78	0.93	0.78	0.77	0.90
Adj. Flow (vph)	983	127	232	1645	101	258
RTOR Reduction (vph)	0	21	0	0	0	0
Lane Group Flow (vph)	983	106	232	1645	101	258
Heavy Vehicles (%)	3%	1%	3%	1%	1%	2%
Turn Type		Perm	pm+pt			Prot
Protected Phases	4		3	8	2	2
Permitted Phases		4	8			
Actuated Green, G (s)	101.5	101.5	116.0	116.0	23.5	23.5
Effective Green, g (s)	101.5	101.5	116.0	116.0	23.5	23.5
Actuated g/C Ratio	0.68	0.68	0.77	0.77	0.16	0.16
Clearance Time (s)	6.0	6.0	3.6	6.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1248	1082	312	1455	280	248
v/s Ratio Prot	0.53		0.05	c0.87	0.06	c0.16
v/s Ratio Perm		0.07	0.52			
v/c Ratio	0.79	0.10	0.74	1.13	0.36	1.04
Uniform Delay, d1	16.8	8.4	22.2	17.0	56.5	63.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.4	0.0	9.2	68.0	0.8	68.1
Delay (s)	20.2	8.4	31.4	85.0	57.3	131.3
Level of Service	C	A	C	F	E	F
Approach Delay (s)	18.8			78.4	110.5	
Approach LOS	B			E	F	

Intersection Summary			
HCM Average Control Delay	62.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	5	750	135	31	386	2	110	16	46	8	9	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			0%	
Total Lost time (s)		6.5			6.5			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			1.00			0.97			0.98	
Flt Protected		1.00			1.00			0.97			0.98	
Satd. Flow (prot)		1867			1862			1781			1812	
Flt Permitted		0.99			0.89			0.80			0.79	
Satd. Flow (perm)		1854			1666			1458			1466	
Peak-hour factor, PHF	0.42	0.74	0.91	0.83	0.64	0.50	0.89	0.40	0.94	0.40	0.56	0.50
Adj. Flow (vph)	12	1014	148	37	603	4	124	40	49	20	16	8
RTOR Reduction (vph)	0	6	0	0	0	0	0	12	0	0	7	0
Lane Group Flow (vph)	0	1168	0	0	644	0	0	201	0	0	37	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	50%	0%	0%	2%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		64.5			64.5			13.0			13.0	
Effective Green, g (s)		64.5			64.5			13.0			13.0	
Actuated g/C Ratio		0.72			0.72			0.14			0.14	
Clearance Time (s)		6.5			6.5			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1329			1194			211			212	
v/s Ratio Prot												
v/s Ratio Perm		c0.63			0.39			c0.14			0.03	
v/c Ratio		0.88			0.54			0.95			0.18	
Uniform Delay, d1		9.8			5.9			38.2			33.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		8.5			1.7			48.3			0.4	
Delay (s)		18.3			7.6			86.5			34.2	
Level of Service		B			A			F			C	
Approach Delay (s)		18.3			7.6			86.5			34.2	
Approach LOS		B			A			F			C	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	11	762	5	2	406	2	8	1	3	3	2	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.97			0.93	
Flt Protected		1.00			1.00			0.97			0.99	
Satd. Flow (prot)		1887			1879			1795			1750	
Flt Permitted		0.99			0.99			1.00			1.00	
Satd. Flow (perm)		1876			1858			1849			1772	
Peak-hour factor, PHF	0.92	0.74	0.62	0.25	0.66	0.50	0.67	0.25	0.75	0.38	0.25	0.69
Adj. Flow (vph)	12	1030	8	8	615	4	12	4	4	8	8	16
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	15	0
Lane Group Flow (vph)	0	1050	0	0	627	0	0	16	0	0	17	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		50.2			50.2			2.4			2.4	
Effective Green, g (s)		50.2			50.2			2.4			2.4	
Actuated g/C Ratio		0.80			0.80			0.04			0.04	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1504			1490			71			68	
v/s Ratio Prot												
v/s Ratio Perm		c0.56			0.34			0.01			c0.01	
v/c Ratio		0.70			0.42			0.23			0.24	
Uniform Delay, d1		2.8			1.9			29.2			29.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.7			0.9			1.6			1.9	
Delay (s)		5.5			2.7			30.8			31.1	
Level of Service		A			A			C			C	
Approach Delay (s)		5.5			2.7			30.8			31.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	62.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1	1	1	1>	0	1	1	1
Volume (vph)	87	644	25	21	1243	209	53	9	22	194	4	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	16	16
Grade (%)		1%			-1%			1%			2%	
Total Lost time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1796	1828		1814	1891	1623	1796	1700		1787	2132	1812
Flt Permitted	0.04	1.00		0.25	1.00	1.00	0.75	1.00		0.73	1.00	1.00
Satd. Flow (perm)	73	1828		482	1891	1623	1422	1700		1364	2132	1812
Peak-hour factor, PHF	0.71	0.71	0.75	0.71	0.83	0.95	0.69	0.56	0.66	0.80	0.50	0.69
Adj. Flow (vph)	123	907	33	30	1498	220	77	16	33	242	8	190
RTOR Reduction (vph)	0	1	0	0	0	23	0	28	0	0	0	95
Lane Group Flow (vph)	123	939	0	30	1498	197	77	21	0	242	8	95
Heavy Vehicles (%)	0%	3%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt			Perm		Perm	Perm			Perm		Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	108.7	108.7		100.7	100.7	100.7	20.8	20.8		20.8	20.8	20.8
Effective Green, g (s)	108.7	108.7		100.7	100.7	100.7	20.8	20.8		20.8	20.8	20.8
Actuated g/C Ratio	0.78	0.78		0.72	0.72	0.72	0.15	0.15		0.15	0.15	0.15
Clearance Time (s)	3.5	5.3		5.3	5.3	5.3	5.2	5.2		5.2	5.2	5.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	112	1419		347	1360	1167	211	253		203	317	269
v/s Ratio Prot	c0.04	0.51			0.79			0.01			0.00	
v/s Ratio Perm	c0.82			0.06		0.12	0.05			c0.18		0.05
v/c Ratio	1.10	0.66		0.09	1.10	0.17	0.36	0.08		1.19	0.03	0.35
Uniform Delay, d1	50.6	7.2		5.9	19.6	6.3	53.7	51.4		59.6	50.9	53.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	113.9	1.2		0.1	57.1	0.1	1.1	0.1		124.6	0.0	0.8
Delay (s)	164.5	8.4		6.0	76.8	6.3	54.7	51.5		184.2	51.0	54.4
Level of Service	F	A		A	E	A	D	D		F	D	D
Approach Delay (s)		26.4			66.7			53.5			125.7	
Approach LOS		C			E			D			F	

Intersection Summary			
HCM Average Control Delay	61.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.7
Intersection Capacity Utilization	98.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	0	1>	0	0	<1>	0	0	<1	1
Volume (vph)	29	1189	16	6	809	227	12	3	6	151	4	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			0%			-1%	
Total Lost time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	1.00			0.97			0.95			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.96	1.00
Satd. Flow (prot)	1796	1869			1825			1774			1774	1399
Flt Permitted	0.20	1.00			0.47			0.98			0.96	1.00
Satd. Flow (perm)	376	1869			865			1774			1774	1399
Peak-hour factor, PHF	0.70	0.71	0.80	0.38	0.73	0.87	0.75	0.25	0.38	0.85	0.33	0.62
Adj. Flow (vph)	41	1675	20	16	1108	261	16	12	16	178	12	24
RTOR Reduction (vph)	0	0	0	0	6	0	0	15	0	0	0	10
Lane Group Flow (vph)	41	1695	0	0	1379	0	0	29	0	0	190	14
Heavy Vehicles (%)	0%	1%	0%	12%	2%	1%	0%	0%	0%	3%	0%	16%
Turn Type	Perm			Perm			Split			Split		Perm
Protected Phases		2			6		8	8		4	4	
Permitted Phases	2	2		6								4
Actuated Green, G (s)	107.9	107.9			107.9			3.2			11.0	11.0
Effective Green, g (s)	107.9	107.9			107.9			3.2			11.0	11.0
Actuated g/C Ratio	0.77	0.77			0.77			0.02			0.08	0.08
Clearance Time (s)	6.0	6.0			6.0			5.2			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	291	1448			670			41			140	110
v/s Ratio Prot		0.91						c0.02			c0.11	
v/s Ratio Perm	0.11				c1.59							0.01
v/c Ratio	0.14	1.17			2.06			0.72			1.36	0.13
Uniform Delay, d1	4.0	15.7			15.7			67.6			64.2	59.7
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.2	84.4			481.5			45.2			200.0	0.5
Delay (s)	4.2	100.1			497.2			112.8			264.1	60.2
Level of Service	A	F			F			F			F	E
Approach Delay (s)		97.9			497.2			112.8			241.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	270.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.96		
Actuated Cycle Length (s)	139.3	Sum of lost time (s)	17.2
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	1	1	1	1
Volume (vph)	1134	198	125	802	271	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-2%	0%	
Total Lost time (s)	7.0		7.0	7.0	7.0	7.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1859		1823	1900	1805	1615
Flt Permitted	1.00		0.04	1.00	0.95	1.00
Satd. Flow (perm)	1859		70	1900	1805	1615
Peak-hour factor, PHF	0.69	0.92	0.86	0.71	0.91	0.76
Adj. Flow (vph)	1643	215	145	1130	298	107
RTOR Reduction (vph)	3	0	0	0	0	0
Lane Group Flow (vph)	1855	0	145	1130	298	107
Heavy Vehicles (%)	0%	1%	0%	1%	0%	0%
Turn Type			pm+pt			pt+ov
Protected Phases	4		3	8	2	2 3
Permitted Phases			8			
Actuated Green, G (s)	103.0		119.0	119.0	17.0	33.0
Effective Green, g (s)	103.0		119.0	119.0	17.0	33.0
Actuated g/C Ratio	0.69		0.79	0.79	0.11	0.22
Clearance Time (s)	7.0		7.0	7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1277		161	1507	205	355
v/s Ratio Prot	c1.00		0.05	c0.59	c0.17	0.07
v/s Ratio Perm			0.66			
v/c Ratio	1.45		0.90	0.75	1.45	0.30
Uniform Delay, d1	23.5		56.9	7.9	66.5	48.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	208.1		43.3	2.1	229.2	0.5
Delay (s)	231.6		100.1	10.0	295.7	49.4
Level of Service	F		F	B	F	D
Approach Delay (s)	231.6			20.3	230.6	
Approach LOS	F			C	F	

Intersection Summary			
HCM Average Control Delay	155.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.43		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	111.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

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Appendix M
Mitigation Measures and Capacity Analysis

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Appendix M

This appendix contains the following with regard to the construction scenario with mitigation measures in place:

P age

- LOS/delay summary table comparing FNB and Construction phase peak M-3 M -4
- Discussion relating to the 15 Minute volume adjustment for the PM peak M-5
- Stick diagrams depicting volumes used as inputs for analysis M-6
- Signal Warrant Analysis M-14
- SYNCHRO HCM Signalized Reports M-19
- Mitigated Intersection Condition Diagrams M-65
- Bell Bend Site Plan M -78
- Driveway Plan M- 79
- Left Turn bay storage length calculations M-82
- Left turn bay warrant analysis M-97
- Left turn conflict factors and phasing computations M-105

Left turn warrants are provided for all approaches in the study area which satisfy both of the following conditions:

a) The approach experiences an increase in advancing or opposing volume due to construction activity
b) A left turn bay in not currently provided or is added/removed as a result of mitigation

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Table M-2 – LOS and Average Delay (sec/veh): Construction with Mitigation

Int No	PennDOT	County	Municipality	Intersection	Mitigation Measure[1]	AM LOS(delay[3])		PM LOS(delay[3])	
						FNB[2]	Const[2]	FNB	Const
1	3-0	Columbia	South Center	S.R. 11 and S.R. 2028	Add Thru Lane on RT 11 NB	B (14.9)	B (10.8)	C (23.1)	C (27.5)
2			Briar Creek	S.R. 11 and Briar Creek Plaza Driveways	Add Thru Lane on RT 11 SB	A (6.6)	**C (21.5)**	C (20.9)	B (16.2)
3			Berwick	S.R. 11 (Front Street) and Eaton Street	Temporary Traffic Signal		B (11.9)		C (30.4)
4				S.R. 11 (Front Street) and Poplar Street	Restriping on Poplar Street	C (27)	D (36.8)	D (40)	B (17.2)
5				S.R. 11 (Front Street) and Orchard Street		A (6.7)	A (8)	B (17.7)	**D (49.1)**
6				S.R. 11 (Front Street) and S.R. 93 (Orange Street)		A (5.9)	B (11.5)	B (11)	**D (45.7)**
7				S.R. 11 (Second Street) and LaSalle Street		B (11.8)	A (8.3)	B (14.1)	B (12.6)
8				S.R. 11 (Second Street) and Oak Street		A (6.2)	A (7.4)	A (8)	A (7.7)
9				S.R. 11 (Second Street) and Mulberry Street		A (4.8)	A (3.4)	A (5.7)	A (6)
10				S.R. 11 (Front Street) and Mulberry Street		A (6.1)	B (12.1)	A (8)	A (8.4)
11				S.R. 1025 (Market Street) and Third Street		A (9.6)	A (8.8)	B (12.8)	B (12.8)
12				S.R. 11 (Second Street) and Market Street	Restriping on Market Street	A (9.7)	A (6.3)	B (11.7)	B (14)
13				S.R. 11 (Front Street) and Market Street	Restrict street parking on Front Street	B (14.2)	B (16.3)	B (15.3)	A (8.8)
14				S.R. 11 (Second Street) and Pine Street		A (6)	A (7.6)	A (8.6)	B (15.9)
15	4-0	Luzerne	Nescopeck	S.R. 93 (Third Street) and S.R. 339 (Broad Street)		B (14.1)	C (22.6)	B (12.3)	B (16.4)
16				S.R. 93 (Third Street) and Dewey Street		A (4.6)	A (4.6)	A (3.7)	A (4.3)
17			Salem Township	S.R. 11 and Bell Bend Site Entrance	Proposed Site Access Road		C (20.2)		B (19.6)
18				S.R. 11 and SSES Site Entrance	Temporary Traffic Signal Add Thru Lane on SB RT 11		**D (35.2)**		**D (35.2)**
19			Shickshinny	S.R. 11 (S. Main Street) and S.R. 239	Add Thru Lane on SB RT 11 Add Thru Lane on NB RT 11 Add Right turn bay on RT 239 onto RT 11	A (7.8)	A (5.6)	A (9.4)	B (10.8)
20				S.R. 11 (Main Street) and S.R. 239 (Union Street)	Restrict Parking on RT 11 SB	B (14.7)	B (14.9)	B (15.5)	B (18)
21			Nanticoke	S.R. 11 and S.R. 29 (Mill Street)	Modify intersection to provide un-interrupted flow for NB RT 11	C (23.6)	C (29.5)	C (26.3)	C (21.5)
22				S.R. 11 and County Bridge	Add Thru Lane on RT 11 NB Make RT 11 NB 2 lanes to intersection with RT 29	D (49.5)	B (14.1)	C (24.2)	C (31.1)
23				S.R. 11 (E. Poplar Street) and S.R. 29	Temporary Traffic Signal Restrict left turn from SB RT 11 onto NB RT 29		C (23.3)		B (16.8)

Note 1: Mitigation measures shown are in addition to signal retiming.

Note 2: "FNB" corresponds to the Future Year No-Build Condition and "Const" corresponds to Future Year Construction with proposed mitigation in place.

Note 3: "Delay" is average vehicle delay in (seconds/vehicle)

Note 4: Highlighted cells **B (18.3)** indicate cases in which the proposed mitigation does not fully address the impact

Note 5: Highlighted cells Add Thru Lane on SB RT 11 indicate locations that involve no significant infrastructure changes

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15 Minute Volume Adjustment for HCM Analysis During Construction Phase PM Peak

Two considerations in determining the applicable peak hour factor were considered:

1) Based upon available data, the PM peak hour is estimated to occur at 3:45pm to 4:45pm;

2) At the same time, there is a rigid boundary within this period, namely the start of a new shift at 4:00pm. The time preceding this is characterized by arrival flow (for the next shift), on certain approaches; the time following this is characterized by departure flow (from the earlier shift), on different approaches1.

To model this realistically, the flow was modeled by sequential 15-min periods, in both Synchro and SIMTraffic. This is consistent with the strong HCM guidance to benefit from local data when available. Refer to Table M-3, which shows the sequence of 15-minute flows and the very substantial shift from inbound (i.e. NB, SB) to outbound (i.e. EB) at the shift boundary. Table M-4 shows the busiest 15-min from each pattern expressed in terms of hourly flow rates.

Table M-3 – Non-uniform Arrivals and Departures at Bell Bend Site Entrance During PM Peak Hour and Associated PHF Adjustment

ACTUAL 15 MINUTE VOLUMES

	NB			SB			EB			
	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Total
3:45:00 PM	140	0	68	0	127	183	10	26	0	554
4:00:00 PM	1	0	49	0	0	155	351	390	0	947
4:15:00 PM	1	0	81	0	0	93	264	294	0	734
4:30:00 PM	1	0	76	0	0	116	177	199	0	569
Hrly. Total	141	0	275	0	128	548	802	910	0	2804

PHF ADJUSTED

	NB			SB			EB			Total
	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	
Hrly. Total	558	0	326	0	508	732	1404	1559	0	5088

Table M-4 – Analysis Time Period Volume Calculation for Static HCM Assignment During Construction Phase PM Peak Hour

ANALYSIS TIME PERIOD (4:00:-4:15PM Volume X4)

	NB			SB			EB			Total
	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	
3:45:00 PM	558	0	273	0	508	732	39	105	0	2216
4:00:00 PM	3	0	197	0	1	621	1404	1559	0	3786
4:15:00 PM	3	0	326	0	1	374	1056	1178	0	2938
4:30:00 PM	3	0	304	0	1	464	708	797	0	2278

[1] This is analogous to arrival/departures at a Church parking lot on a Sunday morning, when there are closely spaced consecutive services. Attention focuses on arrivals, and then switches quickly to focus on departures (from the earlier service), taking into account pass-by traffic in both cases.

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This method was applied to all of the calculations for the PM construction phase peak throughout this appendix and is reflected in the LOS/delay calculations regarding the construction phase peak with mitigation presented throughout this report.

Additionally, this peak hour was analyzed using SimTraffic with the four individual 15 minute volumes for each approach. This traffic visualization in SimTraffic was used to aid in the analysis of traffic operations with mitigation, and in the development of appropriate signal timings.

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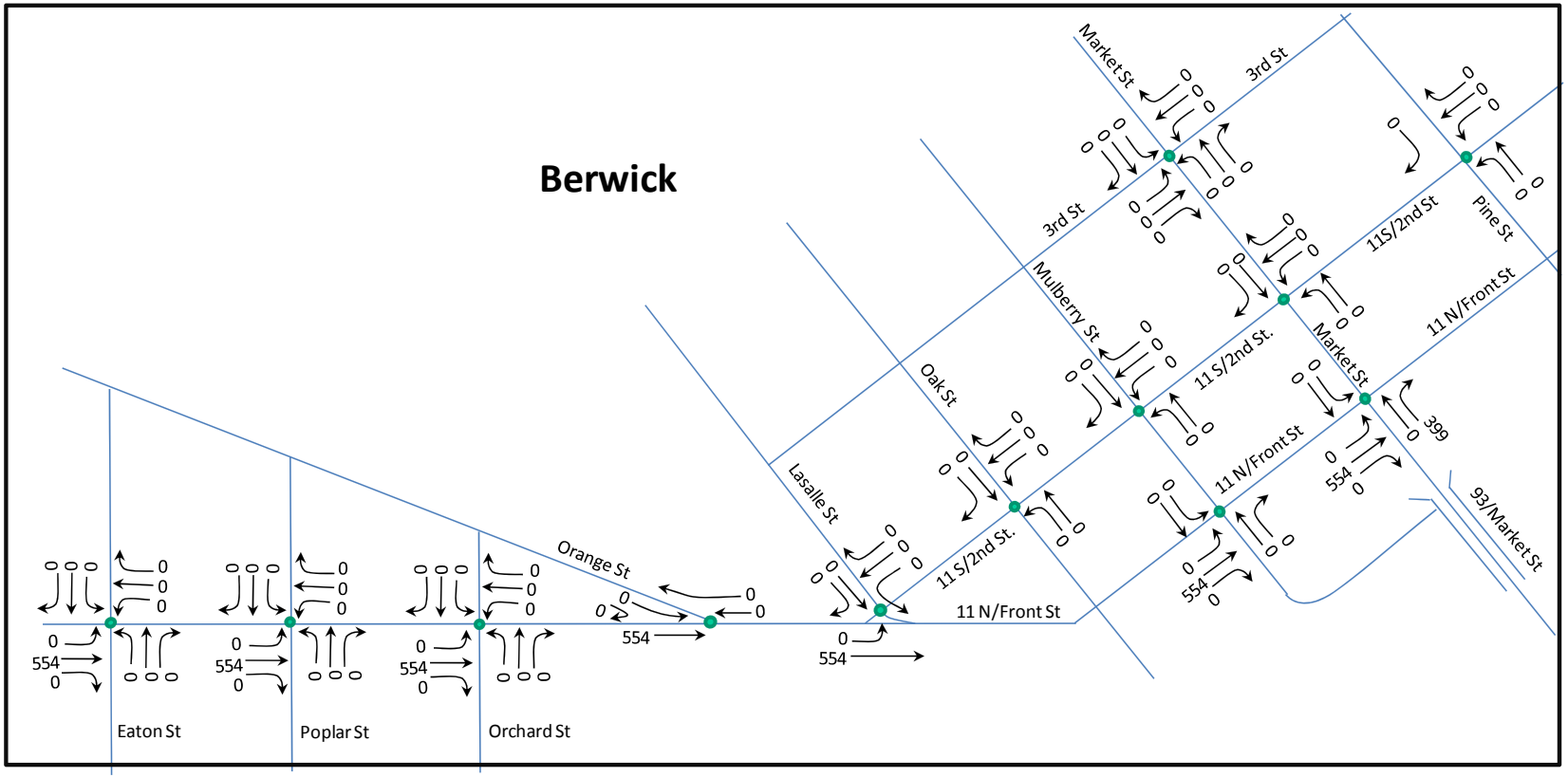

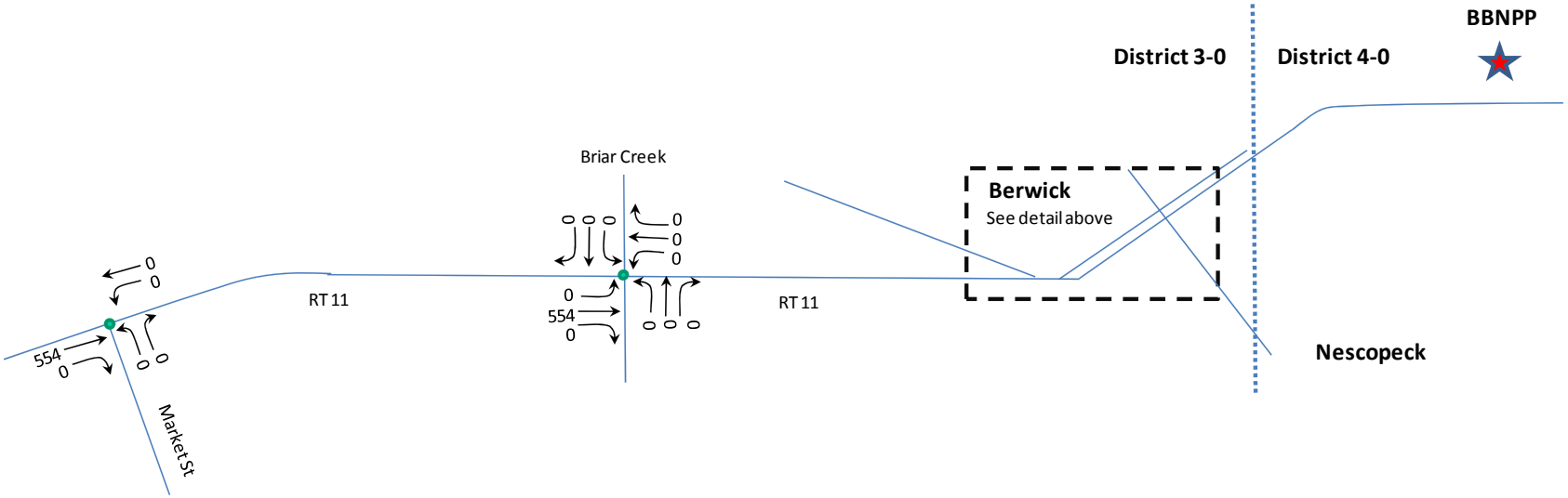

Figure M-1 - Construction Phase AM Peak (6:30-7:30) Additional Construction Traffic Only

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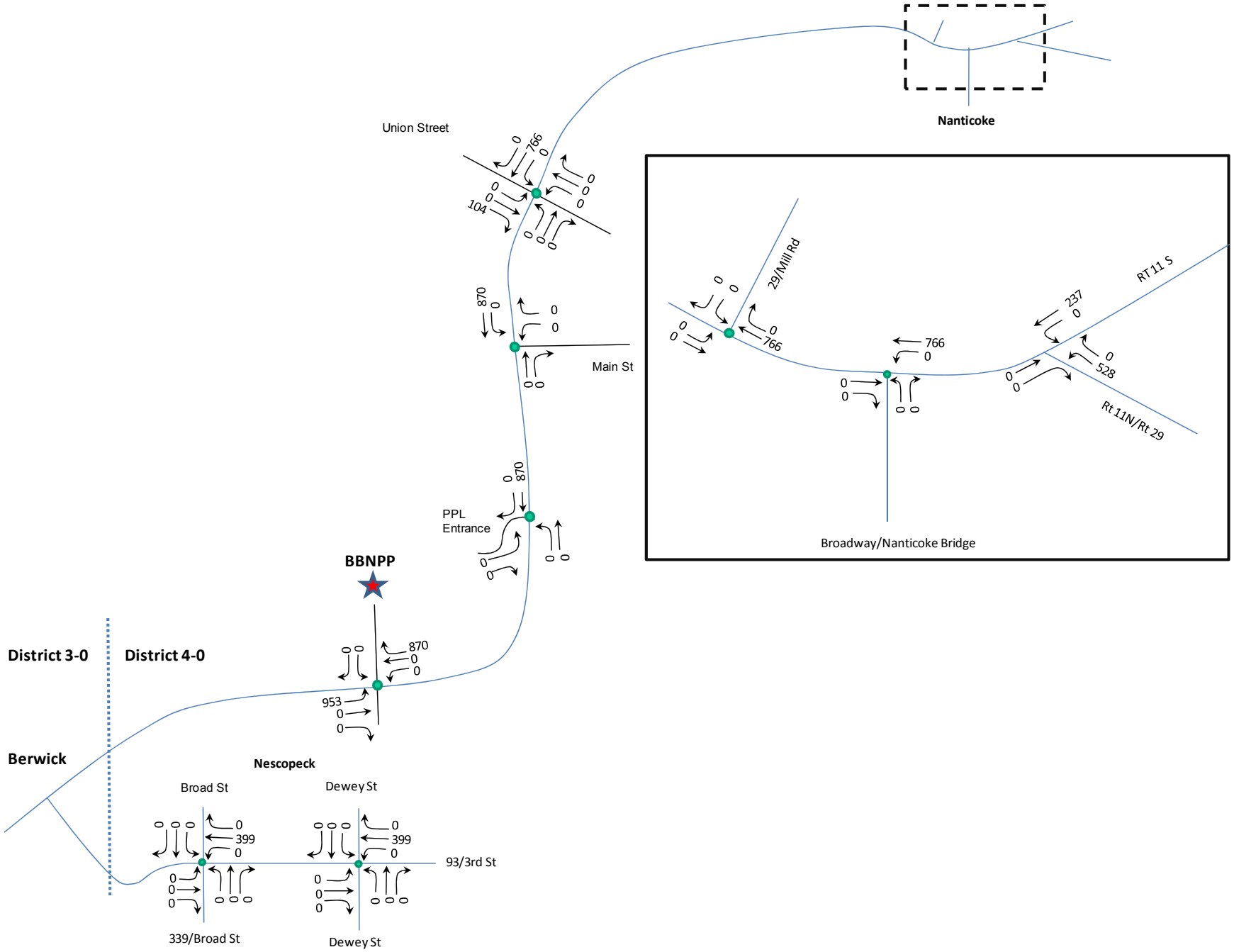

Figure M-1 - Construction Phase AM Peak (6:30-7:30) Additional Construction Traffic Only

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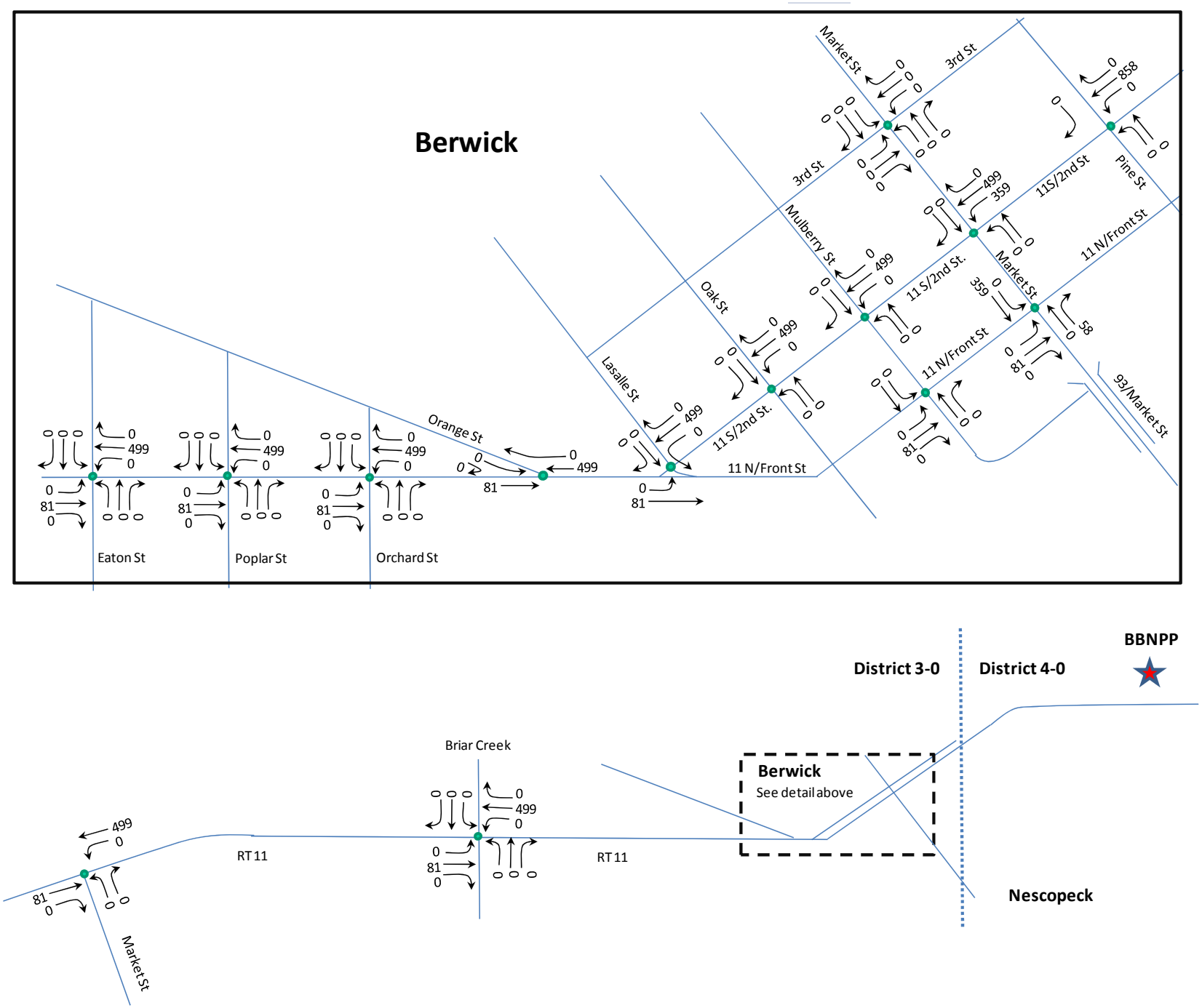

Figure M-2 - Construction Phase PM Peak (3:45-4:45) Additional Construction Traffic Only

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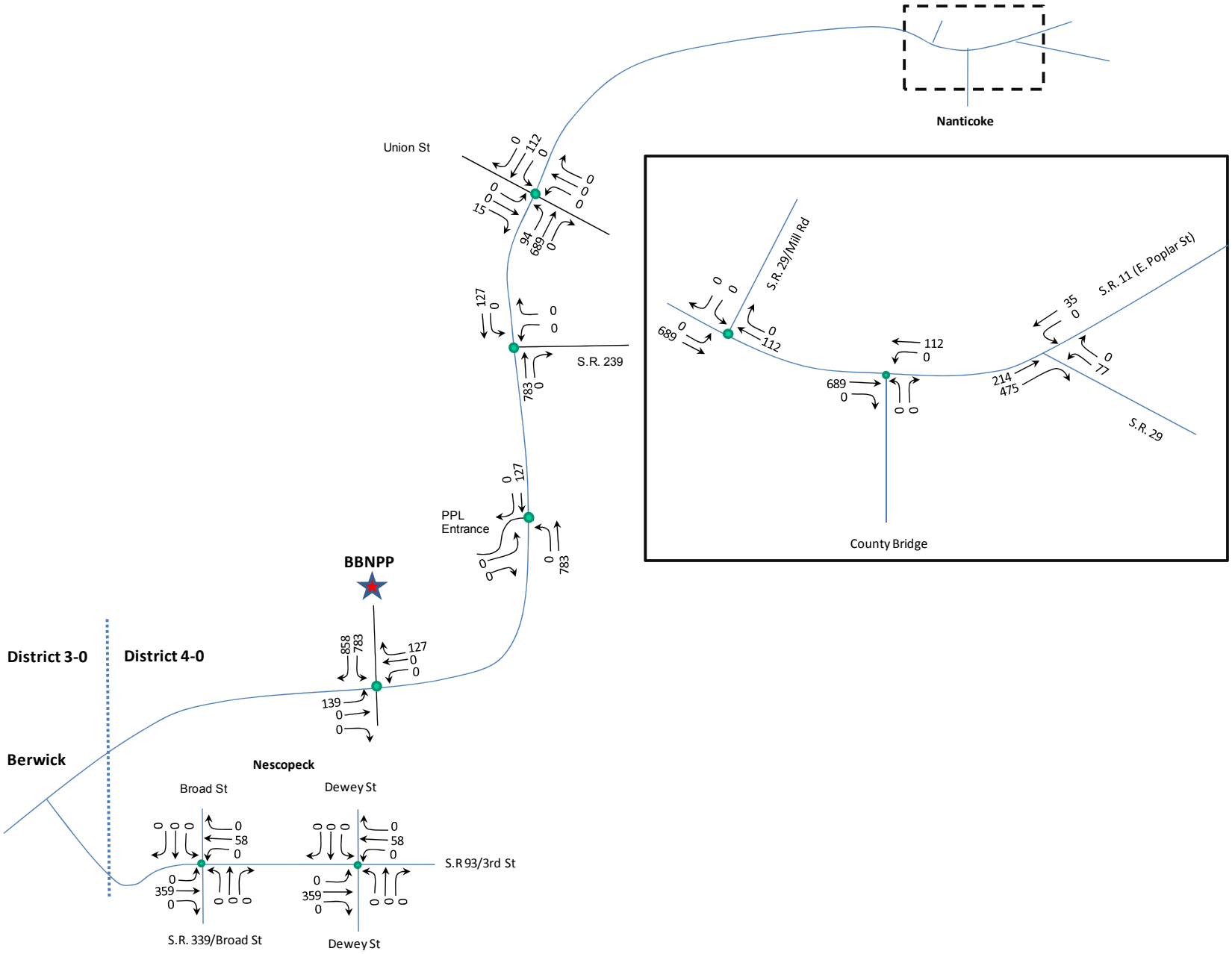

Figure M-2 - Construction Phase PM Peak (3:45-4:45) Additional Construction Traffic Only

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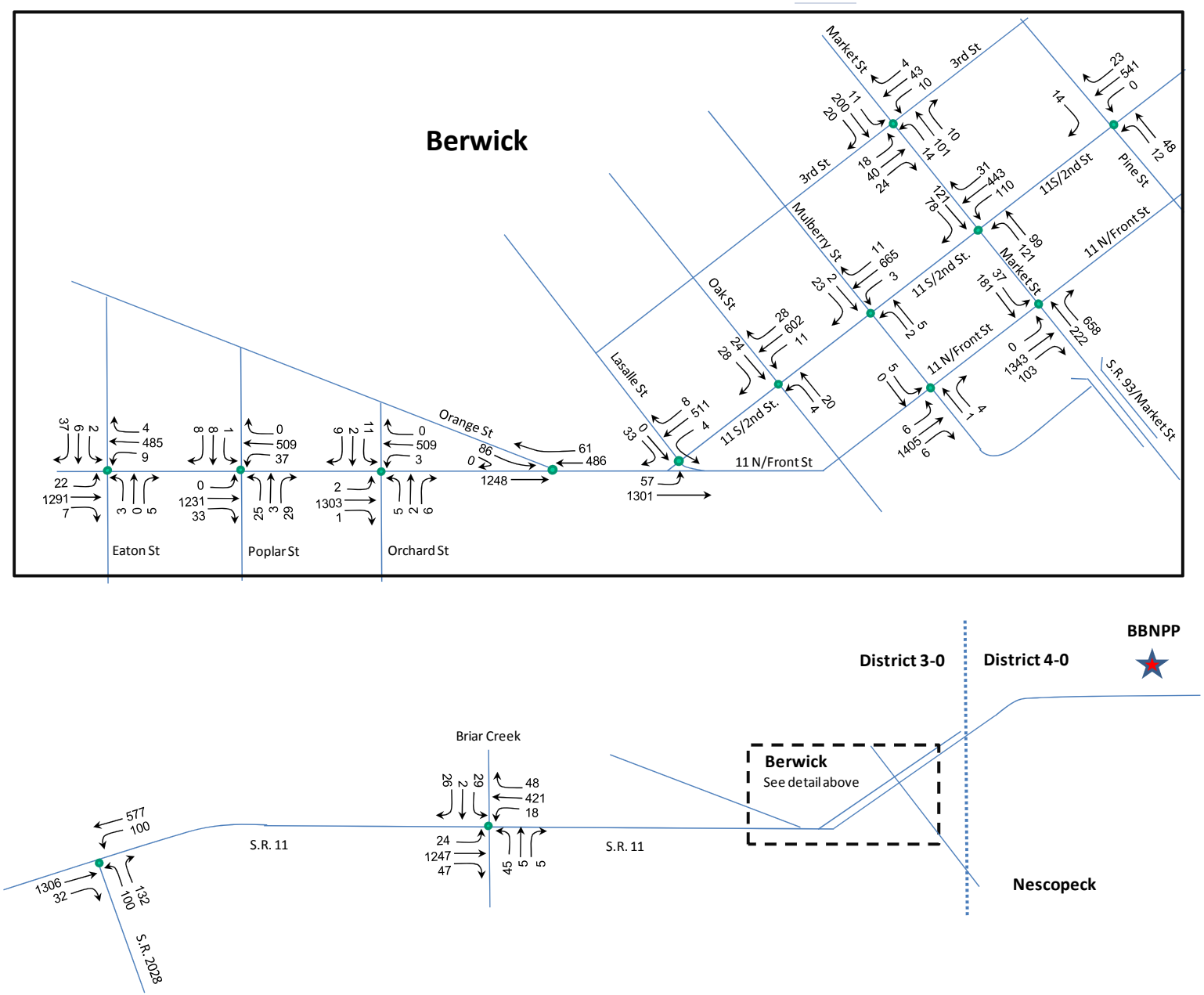

Figure M-3 - Construction Phase AM Peak Hour Volumes (6:30-7:30)

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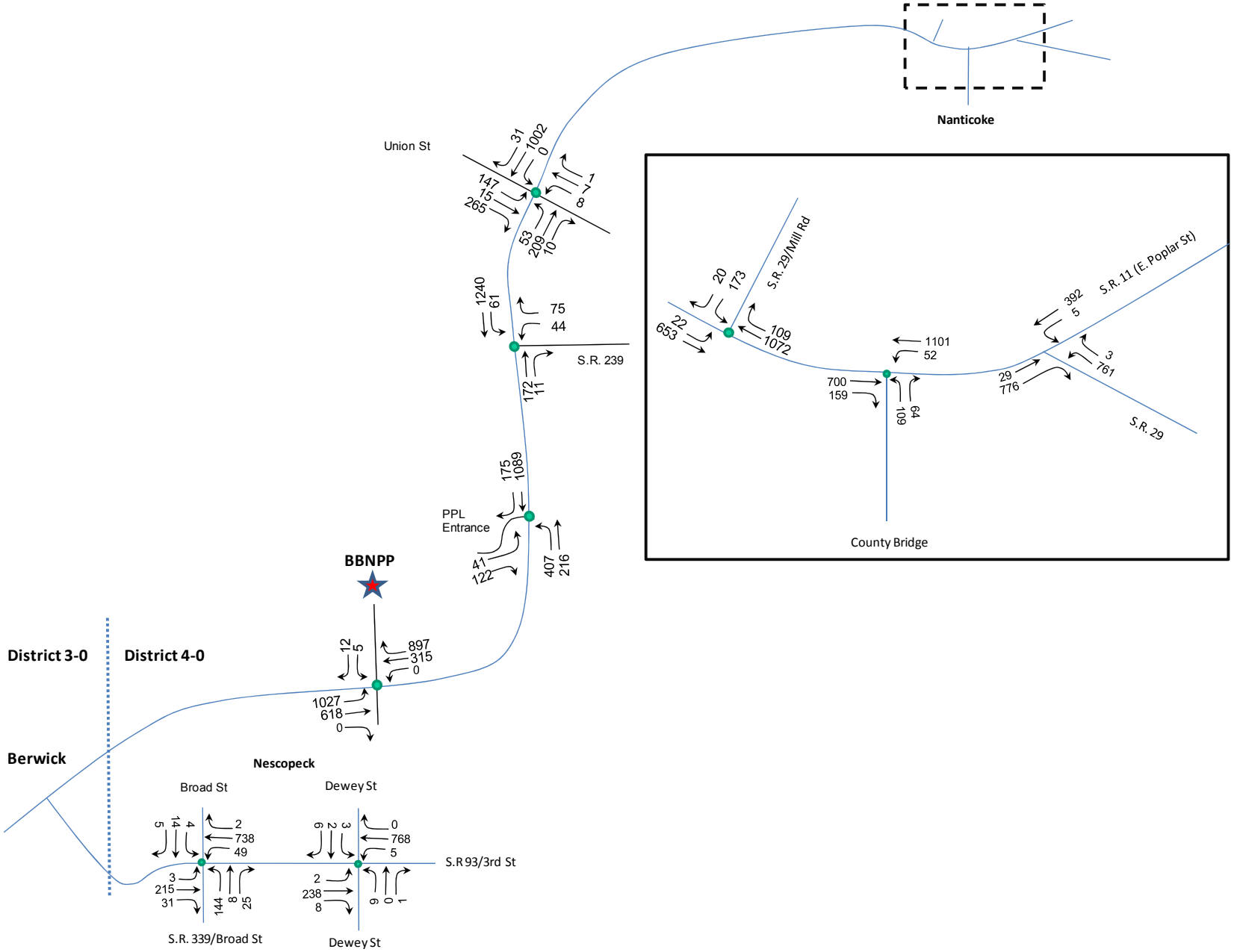

Figure M-3 - Construction Phase AM Peak Hour Volumes (6:30-7:30)

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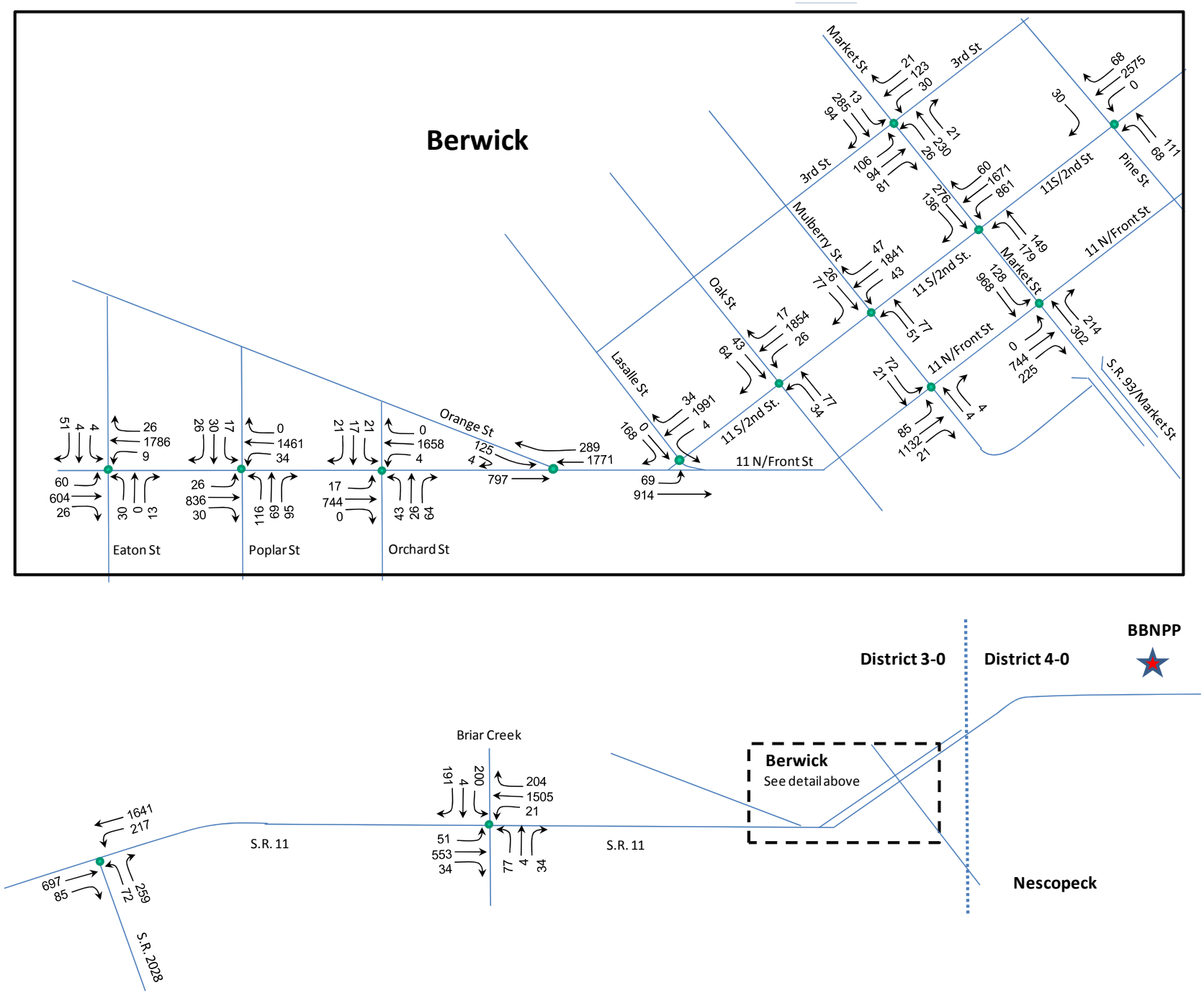

Figure M-4 - Construction Phase PM Peak Hour Volumes (3:45-4:45)

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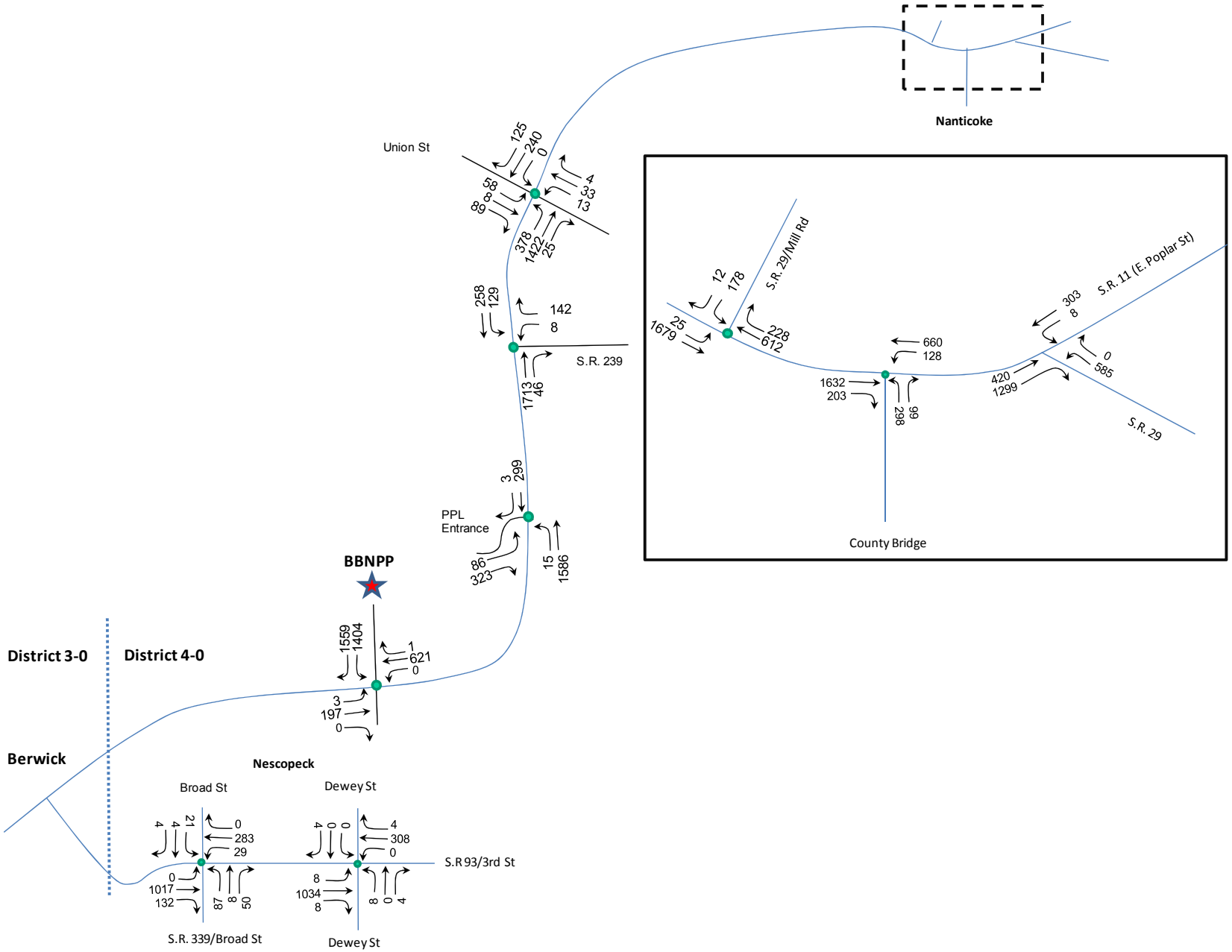

Figure M-4 - Construction Phase PM Peak Hour Volumes (3:45-4:45)

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MUTCD TRAFFIC SIGNAL WARRANT ANALYSIS AT FOUR PRESENTLY UNSIGNALIZED INTERSECTIONS

This appendix contains the analysis of four intersections,

- Bell Bend Site Entrance & S.R. 11 (Front Street)
- Eaton Street & S.R. 11 (Front Street)
- SSES Site Entrance & S.R. 11 (Front Street)
- S.R. 29 & S.R. 11 (East Poplar Street)

The data used in support of this analysis, in particular the hourly traffic volumes for the existing, future no-build, future build and construction future cases is detailed in the text of this report. For all intersections, with the exception of Eaton Street & S.R. 11 (Front Street) Warrant Two (Four Hour) or Warrant Three (Peak Hour) are satisfied.

Warrant One is not considered given that eight hours of traffic volumes are not available. Warrants Four through Eight are not considered for all intersection due to lack of data or the fact that they are not applicable.

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Bell Bend Site Entrance & S.R. 11 (Front Street)

Refer to Figure M-5 which shows the traffic volumes for the existing, future build and construction cases. No data exist for the future no-build case as this intersection does not exist for that case. The 70% Factor is applied at this intersection given that the speed limit is greater than 40 MPH. Base d upon the available data, no w arrants are satisfied for the existing and future build cases. In the construction case, only Warrant 3 is trigge red. Give n the si gnificantly high single peak hour volume during the construction case, a detailed engineering study to assess the installation of a temporary traffic signal during construction is justified.

FUTURE BUILD		
	S.R. 11	BB Entrance
	Total of Two Directions	Greater of Two Minor Approaches
5:00 AM - 6:00 AM	226	0
6:00 AM - 7:00 AM	1297	23
7:00 AM - 8:00 AM	731	8
3:00 PM - 4:00 PM	964	142
4:00 PM - 5:00 PM	750	45
5:00 PM - 6:00 PM	658	17
Warrant 2 (Four Hour)		
Not Satisfied		
Warrant 3A (Peak Hour)		
Not Satisfied		

CONSTRUCTION		
	S.R. 11	BB Entrance
	Total of Two Directions	Greater of Two Minor Approaches
5:00 AM - 6:00 AM	228	2
6:00 AM - 7:00 AM	2205	25
7:00 AM - 8:00 AM	1636	116
3:00 PM - 4:00 PM	2022	144
4:00 PM - 5:00 PM	744	1870
5:00 PM - 6:00 PM	653	19
Warrant 2 (Four Hour)		
Not Satisfied		
Warrant 3A (Peak Hour)		
Satisfied, 70% Factor, 1 Hour		

Figure M-5: Bell Bend Site Entrance & S.R. 11 (Front Street)

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Eaton Street & S.R. 11 (Front Street)

Refer to Figure M-6 which shows the traffic volumes for the existing, future no-build, future build and construction cases. Based upon the available data, no warrants are satisfied at this intersection for all cases. Given the extensive delays encountered on Eaton Street during construction, a detailed engineering study to asses a traffic signal installation is justified.

EXISTING		
	S.R. 11	Eaton Street
	Total of Two Directions	Greater of Two Minor Approaches
5:00 AM - 6:00 AM	0	0
6:00 AM - 7:00 AM	722	30
7:00 AM - 8:00 AM	932	44
3:00 PM - 4:00 PM	1474	44
4:00 PM - 5:00 PM	1327	54
5:00 PM - 6:00 PM	1382	65
Warrant 2 (Four Hour)		
Not Satisfied		
Warrant 3A (Peak Hour)		
Not Satisfied		

FUTURE NO-BUILD		
	S.R. 11	Eaton Street
	Total of Two Directions	Greater of Two Minor Approaches
5:00 AM - 6:00 AM	144	0
6:00 AM - 7:00 AM	1249	33
7:00 AM - 8:00 AM	1120	48
3:00 PM - 4:00 PM	1965	48
4:00 PM - 5:00 PM	1569	59
5:00 PM - 6:00 PM	1577	71
Warrant 2 (Four Hour)		
Not Satisfied		
Warrant 3A (Peak Hour)		
Not Satisfied		

FUTURE BUILD		
	S.R. 11	Eaton Street
	Total of Two Directions	Greater of Two Minor Approaches
5:00 AM - 6:00 AM	181	0
6:00 AM - 7:00 AM	1367	33
7:00 AM - 8:00 AM	1146	48
3:00 PM - 4:00 PM	2057	48
4:00 PM - 5:00 PM	1599	59
5:00 PM - 6:00 PM	1594	71
Warrant 2 (Four Hour)		
Not Satisfied		
Warrant 3A (Peak Hour)		
Not Satisfied		

CONSTRUCTION		
	S.R. 11	Eaton Street
	Total of Two Directions	Greater of Two Minor Approaches
5:00 AM - 6:00 AM	183	0
6:00 AM - 7:00 AM	1622	32
7:00 AM - 8:00 AM	1426	47
3:00 PM - 4:00 PM	2332	47
4:00 PM - 5:00 PM	2110	57
5:00 PM - 6:00 PM	1549	69
Warrant 2 (Four Hour)		
Not Satisfied		
Warrant 3A (Peak Hour)		
Not Satisfied		

Figure M-6: Eaton Street & S.R. 11 (Front Street)

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SSES Site Entrance & S.R. 11 (Front Street)

Refer to Figure M-7 which shows the traffic volumes for the existing, future no-build, future build and construction cases. The 70% Factor is applied at this intersection given that the speed limit is gre ater than 4 0 MPH. B ased upon the available data, Warrant Two is satisfied at this intersection for all cases, as is Warrant Three during the Construction case. Therefore, a detailed engineering study to a sses a traffic signal installation is justified.

EXISTING		
	S.R. 11	SSES Entrance
	Total of Two Directions	Greater of Two Minor Approaches
5:00 AM - 6:00 AM	0	0
6:00 AM - 7:00 AM	655	111
7:00 AM - 8:00 AM	554	46
3:00 PM - 4:00 PM	436	163
4:00 PM - 5:00 PM	498	139
5:00 PM - 6:00 PM	491	175
Warrant 2 (Four Hour)		
Satisfied, 70% Factor, 4 Hours		
Warrant 3A (Peak Hour)		
Not Satisfied		

FUTURE NO-BUILD		
	S.R. 11	SSES Entrance
	Total of Two Directions	Greater of Two Minor Approaches
5:00 AM - 6:00 AM	0	0
6:00 AM - 7:00 AM	666	111
7:00 AM - 8:00 AM	573	46
3:00 PM - 4:00 PM	452	163
4:00 PM - 5:00 PM	517	139
5:00 PM - 6:00 PM	507	175
Warrant 2 (Four Hour)		
Satisfied, 70% Factor, 4 Hours		
Warrant 3A (Peak Hour)		
Not Satisfied		

FUTURE BUILD		
	S.R. 11	SSES Entrance
	Total of Two Directions	Greater of Two Minor Approaches
5:00 AM - 6:00 AM	0	0
6:00 AM - 7:00 AM	716	111
7:00 AM - 8:00 AM	584	46
3:00 PM - 4:00 PM	491	163
4:00 PM - 5:00 PM	529	139
5:00 PM - 6:00 PM	514	175
Warrant 2 (Four Hour)		
Satisfied, 70% Factor, 4 Hours		
Warrant 3A (Peak Hour)		
Not Satisfied		

CONSTRUCTION		
	S.R. 11	SSES Entrance
	Total of Two Directions	Greater of Two Minor Approaches
5:00 AM - 6:00 AM	0	0
6:00 AM - 7:00 AM	1784	199
7:00 AM - 8:00 AM	1190	78
3:00 PM - 4:00 PM	1001	712
4:00 PM - 5:00 PM	1404	312
5:00 PM - 6:00 PM	547	240
Warrant 2 (Four Hour)		
Satisfied, 70% Factor, 5 Hours		
Warrant 3A (Peak Hour)		
Satisfied, 70% Factor, 5 Hours		

Figure M-7: SSES Site Entrance & S.R. 11 (Front Street)

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S.R. 29 & S.R. 11 (East Poplar Street)

Refer to Figure M-8 which shows the traffic volumes for the existing, future no-build, future build and construction cases. The 70% Factor is applied at this intersection given that the speed limit is greater than 40 MPH. Based upon the available data, Warrant One, Warrant Two and Warrant Three are satisfied at this intersection for all cases. As such, a detailed engineering study to asses a traffic signal installation is justified.

EXISTING		
	S.R. 11	S.R. 29
	Total of Two Directions	Greater of Two Minor Approaches
6:00 AM - 7:00 AM	752	137
7:00 AM - 8:00 AM	992	211
8:00 AM - 9:00 AM	786	135
2:00 PM - 3:00 PM	0	0
3:00 PM - 4:00 PM	734	460
4:00 PM - 5:00 PM	749	508
5:00 PM - 6:00 PM	733	495
Warrant 2 (Four Hour)		
Satisfied, 70% Factor, 5 Hours		
Warrant 3A (Peak Hour)		
Satisfied, 70% Factor, 5 Hours		

FUTURE NO-BUILD		
	S.R. 11	S.R. 29
	Total of Two Directions	Greater of Two Minor Approaches
6:00 AM - 7:00 AM	835	212
7:00 AM - 8:00 AM	1054	235
8:00 AM - 9:00 AM	833	149
2:00 PM - 3:00 PM	0	0
3:00 PM - 4:00 PM	858	484
4:00 PM - 5:00 PM	815	535
5:00 PM - 6:00 PM	782	524
Warrant 2 (Four Hour)		
Satisfied, 70% Factor, 6 Hours		
Warrant 3A (Peak Hour)		
Satisfied, 70% Factor, 5 Hours		

FUTURE BUILD		
	S.R. 11	S.R. 29
	Total of Two Directions	Greater of Two Minor Approaches
6:00 AM - 7:00 AM	847	230
7:00 AM - 8:00 AM	1057	239
8:00 AM - 9:00 AM	834	150
3:00 PM - 4:00 PM	880	484
4:00 PM - 5:00 PM	822	535
5:00 PM - 6:00 PM	786	525
Warrant 2 (Four Hour)		
Satisfied, 70% Factor, 6 Hours		
Warrant 3A (Peak Hour)		
Satisfied, 70% Factor, 5 Hours		

CONSTRUCTION		
	S.R. 11	S.R. 29
	Total of Two Directions	Greater of Two Minor Approaches
6:00 AM - 7:00 AM	953	492
7:00 AM - 8:00 AM	1204	500
8:00 AM - 9:00 AM	841	149
3:00 PM - 4:00 PM	1007	785
4:00 PM - 5:00 PM	1576	527
5:00 PM - 6:00 PM	774	517
Warrant 2 (Four Hour)		
Satisfied, 70% Factor, 6 Hours		
Warrant 3A (Peak Hour)		
Satisfied, 70% Factor, 5 Hours		

Figure M-8: S.R. 29 & S.R. 11 (East Poplar Street)

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	2>	0	1	1	0	0	0	0	1	2	1
Volume (vph)	0	121	77	121	98	0	0	0	0	110	442	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5		2.0	3.5					4.0	4.0	4.0
Lane Util. Factor		0.95		1.00	1.00					1.00	0.95	1.00
Frt		0.94		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		3260		1787	1881					1752	3505	1615
Flt Permitted		1.00		0.53	1.00					0.95	1.00	1.00
Satd. Flow (perm)		3260		990	1881					1752	3505	1615
Peak-hour factor, PHF	1.00	0.86	0.91	0.81	0.86	1.00	1.00	1.00	1.00	0.83	0.84	0.72
Adj. Flow (vph)	0	141	85	149	114	0	0	0	0	133	526	42
RTOR Reduction (vph)	0	67	0	0	0	0	0	0	0	0	0	23
Lane Group Flow (vph)	0	159	0	149	114	0	0	0	0	133	526	19
Heavy Vehicles (%)	0%	6%	2%	1%	1%	0%	0%	0%	0%	3%	3%	0%
Turn Type				pm+pt						Split		Prot
Protected Phases		4		3	8					2	2	2
Permitted Phases				8								
Actuated Green, G (s)		11.5		24.5	24.5					26.0	26.0	26.0
Effective Green, g (s)		12.5		25.5	25.5					27.0	27.0	27.0
Actuated g/C Ratio		0.21		0.42	0.42					0.45	0.45	0.45
Clearance Time (s)		4.5		3.0	4.5					5.0	5.0	5.0
Lane Grp Cap (vph)		679		567	799					788	1577	727
v/s Ratio Prot		c0.05		c0.05	0.06					0.08	c0.15	0.01
v/s Ratio Perm				0.06								
v/c Ratio		0.23		0.26	0.14					0.17	0.33	0.03
Uniform Delay, d1		19.8		10.9	10.6					9.8	10.7	9.2
Progression Factor		0.60		0.12	0.18					0.48	0.52	0.28
Incremental Delay, d2		0.8		1.1	0.4					0.5	0.6	0.1
Delay (s)		12.6		2.4	2.3					5.2	6.2	2.6
Level of Service		B		A	A					A	A	A
Approach Delay (s)		12.6			2.3			0.0			5.8	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	3>	0	0	0	0	0	1	1	0	<2	0
Volume (vph)	0	1343	103	0	0	0	0	222	657	37	181	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			1%	
Total Lost time (s)		4.0						4.0	4.0		4.0	
Lane Util. Factor		0.91						1.00	1.00		0.95	
Frt		0.99						1.00	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.99	
Satd. Flow (prot)		5079						1891	1623		3432	
Flt Permitted		1.00						1.00	1.00		0.88	
Satd. Flow (perm)		5079						1891	1623		3046	
Peak-hour factor, PHF	1.00	0.86	0.84	1.00	1.00	1.00	1.00	0.84	0.88	0.80	0.76	1.00
Adj. Flow (vph)	0	1562	123	0	0	0	0	264	747	46	238	0
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	2	0	0	0
Lane Group Flow (vph)	0	1670	0	0	0	0	0	264	746	0	284	0
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%	0%	1%	0%	8%	3%	0%
Turn Type									Perm	Perm		
Protected Phases		4						2			6	
Permitted Phases									2	6		
Actuated Green, G (s)		21.0						29.0	29.0		29.0	
Effective Green, g (s)		22.0						30.0	30.0		30.0	
Actuated g/C Ratio		0.37						0.50	0.50		0.50	
Clearance Time (s)		5.0						5.0	5.0		5.0	
Lane Grp Cap (vph)		1862						946	812		1523	
v/s Ratio Prot		c0.33						0.14				
v/s Ratio Perm									c0.46		0.09	
v/c Ratio		0.90						0.28	0.92		0.19	
Uniform Delay, d1		17.9						8.7	13.9		8.3	
Progression Factor		0.41						1.00	1.00		1.17	
Incremental Delay, d2		4.7						0.7	17.0		0.3	
Delay (s)		12.0						9.5	30.9		10.0	
Level of Service		B						A	C		A	
Approach Delay (s)		12.0			0.0			25.3			10.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	1	1	2>	0	0	<2
Volume (vph)	43	75	172	11	61	1239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Total Lost time (s)	3.8	5.2	4.0			4.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	0.99			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	1524	3406			3615
Flt Permitted	0.95	1.00	1.00			0.93
Satd. Flow (perm)	1770	1524	3406			3375
Peak-hour factor, PHF	0.55	0.90	0.90	0.55	0.87	0.86
Adj. Flow (vph)	78	83	191	20	70	1441
RTOR Reduction (vph)	0	62	9	0	0	0
Lane Group Flow (vph)	78	21	202	0	0	1511
Heavy Vehicles (%)	2%	6%	4%	9%	3%	0%
Turn Type		pt+ov			pm+pt	
Protected Phases	4	4 5	6		5	2
Permitted Phases					2	
Actuated Green, G (s)	5.5	13.3	27.3			35.3
Effective Green, g (s)	6.9	13.3	28.7			36.7
Actuated g/C Ratio	0.13	0.26	0.56			0.71
Clearance Time (s)	5.2		5.4			5.4
Vehicle Extension (s)	5.0		5.0			5.0
Lane Grp Cap (vph)	238	394	1902			2428
v/s Ratio Prot	c0.04	0.01	0.06			c0.05
v/s Ratio Perm						c0.40
v/c Ratio	0.33	0.05	0.11			0.62
Uniform Delay, d1	20.1	14.3	5.3			3.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.7	0.1	0.1			0.5
Delay (s)	21.8	14.4	5.4			4.3
Level of Service	C	B	A			A
Approach Delay (s)	18.0		5.4			4.3
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	51.4	Sum of lost time (s)	7.8
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1	1	0	<1>	0	1	1>	0	0	<2>	0
Volume (vph)	146	14	265	8	7	1	53	208	10	0	1001	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			1%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			0.95	
Frt		1.00	0.85		0.98		1.00	0.99			0.99	
Flt Protected		0.96	1.00		0.98		0.95	1.00			1.00	
Satd. Flow (prot)		1776	1607		1824		1796	1818			3531	
Flt Permitted		0.72	1.00		0.85		0.15	1.00			1.00	
Satd. Flow (perm)		1345	1607		1580		279	1818			3531	
Peak-hour factor, PHF	0.88	0.88	0.77	0.67	0.58	0.25	0.91	0.87	0.50	1.00	0.92	0.75
Adj. Flow (vph)	166	16	344	12	12	4	58	239	20	0	1088	41
RTOR Reduction (vph)	0	0	142	0	3	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	182	202	0	25	0	58	259	0	0	1125	0
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	3%	0%	0%	1%	6%
Turn Type	Perm		Perm	Perm			pm+pt			Perm		
Protected Phases		4			8		1	6			2	
Permitted Phases	4		4	8			6			2		
Actuated Green, G (s)		12.0	12.0		12.0		37.2	37.2			29.9	
Effective Green, g (s)		12.0	12.0		12.0		37.2	37.2			29.9	
Actuated g/C Ratio		0.20	0.20		0.20		0.63	0.63			0.51	
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		273	326		320		234	1142			1783	
v/s Ratio Prot							0.01	c0.14			c0.32	
v/s Ratio Perm		c0.14	0.13		0.02		0.15					
v/c Ratio		0.67	0.62		0.08		0.25	0.23			0.63	
Uniform Delay, d1		21.8	21.5		19.1		6.2	4.8			10.6	
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2		6.0	3.5		0.1		0.6	0.5			1.7	
Delay (s)		27.8	25.0		19.2		6.8	5.2			12.4	
Level of Service		C	C		B		A	A			B	
Approach Delay (s)		26.0			19.2			5.5			12.4	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	14.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	1	1	1	1	2>	0
Volume (vph)	41	122	407	216	1089	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			1%	0%	
Total Lost time (s)	4.5	4.5	3.5	5.5	5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1796	1818	3489	
Flt Permitted	0.95	1.00	0.09	1.00	1.00	
Satd. Flow (perm)	1805	1615	178	1818	3489	
Peak-hour factor, PHF	0.54	0.59	0.60	0.67	0.99	0.55
Adj. Flow (vph)	76	207	678	322	1100	318
RTOR Reduction (vph)	0	192	0	0	30	0
Lane Group Flow (vph)	76	15	678	322	1388	0
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%
Turn Type		Perm	pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	6.5	6.5	73.3	73.3	39.1	
Effective Green, g (s)	6.5	6.5	73.3	73.3	39.1	
Actuated g/C Ratio	0.07	0.07	0.82	0.82	0.44	
Clearance Time (s)	4.5	4.5	3.5	5.5	5.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	131	117	698	1484	1519	
v/s Ratio Prot	c0.04		c0.33	0.18	0.40	
v/s Ratio Perm		0.01	c0.46			
v/c Ratio	0.58	0.13	0.97	0.22	0.91	
Uniform Delay, d1	40.3	39.0	24.6	1.8	23.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.4	0.5	26.9	0.1	10.0	
Delay (s)	46.7	39.5	51.6	1.9	33.8	
Level of Service	D	D	D	A	C	
Approach Delay (s)	41.4			35.6	33.8	
Approach LOS	D			D	C	

Intersection Summary			
HCM Average Control Delay	35.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	89.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	1	1>	0	0	<1>	0
Volume (vph)	0	1230	33	36	508	0	24	3	29	1	7	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		3.0	5.0		4.0	4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00		1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00		0.97	1.00			1.00	
Frt		1.00		1.00	1.00		1.00	0.87			0.94	
Flt Protected		1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1873		1671	1863		1684	1388			1775	
Flt Permitted		1.00		0.95	1.00		1.00	1.00			0.96	
Satd. Flow (perm)		1873		1671	1863		1773	1388			1711	
Peak-hour factor, PHF	1.00	0.78	0.97	0.57	0.89	1.00	0.64	0.38	0.56	0.25	0.35	0.35
Adj. Flow (vph)	0	1577	34	63	571	0	38	8	52	4	20	20
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	19	0
Lane Group Flow (vph)	0	1610	0	63	571	0	38	60	0	0	25	0
Confl. Peds. (#/hr)							3					
Heavy Vehicles (%)	0%	1%	6%	8%	2%	0%	4%	0%	22%	0%	0%	0%
Turn Type	Perm			Prot			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2						8			4		
Actuated Green, G (s)		99.0		5.0	107.0		4.0	4.0			4.0	
Effective Green, g (s)		99.0		5.0	107.0		4.0	4.0			4.0	
Actuated g/C Ratio		0.82		0.04	0.89		0.03	0.03			0.03	
Clearance Time (s)		5.0		3.0	5.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1545		70	1661		59	46			57	
v/s Ratio Prot		c0.86		c0.04	0.31			c0.04				
v/s Ratio Perm							0.02				0.01	
v/c Ratio		1.04		0.90	0.34		0.64	1.30			0.43	
Uniform Delay, d1		10.5		57.3	1.0		57.3	58.0			56.9	
Progression Factor		0.57		1.11	0.19		1.00	1.00			1.00	
Incremental Delay, d2		28.5		71.1	0.5		21.6	234.8			5.2	
Delay (s)		34.5		134.8	0.7		78.9	292.8			62.1	
Level of Service		C		F	A		E	F			E	
Approach Delay (s)		34.5			14.1			209.8			62.1	
Approach LOS		C			B			F			E	

Intersection Summary			
HCM Average Control Delay	36.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	1	1	0	1	0
Volume (vph)	0	1247	486	0	86	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		-1%	0%		0%	
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1872	1845		1805	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1872	1845		1805	
Peak-hour factor, PHF	1.00	0.82	0.85	0.93	0.71	1.00
Adj. Flow (vph)	0	1521	572	0	121	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1521	572	0	121	0
Heavy Vehicles (%)	0%	2%	3%	2%	0%	0%
Turn Type						
Protected Phases		2	6		8	
Permitted Phases						
Actuated Green, G (s)		103.0	103.0		9.0	
Effective Green, g (s)		103.0	103.0		9.0	
Actuated g/C Ratio		0.86	0.86		0.08	
Clearance Time (s)		4.0	4.0		4.0	
Lane Grp Cap (vph)		1607	1584		135	
v/s Ratio Prot		c0.81	0.31		c0.07	
v/s Ratio Perm						
v/c Ratio		0.95	0.36		0.90	
Uniform Delay, d1		6.4	1.7		55.0	
Progression Factor		0.15	1.00		1.00	
Incremental Delay, d2		6.3	0.6		53.6	
Delay (s)		7.2	2.4		108.7	
Level of Service		A	A		F	
Approach Delay (s)		7.2	2.4		108.7	
Approach LOS		A	A		F	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations	1	0	0	1	2>	0	0	1	0	0
Volume (vph)	57	0	0	4	510	7	0	33	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0			4.0		
Lane Util. Factor	1.00			1.00	0.95			1.00		
Frt	1.00			1.00	1.00			0.86		
Flt Protected	0.95			0.95	1.00			1.00		
Satd. Flow (prot)	1805			1805	3493			1644		
Flt Permitted	0.95			0.95	1.00			1.00		
Satd. Flow (perm)	1805			1805	3493			1644		
Peak-hour factor, PHF	0.66	0.90	1.00	0.33	0.90	0.44	1.00	0.70	0.92	0.92
Adj. Flow (vph)	86	0	0	12	567	16	0	47	0	0
RTOR Reduction (vph)	0	0	0	5	3	0	0	34	0	0
Lane Group Flow (vph)	86	0	0	7	580	0	0	13	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	2%
Turn Type	Prot			Split				Over		
Protected Phases	8			1	1			8		
Permitted Phases										
Actuated Green, G (s)	17.0			35.0	35.0			17.0		
Effective Green, g (s)	17.0			35.0	35.0			17.0		
Actuated g/C Ratio	0.28			0.58	0.58			0.28		
Clearance Time (s)	4.0			4.0	4.0			4.0		
Lane Grp Cap (vph)	511			1053	2038			466		
v/s Ratio Prot	c0.05			0.00	c0.17			0.01		
v/s Ratio Perm										
v/c Ratio	0.17			0.01	0.28			0.03		
Uniform Delay, d1	16.2			5.2	6.2			15.5		
Progression Factor	1.00			1.00	1.00			1.00		
Incremental Delay, d2	0.3			0.0	0.4			0.1		
Delay (s)	16.5			5.2	6.6			15.6		
Level of Service	B			A	A			B		
Approach Delay (s)		16.5			6.6		15.6		0.0	
Approach LOS		B			A		B		A	

Intersection Summary			
HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	24.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	2	1	0	1	2>	0	0	<1>	0	2	0	2
Volume (vph)	1026	618	0	0	314	896	0	0	0	4	0	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			2%			0%			0%	
Total Lost time (s)	5.5	5.5			5.5					4.5		4.5
Lane Util. Factor	0.97	1.00			0.95					0.97		0.88
Frt	1.00	1.00			0.89					1.00		0.85
Flt Protected	0.95	1.00			1.00					0.95		1.00
Satd. Flow (prot)	3467	1881			3198					3019		2656
Flt Permitted	0.95	1.00			1.00					0.95		1.00
Satd. Flow (perm)	3467	1881			3198					3019		2656
Peak-hour factor, PHF	0.95	0.72	0.92	0.92	0.81	0.98	0.92	0.92	0.92	0.72	0.92	0.70
Adj. Flow (vph)	1080	858	0	0	388	914	0	0	0	6	0	17
RTOR Reduction (vph)	0	0	0	0	154	0	0	0	0	0	0	0
Lane Group Flow (vph)	1080	858	0	0	1148	0	0	0	0	6	0	17
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	2%	2%	2%	16%	2%	7%
Turn Type	Prot			Perm			Split			Prot		custom
Protected Phases	6	1			5		7	7		8		8 6
Permitted Phases				5								
Actuated Green, G (s)	25.9	61.8			30.4					0.9		31.3
Effective Green, g (s)	25.9	61.8			30.4					0.9		31.3
Actuated g/C Ratio	0.36	0.85			0.42					0.01		0.43
Clearance Time (s)	5.5	5.5			5.5					4.5		
Vehicle Extension (s)	3.0	3.0			3.0					3.0		
Lane Grp Cap (vph)	1235	1599			1337					37		1144
v/s Ratio Prot	c0.31	0.46			c0.36					c0.00		0.01
v/s Ratio Perm												
v/c Ratio	0.87	0.54			1.08dr					0.16		0.01
Uniform Delay, d1	21.9	1.5			19.2					35.5		11.9
Progression Factor	1.00	1.00			1.00					1.00		1.00
Incremental Delay, d2	7.1	0.3			5.7					2.1		0.0
Delay (s)	29.0	1.9			24.9					37.6		11.9
Level of Service	C	A			C					D		B
Approach Delay (s)		17.0			24.9			0.0			18.6	
Approach LOS		B			C			A			B	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	72.7	Sum of lost time (s)	15.5
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	2>	0	1	1	0	0	1>	0
Volume (vph)	0	0	0	0	541	23	11	47	0	0	0	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			1%	
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					0.95		1.00	1.00			1.00	
Frt					0.99		1.00	1.00			0.86	
Flt Protected					1.00		0.95	1.00			1.00	
Satd. Flow (prot)					3543		1796	1890			1635	
Flt Permitted					1.00		0.74	1.00			1.00	
Satd. Flow (perm)					3543		1407	1890			1635	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	0.85	0.55	0.92	0.70	1.00	1.00	1.00	0.65
Adj. Flow (vph)	0	0	0	0	636	42	12	67	0	0	0	20
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	15	0
Lane Group Flow (vph)	0	0	0	0	670	0	12	67	0	0	5	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type							Perm					
Protected Phases					8			2			6	
Permitted Phases							2					
Actuated Green, G (s)					36.0		16.0	16.0			16.0	
Effective Green, g (s)					36.0		16.0	16.0			16.0	
Actuated g/C Ratio					0.60		0.27	0.27			0.27	
Clearance Time (s)					4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)					2126		375	504			436	
v/s Ratio Prot					c0.19			c0.04			0.00	
v/s Ratio Perm							0.01					
v/c Ratio					0.32		0.03	0.13			0.01	
Uniform Delay, d1					5.9		16.3	16.7			16.2	
Progression Factor					0.98		1.00	1.00			1.00	
Incremental Delay, d2					0.4		0.2	0.5			0.1	
Delay (s)					6.2		16.4	17.3			16.2	
Level of Service					A		B	B			B	
Approach Delay (s)		0.0			6.2			17.1			16.2	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	29.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	0	<1>	0	0	<1>	0
Volume (vph)	2	1302	1	3	508	0	5	2	6	10	2	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.94			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1805	1880		1805	1845			1765			1765	
Flt Permitted	0.42	1.00		0.04	1.00			0.99			0.97	
Satd. Flow (perm)	790	1880		75	1845			1765			1765	
Peak-hour factor, PHF	0.50	0.87	0.25	0.38	0.84	1.00	0.62	0.25	0.50	0.50	0.50	0.67
Adj. Flow (vph)	4	1497	4	8	605	0	8	8	12	20	4	12
RTOR Reduction (vph)	0	0	0	0	0	0	0	12	0	0	12	0
Lane Group Flow (vph)	4	1501	0	8	605	0	0	16	0	0	24	0
Heavy Vehicles (%)	0%	1%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Split			Split		
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	101.0	101.0		101.0	101.0			1.6			2.4	
Effective Green, g (s)	101.0	101.0		101.0	101.0			1.6			2.4	
Actuated g/C Ratio	0.84	0.84		0.84	0.84			0.01			0.02	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	665	1582		63	1553			24			35	
v/s Ratio Prot		c0.80			0.33			c0.01			c0.01	
v/s Ratio Perm	0.01			0.11								
v/c Ratio	0.01	0.95		0.13	0.39			0.67			0.69	
Uniform Delay, d1	1.5	7.5		1.7	2.2			58.9			58.4	
Progression Factor	0.18	0.61		0.31	0.47			1.00			1.00	
Incremental Delay, d2	0.0	1.8		3.9	0.7			55.3			45.6	
Delay (s)	0.3	6.3		4.5	1.8			114.2			104.1	
Level of Service	A	A		A	A			F			F	
Approach Delay (s)		6.3			1.8			114.2			104.1	
Approach LOS		A			A			F			F	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	10	602	27	4	20	0	0	24	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			1%			-1%	
Total Lost time (s)					6.0			5.0			5.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					0.99			1.00			0.93	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3495			1734			1656	
Flt Permitted					1.00			0.92			1.00	
Satd. Flow (perm)					3495			1619			1656	
Peak-hour factor, PHF	1.00	1.00	1.00	0.50	0.86	0.59	0.50	0.68	1.00	1.00	0.64	0.72
Adj. Flow (vph)	0	0	0	20	700	46	8	29	0	0	38	38
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	0	0	30	0
Lane Group Flow (vph)	0	0	0	0	755	0	0	37	0	0	46	0
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	10%	0%	0%	4%	11%
Turn Type				Perm			Perm					
Protected Phases					1			2			2	
Permitted Phases				1			2					
Actuated Green, G (s)					21.0			8.0			8.0	
Effective Green, g (s)					21.0			8.0			8.0	
Actuated g/C Ratio					0.52			0.20			0.20	
Clearance Time (s)					6.0			5.0			5.0	
Lane Grp Cap (vph)					1835			324			331	
v/s Ratio Prot											c0.03	
v/s Ratio Perm					0.22			0.02				
v/c Ratio					0.41			0.11			0.14	
Uniform Delay, d1					5.8			13.1			13.2	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.7			0.7			0.9	
Delay (s)					6.4			13.8			14.0	
Level of Service					A			B			B	
Approach Delay (s)		0.0			6.4			13.8			14.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	7.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	1	1>	0
Volume (vph)	18	40	24	9	42	4	13	100	9	10	199	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.95			0.99		1.00	0.99		1.00	0.98	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1788			1815		1805	1876		1805	1817	
Flt Permitted		0.95			0.95		0.57	1.00		0.67	1.00	
Satd. Flow (perm)		1710			1736		1092	1876		1266	1817	
Peak-hour factor, PHF	0.71	0.68	0.57	0.56	0.77	0.50	0.65	0.77	0.75	0.50	0.84	0.59
Adj. Flow (vph)	25	59	42	16	55	8	20	130	12	20	237	34
RTOR Reduction (vph)	0	28	0	0	5	0	0	6	0	0	8	0
Lane Group Flow (vph)	0	98	0	0	74	0	20	136	0	20	263	0
Heavy Vehicles (%)	0%	0%	0%	11%	0%	0%	0%	0%	0%	0%	3%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		20.0			20.0		32.0	32.0		32.0	32.0	
Effective Green, g (s)		20.0			20.0		32.0	32.0		32.0	32.0	
Actuated g/C Ratio		0.33			0.33		0.53	0.53		0.53	0.53	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		570			579		582	1001		675	969	
v/s Ratio Prot								0.07			c0.14	
v/s Ratio Perm		c0.06			0.04		0.02			0.02		
v/c Ratio		0.17			0.13		0.03	0.14		0.03	0.27	
Uniform Delay, d1		14.1			13.9		6.7	7.0		6.6	7.6	
Progression Factor		1.00			1.00		0.36	0.28		1.00	1.00	
Incremental Delay, d2		0.7			0.5		0.1	0.3		0.1	0.7	
Delay (s)		14.8			14.4		2.5	2.3		6.7	8.3	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		14.8			14.4			2.3			8.2	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	8.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	3	664	10	2	5	0	0	2	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			-4%	
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3564			1864			1733	
Flt Permitted					1.00			0.94			1.00	
Satd. Flow (perm)					3564			1782			1733	
Peak-hour factor, PHF	1.00	1.00	1.00	0.38	0.95	0.83	0.25	0.25	1.00	1.00	0.25	0.79
Adj. Flow (vph)	0	0	0	8	699	12	8	20	0	0	8	29
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	23	0
Lane Group Flow (vph)	0	0	0	0	717	0	0	28	0	0	14	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Split			Perm					
Protected Phases				1	1			2			2	
Permitted Phases							2					
Actuated Green, G (s)					39.0			13.0			13.0	
Effective Green, g (s)					39.0			13.0			13.0	
Actuated g/C Ratio					0.65			0.22			0.22	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					2317			386			375	
v/s Ratio Prot					c0.20						0.01	
v/s Ratio Perm								c0.02				
v/c Ratio					0.31			0.07			0.04	
Uniform Delay, d1					4.6			18.7			18.6	
Progression Factor					0.41			0.67			1.00	
Incremental Delay, d2					0.3			0.3			0.2	
Delay (s)					2.2			12.9			18.8	
Level of Service					A			B			B	
Approach Delay (s)		0.0			2.2			12.9			18.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	3.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<2>	0	0	0	0	0	1>	0	0	<1	0
Volume (vph)	6	1404	6	0	0	0	0	1	4	5	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			1%			-1%	
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.90			1.00	
Flt Protected		1.00						1.00			0.95	
Satd. Flow (prot)		3585						1699			1814	
Flt Permitted		1.00						1.00			0.75	
Satd. Flow (perm)		3585						1699			1426	
Peak-hour factor, PHF	0.25	0.89	0.50	1.00	1.00	1.00	1.00	0.25	0.33	0.31	1.00	1.00
Adj. Flow (vph)	24	1578	12	0	0	0	0	4	12	16	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	1613	0	0	0	0	0	8	0	0	16	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Split									Perm		
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)		33.0						19.0			19.0	
Effective Green, g (s)		33.0						19.0			19.0	
Actuated g/C Ratio		0.55						0.32			0.32	
Clearance Time (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		1972						538			452	
v/s Ratio Prot		c0.45						0.00				
v/s Ratio Perm											c0.01	
v/c Ratio		0.82						0.01			0.04	
Uniform Delay, d1		11.0						14.1			14.2	
Progression Factor		0.94						1.00			0.74	
Incremental Delay, d2		1.7						0.0			0.1	
Delay (s)		12.1						14.1			10.6	
Level of Service		B						B			B	
Approach Delay (s)		12.1			0.0			14.1			10.6	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	2>	0	1	1	1	1
Volume (vph)	1306	31	99	576	99	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		3.6	6.0	4.0	4.0
Lane Util. Factor	0.95		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3551		1752	1827	1770	1583
Flt Permitted	1.00		0.12	1.00	0.95	1.00
Satd. Flow (perm)	3551		213	1827	1770	1583
Peak-hour factor, PHF	0.83	0.50	0.81	0.89	0.78	0.86
Adj. Flow (vph)	1573	62	122	647	127	152
RTOR Reduction (vph)	5	0	0	0	0	0
Lane Group Flow (vph)	1630	0	122	647	127	152
Heavy Vehicles (%)	1%	3%	3%	4%	2%	2%
Turn Type			pm+pt			pt+ov
Protected Phases	4		3	8	2	2 3
Permitted Phases			8			
Actuated Green, G (s)	31.0		36.6	36.6	5.7	11.7
Effective Green, g (s)	31.0		36.6	36.6	5.7	11.7
Actuated g/C Ratio	0.59		0.70	0.70	0.11	0.22
Clearance Time (s)	6.0		3.6	6.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2105		208	1279	193	354
v/s Ratio Prot	c0.46		0.02	0.35	c0.07	c0.10
v/s Ratio Perm			0.39			
v/c Ratio	0.77		0.59	0.51	0.66	0.43
Uniform Delay, d1	8.0		6.5	3.6	22.4	17.4
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9		4.2	1.4	7.9	0.8
Delay (s)	10.9		10.6	5.1	30.2	18.3
Level of Service	B		B	A	C	B
Approach Delay (s)	10.9			6.0	23.7	
Approach LOS	B			A	C	

Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	52.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	3	214	31	48	738	2	143	8	24	4	14	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			0%	
Total Lost time (s)		6.5			6.5			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			1.00			0.98			0.97	
Flt Protected		1.00			1.00			0.96			0.99	
Satd. Flow (prot)		1775			1865			1734			1823	
Flt Permitted		0.96			0.94			0.74			0.92	
Satd. Flow (perm)		1707			1767			1338			1698	
Peak-hour factor, PHF	0.25	0.89	0.62	0.62	0.88	0.25	0.69	0.67	0.67	0.50	0.70	0.62
Adj. Flow (vph)	12	240	50	77	839	8	207	12	36	8	20	8
RTOR Reduction (vph)	0	10	0	0	0	0	0	9	0	0	6	0
Lane Group Flow (vph)	0	292	0	0	924	0	0	246	0	0	30	0
Heavy Vehicles (%)	0%	5%	3%	6%	1%	50%	2%	0%	12%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		41.5			41.5			15.1			15.1	
Effective Green, g (s)		41.5			41.5			15.1			15.1	
Actuated g/C Ratio		0.60			0.60			0.22			0.22	
Clearance Time (s)		6.5			6.5			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1025			1061			292			371	
v/s Ratio Prot												
v/s Ratio Perm		0.17			c0.52			c0.18			0.02	
v/c Ratio		0.28			0.87			0.84			0.08	
Uniform Delay, d1		6.6			11.6			25.9			21.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.7			9.8			19.4			0.1	
Delay (s)		7.3			21.3			45.3			21.6	
Level of Service		A			C			D			C	
Approach Delay (s)		7.3			21.3			45.3			21.6	
Approach LOS		A			C			D			C	

Intersection Summary			
HCM Average Control Delay	22.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	69.1	Sum of lost time (s)	12.5
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	2	237	8	5	767	0	9	1	1	3	2	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.97			0.93	
Flt Protected		1.00			1.00			0.96			0.99	
Satd. Flow (prot)		1766			1880			1783			1757	
Flt Permitted		0.99			0.99			1.00			1.00	
Satd. Flow (perm)		1753			1869			1851			1772	
Peak-hour factor, PHF	0.50	0.91	0.29	0.31	0.89	1.00	0.56	1.00	0.25	0.75	0.25	0.50
Adj. Flow (vph)	4	260	28	16	862	0	16	1	4	4	8	12
RTOR Reduction (vph)	0	5	0	0	0	0	0	4	0	0	12	0
Lane Group Flow (vph)	0	287	0	0	878	0	0	17	0	0	12	0
Heavy Vehicles (%)	0%	5%	12%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		37.9			37.9			1.2			1.2	
Effective Green, g (s)		37.9			37.9			1.2			1.2	
Actuated g/C Ratio		0.77			0.77			0.02			0.02	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1353			1443			45			43	
v/s Ratio Prot												
v/s Ratio Perm		0.16			c0.47			c0.01			0.01	
v/c Ratio		0.21			0.61			0.38			0.29	
Uniform Delay, d1		1.5			2.4			23.6			23.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.4			1.9			5.3			3.6	
Delay (s)		1.9			4.3			28.9			27.2	
Level of Service		A			A			C			C	
Approach Delay (s)		1.9			4.3			28.9			27.2	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	49.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	2>	0	1	1>	0	1	1	1
Volume (vph)	24	1246	46	18	420	47	44	5	5	28	2	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	16	16
Grade (%)		1%			-1%			1%			2%	
Total Lost time (s)	3.5	5.3		5.3	5.3		5.2	5.2		5.2	5.2	5.2
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1663	1859		1728	3429		1796	1645		1787	2132	1678
Flt Permitted	0.44	1.00		0.05	1.00		1.00	1.00		1.00	1.00	1.00
Satd. Flow (perm)	769	1859		98	3429		1890	1645		1881	2132	1678
Peak-hour factor, PHF	0.52	0.84	0.85	0.61	0.93	0.70	0.70	0.42	0.62	0.68	0.25	0.60
Adj. Flow (vph)	46	1483	54	30	452	67	63	12	8	41	8	42
RTOR Reduction (vph)	0	1	0	0	11	0	0	8	0	0	0	40
Lane Group Flow (vph)	46	1536	0	30	508	0	63	12	0	41	8	2
Heavy Vehicles (%)	8%	1%	6%	5%	4%	2%	0%	0%	20%	0%	0%	8%
Turn Type	pm+pt			Perm			Perm			Perm		Perm
Protected Phases	5	2			6			8			8	
Permitted Phases	2			6			8			8		8
Actuated Green, G (s)	79.0	79.0		74.1	74.1		3.9	3.9		3.9	3.9	3.9
Effective Green, g (s)	79.0	79.0		74.1	74.1		3.9	3.9		3.9	3.9	3.9
Actuated g/C Ratio	0.85	0.85		0.79	0.79		0.04	0.04		0.04	0.04	0.04
Clearance Time (s)	3.5	5.3		5.3	5.3		5.2	5.2		5.2	5.2	5.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	664	1572		78	2720		79	69		79	89	70
v/s Ratio Prot	0.00	c0.83			0.15			0.01			0.00	
v/s Ratio Perm	0.06			0.31			c0.03			0.02		0.00
v/c Ratio	0.07	0.98		0.38	0.19		0.80	0.18		0.52	0.09	0.03
Uniform Delay, d1	1.2	6.4		2.9	2.3		44.4	43.2		43.8	43.0	42.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.0	17.8		13.7	0.2		41.2	1.2		5.7	0.4	0.1
Delay (s)	1.3	24.2		16.6	2.5		85.5	44.4		49.5	43.5	43.1
Level of Service	A	C		B	A		F	D		D	D	D
Approach Delay (s)		23.5			3.3			75.6			46.0	
Approach LOS		C			A			E			D	

Intersection Summary			
HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	93.4	Sum of lost time (s)	10.5
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	0	<1	1	0	<1>	0
Volume (vph)	22	1291	7	8	485	4	3	0	5	2	6	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.90	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.99	
Satd. Flow (prot)	1805	1876		1805	1859			1357	1615		1695	
Flt Permitted	0.44	1.00		0.06	1.00			1.00	1.00		0.96	
Satd. Flow (perm)	845	1876		118	1859			1429	1615		1628	
Peak-hour factor, PHF	0.53	0.85	0.44	0.67	0.86	0.50	0.25	1.00	0.42	0.25	0.75	0.73
Adj. Flow (vph)	42	1519	16	12	564	8	12	0	12	8	8	51
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	12	0	49	0
Lane Group Flow (vph)	42	1535	0	12	572	0	0	12	0	0	18	0
Heavy Vehicles (%)	0%	1%	14%	0%	2%	0%	33%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	107.0	107.0		107.0	107.0			4.0	4.0		4.0	
Effective Green, g (s)	107.0	107.0		107.0	107.0			4.0	4.0		4.0	
Actuated g/C Ratio	0.89	0.89		0.89	0.89			0.03	0.03		0.03	
Clearance Time (s)	5.0	5.0		5.0	5.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	753	1673		105	1658			48	54		54	
v/s Ratio Prot		c0.82			0.31							
v/s Ratio Perm	0.05			0.10				0.01	0.00		c0.01	
v/c Ratio	0.06	0.92		0.11	0.34			0.25	0.01		0.33	
Uniform Delay, d1	0.7	3.9		0.8	1.0			56.5	56.1		56.7	
Progression Factor	1.00	1.00		0.71	0.68			1.00	1.00		1.00	
Incremental Delay, d2	0.1	9.5		2.1	0.5			2.7	0.1		3.5	
Delay (s)	0.9	13.4		2.6	1.2			59.3	56.1		60.2	
Level of Service	A	B		A	A			E	E		E	
Approach Delay (s)		13.0			1.3			57.7			60.2	
Approach LOS		B			A			E			E	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	2>	0	1	1	1	1
Volume (vph)	700	159	51	1100	108	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-2%	0%	
Total Lost time (s)	7.0		7.0	7.0	7.0	7.0
Lane Util. Factor	0.95		1.00	1.00	1.00	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3455		1787	1919	1787	1599
Flt Permitted	1.00		0.19	1.00	0.95	1.00
Satd. Flow (perm)	3455		351	1919	1787	1599
Peak-hour factor, PHF	0.87	0.84	0.69	0.97	0.67	0.86
Adj. Flow (vph)	805	189	74	1134	161	74
RTOR Reduction (vph)	33	0	0	0	0	53
Lane Group Flow (vph)	961	0	74	1134	161	21
Heavy Vehicles (%)	1%	1%	2%	0%	1%	1%
Turn Type			pm+pt			pt+ov
Protected Phases	4		3	8	2	2 3
Permitted Phases			8			
Actuated Green, G (s)	29.0		40.0	40.0	6.0	17.0
Effective Green, g (s)	29.0		40.0	40.0	6.0	17.0
Actuated g/C Ratio	0.48		0.67	0.67	0.10	0.28
Clearance Time (s)	7.0		7.0	7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1670		330	1279	179	453
v/s Ratio Prot	0.28		0.01	c0.59	c0.09	0.01
v/s Ratio Perm			0.13			
v/c Ratio	0.58		0.22	0.89	0.90	0.05
Uniform Delay, d1	11.1		5.0	8.2	26.7	15.6
Progression Factor	0.71		0.78	0.65	1.00	1.00
Incremental Delay, d2	1.4		0.2	6.2	39.5	0.0
Delay (s)	9.3		4.1	11.5	66.3	15.7
Level of Service	A		A	B	E	B
Approach Delay (s)	9.3			11.0	50.3	
Approach LOS	A			B	D	

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	1	0	1>	0	1	1
Volume (vph)	21	0	1072	108	173	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		1%	-1%		-1%	
Total Lost time (s)	5.0		5.0		5.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	1.00		0.99		1.00	0.85
Flt Protected	0.95		1.00		0.95	1.00
Satd. Flow (prot)	1497		1863		1796	1531
Flt Permitted	0.95		1.00		0.95	1.00
Satd. Flow (perm)	1497		1863		1796	1531
Peak-hour factor, PHF	0.75	1.00	0.96	0.85	0.77	0.79
Adj. Flow (vph)	28	0	1117	127	225	24
RTOR Reduction (vph)	0	0	3	0	0	9
Lane Group Flow (vph)	28	0	1241	0	225	15
Heavy Vehicles (%)	20%	0%	1%	2%	1%	6%
Turn Type	Prot					Prot
Protected Phases	2		1		3	3
Permitted Phases						
Actuated Green, G (s)	3.0		84.9		17.1	17.1
Effective Green, g (s)	3.0		84.9		17.1	17.1
Actuated g/C Ratio	0.02		0.71		0.14	0.14
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	37		1318		256	218
v/s Ratio Prot	c0.02		c0.67		c0.13	0.01
v/s Ratio Perm						
v/c Ratio	0.76		0.94		0.88	0.07
Uniform Delay, d1	58.1		15.4		50.4	44.5
Progression Factor	1.00		0.70		1.00	1.00
Incremental Delay, d2	59.7		7.7		27.0	0.1
Delay (s)	117.9		18.5		77.5	44.7
Level of Service	F		B		E	D
Approach Delay (s)		117.9	18.5		74.3	
Approach LOS		F	B		E	

Intersection Summary			
HCM Average Control Delay	29.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	0	0	1	1	1
Volume (vph)	28	0	0	392	761	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	5.5	4.0
Lane Util. Factor	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	1827			1900	1805	1615
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	1827			1900	1805	1615
Peak-hour factor, PHF	0.48	0.92	0.62	0.97	0.97	0.38
Adj. Flow (vph)	58	0	0	404	785	8
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	58	0	0	404	785	8
Heavy Vehicles (%)	4%	2%	20%	0%	0%	0%
Turn Type						Free
Protected Phases	4			8	2	
Permitted Phases						Free
Actuated Green, G (s)	19.5			19.5	29.5	60.0
Effective Green, g (s)	19.5			19.5	29.5	60.0
Actuated g/C Ratio	0.32			0.32	0.49	1.00
Clearance Time (s)	5.5			5.5	5.5	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	594			618	887	1615
v/s Ratio Prot	0.03			c0.21	c0.43	
v/s Ratio Perm						0.00
v/c Ratio	0.10			0.65	0.89	0.00
Uniform Delay, d1	14.1			17.4	13.7	0.0
Progression Factor	1.31			1.00	1.00	1.00
Incremental Delay, d2	0.1			5.3	10.5	0.0
Delay (s)	18.6			22.7	24.2	0.0
Level of Service	B			C	C	A
Approach Delay (s)	18.6			22.7	24.0	
Approach LOS	B			C	C	

Intersection Summary			
HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	2>	0	1	1	0	0	0	0	1	2	1
Volume (vph)	0	276	136	179	149	0	0	0	0	861	1671	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5		2.0	3.5					4.0	4.0	4.0
Lane Util. Factor		0.95		1.00	1.00					1.00	0.95	1.00
Frt		0.95		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		3431		1770	1863					1805	3574	1509
Flt Permitted		1.00		0.36	1.00					0.95	1.00	1.00
Satd. Flow (perm)		3431		673	1863					1805	3574	1509
Peak-hour factor, PHF	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. Flow (vph)	0	276	136	179	149	0	0	0	0	861	1671	60
RTOR Reduction (vph)	0	34	0	0	0	0	0	0	0	0	0	17
Lane Group Flow (vph)	0	378	0	179	149	0	0	0	0	861	1671	43
Heavy Vehicles (%)	0%	0%	0%	2%	2%	0%	0%	0%	0%	0%	1%	7%
Turn Type				pm+pt						Split		Prot
Protected Phases		4		3	8					2	2	2
Permitted Phases				8								
Actuated Green, G (s)		16.5		23.5	23.5					37.0	37.0	37.0
Effective Green, g (s)		17.5		24.5	24.5					38.0	38.0	38.0
Actuated g/C Ratio		0.25		0.35	0.35					0.54	0.54	0.54
Clearance Time (s)		4.5		3.0	4.5					5.0	5.0	5.0
Lane Grp Cap (vph)		858		314	652					980	1940	819
v/s Ratio Prot		c0.11		c0.04	0.08					c0.48	0.47	0.03
v/s Ratio Perm				0.16								
v/c Ratio		0.44		0.57	0.23					0.88	0.86	0.05
Uniform Delay, d1		22.1		16.8	16.1					14.0	13.7	7.5
Progression Factor		0.67		1.58	1.45					0.64	0.64	0.43
Incremental Delay, d2		1.5		7.2	0.8					4.8	2.2	0.0
Delay (s)		16.4		33.8	24.1					13.7	10.9	3.3
Level of Service		B		C	C					B	B	A
Approach Delay (s)		16.4			29.4			0.0			11.7	
Approach LOS		B			C			A			B	

Intersection Summary			
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	3>	0	0	0	0	0	1	1	0	<2	0
Volume (vph)	0	744	225	0	0	0	0	302	214	128	968	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			1%	
Total Lost time (s)		4.0						4.0	4.0		4.0	
Lane Util. Factor		0.91						1.00	1.00		0.95	
Frt		0.97						1.00	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.99	
Satd. Flow (prot)		4931						1872	1561		3571	
Flt Permitted		1.00						1.00	1.00		0.86	
Satd. Flow (perm)		4931						1872	1561		3093	
Peak-hour factor, PHF	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. Flow (vph)	0	744	225	0	0	0	0	302	214	128	968	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	969	0	0	0	0	0	302	214	0	1096	0
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	2%	4%	0%	0%	0%
Turn Type									Perm	Perm		
Protected Phases		4						2			6	
Permitted Phases									2	6		
Actuated Green, G (s)		20.0						40.0	40.0		40.0	
Effective Green, g (s)		21.0						41.0	41.0		41.0	
Actuated g/C Ratio		0.30						0.59	0.59		0.59	
Clearance Time (s)		5.0						5.0	5.0		5.0	
Lane Grp Cap (vph)		1479						1096	914		1812	
v/s Ratio Prot		c0.20						0.16				
v/s Ratio Perm									0.14		c0.35	
v/c Ratio		0.66						0.28	0.23		0.60	
Uniform Delay, d1		21.3						7.2	7.0		9.3	
Progression Factor		0.56						1.00	1.00		0.41	
Incremental Delay, d2		2.0						0.6	0.6		0.9	
Delay (s)		13.9						7.8	7.6		4.7	
Level of Service		B						A	A		A	
Approach Delay (s)		13.9			0.0			7.7			4.7	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	1	1	2>	0	0	<2
Volume (vph)	8	142	1713	46	129	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Total Lost time (s)	3.8	5.4	4.0			4.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			0.98
Satd. Flow (prot)	1805	1495	3596			3453
Flt Permitted	0.95	1.00	1.00			0.55
Satd. Flow (perm)	1805	1495	3596			1925
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	8	142	1713	46	129	258
RTOR Reduction (vph)	0	9	2	0	0	0
Lane Group Flow (vph)	8	133	1757	0	0	387
Heavy Vehicles (%)	0%	8%	0%	0%	0%	5%
Turn Type		pm+ov			pm+pt	
Protected Phases	4	5	6		5	2
Permitted Phases		4			2	
Actuated Green, G (s)	1.1	8.9	38.5			51.7
Effective Green, g (s)	2.5	8.9	39.9			53.1
Actuated g/C Ratio	0.04	0.14	0.63			0.84
Clearance Time (s)	5.2	5.4	5.4			5.4
Vehicle Extension (s)	5.0	3.0	5.0			5.0
Lane Grp Cap (vph)	71	210	2263			1834
v/s Ratio Prot	0.00	c0.08	c0.49			0.03
v/s Ratio Perm		0.01				0.15
v/c Ratio	0.11	0.64	0.78			0.21
Uniform Delay, d1	29.4	25.7	8.5			1.0
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.5	6.2	2.7			0.1
Delay (s)	30.9	31.9	11.2			1.1
Level of Service	C	C	B			A
Approach Delay (s)	31.8		11.2			1.1
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	63.4	Sum of lost time (s)	14.8
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1	1	0	<1>	0	1	1>	0	0	<2>	0
Volume (vph)	58	8	89	13	33	4	378	1422	25	0	240	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			1%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			0.95	
Frt		1.00	0.85		0.99		1.00	1.00			0.95	
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	
Satd. Flow (prot)		1706	1607		1855		1796	1886			3266	
Flt Permitted		0.83	1.00		0.89		0.49	1.00			1.00	
Satd. Flow (perm)		1479	1607		1673		927	1886			3266	
Peak-hour factor, PHF	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. Flow (vph)	58	8	89	13	33	4	378	1422	25	0	240	125
RTOR Reduction (vph)	0	0	82	0	4	0	0	0	0	0	45	0
Lane Group Flow (vph)	0	66	7	0	46	0	378	1447	0	0	320	0
Heavy Vehicles (%)	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	3%
Turn Type	Perm		Perm	Perm			pm+pt			Perm		
Protected Phases		4			8		1	6			2	
Permitted Phases	4		4	8			6			2		
Actuated Green, G (s)		7.2	7.2		7.2		70.4	70.4			56.0	
Effective Green, g (s)		7.2	7.2		7.2		70.4	70.4			56.0	
Actuated g/C Ratio		0.08	0.08		0.08		0.80	0.80			0.64	
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		122	132		138		838	1516			2088	
v/s Ratio Prot							0.05	c0.77			0.10	
v/s Ratio Perm		c0.04	0.00		0.03		0.31					
v/c Ratio		0.54	0.06		0.34		0.45	0.95			0.15	
Uniform Delay, d1		38.6	37.1		37.9		2.4	7.2			6.3	
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2		4.8	0.2		1.4		0.4	14.6			0.2	
Delay (s)		43.4	37.2		39.4		2.8	21.8			6.5	
Level of Service		D	D		D		A	C			A	
Approach Delay (s)		39.9			39.4			17.9			6.5	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM Average Control Delay	18.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	87.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	109.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	1	1	1	1	2>	0
Volume (vph)	86	323	15	1586	299	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			1%	0%	
Total Lost time (s)	4.5	4.5	3.5	5.5	5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1599	1796	1890	3467	
Flt Permitted	0.95	1.00	0.55	1.00	1.00	
Satd. Flow (perm)	1805	1599	1031	1890	3467	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	86	323	15	1586	299	3
RTOR Reduction (vph)	0	295	0	0	0	0
Lane Group Flow (vph)	86	28	15	1586	302	0
Heavy Vehicles (%)	0%	1%	0%	0%	4%	0%
Turn Type		Perm	pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	9.7	9.7	90.7	90.7	85.0	
Effective Green, g (s)	9.7	9.7	90.7	90.7	85.0	
Actuated g/C Ratio	0.09	0.09	0.82	0.82	0.77	
Clearance Time (s)	4.5	4.5	3.5	5.5	5.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	159	140	862	1553	2669	
v/s Ratio Prot	c0.05		0.00	c0.84	0.09	
v/s Ratio Perm		0.02	0.01			
v/c Ratio	0.54	0.20	0.02	1.02	0.11	
Uniform Delay, d1	48.2	46.8	1.8	9.9	3.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.7	0.7	0.0	28.4	0.1	
Delay (s)	51.9	47.5	1.8	38.2	3.3	
Level of Service	D	D	A	D	A	
Approach Delay (s)	48.4			37.9	3.3	
Approach LOS	D			D	A	

Intersection Summary			
HCM Average Control Delay	35.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	110.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	96.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	1	1>	0	0	<1>	0
Volume (vph)	26	836	30	34	1461	0	116	69	95	17	30	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		3.0	5.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.91			0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1805	1854		1805	1881		1789	1735			1788	
Flt Permitted	0.04	1.00		0.95	1.00		0.64	1.00			0.79	
Satd. Flow (perm)	75	1854		1805	1881		1197	1735			1427	
Peak-hour factor, PHF	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. Flow (vph)	26	836	30	34	1461	0	116	69	95	17	30	26
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	16	0
Lane Group Flow (vph)	26	865	0	34	1461	0	116	164	0	0	57	0
Confl. Peds. (#/hr)							3					
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Prot			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2						8			4		
Actuated Green, G (s)	101.4	101.4		8.0	112.4		18.6	18.6			18.6	
Effective Green, g (s)	101.4	101.4		8.0	112.4		18.6	18.6			18.6	
Actuated g/C Ratio	0.72	0.72		0.06	0.80		0.13	0.13			0.13	
Clearance Time (s)	5.0	5.0		3.0	5.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	54	1343		103	1510		159	231			190	
v/s Ratio Prot		0.47		0.02	c0.78			0.09				
v/s Ratio Perm	0.35						c0.10				0.04	
v/c Ratio	0.48	0.64		0.33	0.97		0.73	0.71			0.30	
Uniform Delay, d1	8.2	10.0		63.4	12.2		58.3	58.1			54.8	
Progression Factor	0.96	0.97		1.14	0.32		1.00	1.00			1.00	
Incremental Delay, d2	27.2	2.3		0.2	2.7		15.4	9.6			0.9	
Delay (s)	35.0	12.0		72.5	6.6		73.7	67.7			55.7	
Level of Service	D	B		E	A		E	E			E	
Approach Delay (s)		12.7			8.1			70.2			55.7	
Approach LOS		B			A			E			E	

Intersection Summary			
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	101.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	1	1	0	1	0
Volume (vph)	0	797	1771	0	125	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		-1%	0%		0%	
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1891	1900		1805	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1891	1900		1805	
Peak-hour factor, PHF	1.00	1.00	1.00	0.93	1.00	1.00
Adj. Flow (vph)	0	797	1771	0	125	4
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	0	797	1771	0	128	0
Heavy Vehicles (%)	0%	1%	0%	2%	0%	0%
Turn Type						
Protected Phases		2	6		8	
Permitted Phases						
Actuated Green, G (s)		123.0	123.0		9.0	
Effective Green, g (s)		123.0	123.0		9.0	
Actuated g/C Ratio		0.88	0.88		0.06	
Clearance Time (s)		4.0	4.0		4.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		1661	1669		116	
v/s Ratio Prot		0.42	c0.93		c0.07	
v/s Ratio Perm						
v/c Ratio		0.48	1.06		1.10	
Uniform Delay, d1		1.8	8.5		65.5	
Progression Factor		0.57	2.13		1.00	
Incremental Delay, d2		0.8	37.6		114.3	
Delay (s)		1.8	55.7		179.8	
Level of Service		A	E		F	
Approach Delay (s)		1.8	55.7		179.8	
Approach LOS		A	E		F	

Intersection Summary			
HCM Average Control Delay	45.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations	1	0	0	1	2>	0	0	1	0	0
Volume (vph)	69	0	0	4	1991	34	0	168	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0			4.0		
Lane Util. Factor	1.00			1.00	0.95			1.00		
Frt	1.00			1.00	1.00			0.86		
Flt Protected	0.95			0.95	1.00			1.00		
Satd. Flow (prot)	1805			1805	3601			1644		
Flt Permitted	0.95			0.95	1.00			1.00		
Satd. Flow (perm)	1805			1805	3601			1644		
Peak-hour factor, PHF	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92
Adj. Flow (vph)	69	0	0	4	1991	34	0	168	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	0	29	0	0
Lane Group Flow (vph)	69	0	0	4	2024	0	0	139	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	2%	2%
Turn Type	Prot			Split				Over		
Protected Phases	8			1	1			8		
Permitted Phases										
Actuated Green, G (s)	17.0			115.0	115.0			17.0		
Effective Green, g (s)	17.0			115.0	115.0			17.0		
Actuated g/C Ratio	0.12			0.82	0.82			0.12		
Clearance Time (s)	4.0			4.0	4.0			4.0		
Vehicle Extension (s)	3.0			3.0	3.0			3.0		
Lane Grp Cap (vph)	219			1483	2958			200		
v/s Ratio Prot	0.04			0.00	c0.56			c0.08		
v/s Ratio Perm										
v/c Ratio	0.32			0.00	0.68			0.70		
Uniform Delay, d1	56.2			2.2	5.1			59.0		
Progression Factor	0.96			1.44	1.12			1.00		
Incremental Delay, d2	0.7			0.0	0.7			10.0		
Delay (s)	54.8			3.2	6.5			69.0		
Level of Service	D			A	A			E		
Approach Delay (s)		54.8			6.4		69.0		0.0	
Approach LOS		D			A		E		A	

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	2	1	0	1	2>	0	0	<1>	0	2	0	2
Volume (vph)	3	197	0	0	621	1	0	0	0	1404	0	1559
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			2%			0%			0%	
Total Lost time (s)	5.5	5.5			5.5					4.5		4.5
Lane Util. Factor	0.97	1.00			0.95					0.97		0.88
Frt	1.00	1.00			1.00					1.00		0.85
Flt Protected	0.95	1.00			1.00					0.95		1.00
Satd. Flow (prot)	2730	1881			3570					3502		2842
Flt Permitted	0.95	1.00			1.00					0.95		1.00
Satd. Flow (perm)	2730	1881			3570					3502		2842
Peak-hour factor, PHF	1.00	1.00	0.92	0.92	1.00	1.00	0.92	0.92	0.92	1.00	0.92	1.00
Adj. Flow (vph)	3	197	0	0	621	1	0	0	0	1404	0	1559
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	3	197	0	0	622	0	0	0	0	1404	0	1559
Heavy Vehicles (%)	27%	0%	2%	2%	0%	49%	2%	2%	2%	0%	2%	0%
Turn Type	Prot			Perm			Split			Prot		custom
Protected Phases	6	1			5		7	7		8		8 6
Permitted Phases				5								
Actuated Green, G (s)	6.0	28.6			17.1					41.3		51.8
Effective Green, g (s)	6.0	28.6			17.1					41.3		51.8
Actuated g/C Ratio	0.08	0.36			0.21					0.52		0.65
Clearance Time (s)	5.5	5.5			5.5					4.5		
Vehicle Extension (s)	3.0	3.0			3.0					3.0		
Lane Grp Cap (vph)	205	673			764					1810		1842
v/s Ratio Prot	0.00	0.10			c0.17					0.40		c0.55
v/s Ratio Perm												
v/c Ratio	0.01	0.29			0.81					0.78		0.85
Uniform Delay, d1	34.2	18.4			29.9					15.6		10.9
Progression Factor	1.00	1.00			1.00					1.00		1.00
Incremental Delay, d2	0.0	0.2			6.7					2.1		3.8
Delay (s)	34.2	18.6			36.5					17.7		14.7
Level of Service	C	B			D					B		B
Approach Delay (s)		18.9			36.5			0.0			16.2	
Approach LOS		B			D			A			B	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	79.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	2>	0	1	1	0	0	1>	0
Volume (vph)	0	0	0	0	2575	68	68	111	0	0	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			1%	
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					0.95		1.00	1.00			1.00	
Frt					1.00		1.00	1.00			0.86	
Flt Protected					1.00		0.95	1.00			1.00	
Satd. Flow (prot)					3596		1796	1890			1635	
Flt Permitted					1.00		0.74	1.00			1.00	
Satd. Flow (perm)					3596		1394	1890			1635	
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	0	2575	68	68	111	0	0	0	30
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	0	0	0	2640	0	68	111	0	0	19	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type							Perm					
Protected Phases					8			2			6	
Permitted Phases							2					
Actuated Green, G (s)					55.0		7.0	7.0			7.0	
Effective Green, g (s)					55.0		7.0	7.0			7.0	
Actuated g/C Ratio					0.79		0.10	0.10			0.10	
Clearance Time (s)					4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)					2825		139	189			164	
v/s Ratio Prot					c0.73			c0.06			0.01	
v/s Ratio Perm							0.05					
v/c Ratio					0.93		0.49	0.59			0.12	
Uniform Delay, d1					6.1		29.8	30.1			28.7	
Progression Factor					1.09		1.00	1.00			1.00	
Incremental Delay, d2					7.3		11.8	12.7			1.5	
Delay (s)					13.9		41.6	42.8			30.1	
Level of Service					B		D	D			C	
Approach Delay (s)		0.0			13.9			42.3			30.1	
Approach LOS		A			B			D			C	

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	0	<1>	0	0	<1>	0
Volume (vph)	17	744	0	4	1658	0	43	26	64	21	17	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.94			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1805	1845		1805	1881			1748			1777	
Flt Permitted	0.04	1.00		0.34	1.00			0.98			0.98	
Satd. Flow (perm)	67	1845		644	1881			1748			1777	
Peak-hour factor, PHF	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. Flow (vph)	17	744	0	4	1658	0	43	26	64	21	17	21
RTOR Reduction (vph)	0	0	0	0	0	0	0	24	0	0	14	0
Lane Group Flow (vph)	17	744	0	4	1658	0	0	109	0	0	45	0
Heavy Vehicles (%)	0%	3%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Split			Split		
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	114.2	114.2		114.2	114.2			6.0			4.8	
Effective Green, g (s)	114.2	114.2		114.2	114.2			6.0			4.8	
Actuated g/C Ratio	0.82	0.82		0.82	0.82			0.04			0.03	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	55	1505		525	1534			75			61	
v/s Ratio Prot		0.40			c0.88			c0.06			c0.03	
v/s Ratio Perm	0.26			0.01								
v/c Ratio	0.31	0.49		0.01	1.08			1.45			0.73	
Uniform Delay, d1	3.2	4.0		2.4	12.9			67.0			67.0	
Progression Factor	1.59	1.75		0.54	0.45			1.00			1.00	
Incremental Delay, d2	11.1	0.9		0.0	37.7			263.9			35.1	
Delay (s)	16.2	7.9		1.3	43.5			330.9			102.1	
Level of Service	B	A		A	D			F			F	
Approach Delay (s)		8.1			43.4			330.9			102.1	
Approach LOS		A			D			F			F	

Intersection Summary			
HCM Average Control Delay	49.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	26	1854	17	34	77	0	0	43	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			1%			-1%	
Total Lost time (s)					6.0			5.0			5.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.92	
Flt Protected					1.00			0.98			1.00	
Satd. Flow (prot)					3578			1800			1755	
Flt Permitted					1.00			0.89			1.00	
Satd. Flow (perm)					3578			1620			1755	
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	26	1854	17	34	77	0	0	43	64
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	0	0	0	1896	0	0	111	0	0	93	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	25%	0%	5%	0%	0%	0%	0%
Turn Type				Perm			Perm					
Protected Phases					1			2			2	
Permitted Phases				1			2					
Actuated Green, G (s)					43.0			16.0			16.0	
Effective Green, g (s)					43.0			16.0			16.0	
Actuated g/C Ratio					0.61			0.23			0.23	
Clearance Time (s)					6.0			5.0			5.0	
Lane Grp Cap (vph)					2198			370			401	
v/s Ratio Prot											0.05	
v/s Ratio Perm					0.53			c0.07				
v/c Ratio					0.86			0.30			0.23	
Uniform Delay, d1					11.1			22.4			22.0	
Progression Factor					0.26			1.00			1.00	
Incremental Delay, d2					2.9			2.1			1.4	
Delay (s)					5.9			24.4			23.3	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.9			24.4			23.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	1	1>	0	1	1>	0
Volume (vph)	106	94	81	30	123	21	26	230	21	13	285	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.98		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1783			1853		1805	1876		1805	1829	
Flt Permitted		0.83			0.92		0.43	1.00		0.56	1.00	
Satd. Flow (perm)		1503			1728		824	1876		1069	1829	
Peak-hour factor, PHF	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. Flow (vph)	106	94	81	30	123	21	26	230	21	13	285	94
RTOR Reduction (vph)	0	21	0	0	7	0	0	5	0	0	17	0
Lane Group Flow (vph)	0	260	0	0	167	0	26	246	0	13	362	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		30.0			30.0		32.0	32.0		32.0	32.0	
Effective Green, g (s)		30.0			30.0		32.0	32.0		32.0	32.0	
Actuated g/C Ratio		0.43			0.43		0.46	0.46		0.46	0.46	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		644			741		377	858		489	836	
v/s Ratio Prot								0.13			c0.20	
v/s Ratio Perm		c0.17			0.10		0.03			0.01		
v/c Ratio		0.40			0.23		0.07	0.29		0.03	0.43	
Uniform Delay, d1		13.8			12.7		10.7	11.9		10.4	12.9	
Progression Factor		1.00			1.00		0.63	0.56		1.00	1.00	
Incremental Delay, d2		1.9			0.7		0.4	0.8		0.1	1.6	
Delay (s)		15.7			13.4		7.0	7.4		10.5	14.5	
Level of Service		B			B		A	A		B	B	
Approach Delay (s)		15.7			13.4			7.4			14.4	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	<2>	0	0	<1	0	0	1>	0
Volume (vph)	0	0	0	43	1841	47	51	77	0	0	26	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			1%			-4%	
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.90	
Flt Protected					1.00			0.98			1.00	
Satd. Flow (prot)					3593			1854			1675	
Flt Permitted					1.00			0.86			1.00	
Satd. Flow (perm)					3593			1617			1675	
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	43	1841	47	51	77	0	0	26	77
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	19	0
Lane Group Flow (vph)	0	0	0	0	1929	0	0	128	0	0	84	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	16%	0%
Turn Type				Split			Perm					
Protected Phases				1	1			2			2	
Permitted Phases							2					
Actuated Green, G (s)					46.0			16.0			16.0	
Effective Green, g (s)					46.0			16.0			16.0	
Actuated g/C Ratio					0.66			0.23			0.23	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					2361			370			383	
v/s Ratio Prot					c0.54						0.05	
v/s Ratio Perm								c0.08				
v/c Ratio					0.82			0.35			0.22	
Uniform Delay, d1					8.9			22.6			21.9	
Progression Factor					0.26			0.75			1.00	
Incremental Delay, d2					1.9			2.4			1.3	
Delay (s)					4.2			19.4			23.3	
Level of Service					A			B			C	
Approach Delay (s)		0.0			4.2			19.4			23.3	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<2>	0	0	0	0	0	1>	0	0	<1	0
Volume (vph)	85	1132	21	0	0	0	0	4	4	72	21	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			1%			-1%	
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.96	
Satd. Flow (prot)		3538						1763			1838	
Flt Permitted		1.00						1.00			0.80	
Satd. Flow (perm)		3538						1763			1524	
Peak-hour factor, PHF	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. Flow (vph)	85	1132	21	0	0	0	0	4	4	72	21	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	1236	0	0	0	0	0	5	0	0	93	0
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Split									Perm		
Protected Phases	1	1						2			2	
Permitted Phases										2		
Actuated Green, G (s)		44.0						18.0			18.0	
Effective Green, g (s)		44.0						18.0			18.0	
Actuated g/C Ratio		0.63						0.26			0.26	
Clearance Time (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		2224						453			392	
v/s Ratio Prot		c0.35						0.00				
v/s Ratio Perm											c0.06	
v/c Ratio		0.56						0.01			0.24	
Uniform Delay, d1		7.4						19.4			20.6	
Progression Factor		0.84						1.00			1.07	
Incremental Delay, d2		1.0						0.0			1.3	
Delay (s)		7.2						19.4			23.3	
Level of Service		A						B			C	
Approach Delay (s)		7.2			0.0			19.4			23.3	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	2>	0	1	1	1	1
Volume (vph)	697	85	217	1641	72	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		3.6	6.0	4.0	4.0
Lane Util. Factor	0.95		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3440		1787	1881	1805	1615
Flt Permitted	1.00		0.32	1.00	0.95	1.00
Satd. Flow (perm)	3440		600	1881	1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	697	85	217	1641	72	259
RTOR Reduction (vph)	9	0	0	0	0	0
Lane Group Flow (vph)	773	0	217	1641	72	259
Heavy Vehicles (%)	3%	5%	1%	1%	0%	0%
Turn Type			pm+pt			pt+ov
Protected Phases	4		3	8	2	2 3
Permitted Phases			8			
Actuated Green, G (s)	67.3		86.0	86.0	4.0	23.1
Effective Green, g (s)	67.3		86.0	86.0	4.0	23.1
Actuated g/C Ratio	0.67		0.86	0.86	0.04	0.23
Clearance Time (s)	6.0		3.6	6.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2315		695	1618	72	373
v/s Ratio Prot	0.22		0.05	c0.87	c0.04	0.16
v/s Ratio Perm			0.22			
v/c Ratio	0.33		0.31	1.01	1.00	0.69
Uniform Delay, d1	6.9		1.5	7.0	48.0	35.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		0.3	26.0	106.1	5.5
Delay (s)	7.3		1.8	33.0	154.1	40.7
Level of Service	A		A	C	F	D
Approach Delay (s)	7.3			29.3	65.4	
Approach LOS	A			C	E	

Intersection Summary			
HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	98.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	0	1017	132	29	283	0	87	8	50	21	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			0%	
Total Lost time (s)		6.5			6.5			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			1.00			0.95			0.98	
Flt Protected		1.00			1.00			0.97			0.97	
Satd. Flow (prot)		1854			1818			1712			1799	
Flt Permitted		1.00			0.75			0.80			0.74	
Satd. Flow (perm)		1854			1376			1409			1376	
Peak-hour factor, PHF	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. Flow (vph)	0	1017	132	29	283	0	87	8	50	21	4	4
RTOR Reduction (vph)	0	6	0	0	0	0	0	28	0	0	4	0
Lane Group Flow (vph)	0	1143	0	0	312	0	0	117	0	0	25	0
Heavy Vehicles (%)	0%	1%	0%	0%	5%	0%	0%	0%	8%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		52.3			52.3			7.8			7.8	
Effective Green, g (s)		52.3			52.3			7.8			7.8	
Actuated g/C Ratio		0.72			0.72			0.11			0.11	
Clearance Time (s)		6.5			6.5			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1336			991			151			148	
v/s Ratio Prot		c0.62										
v/s Ratio Perm					0.23			c0.08			0.02	
v/c Ratio		0.86			0.31			0.78			0.17	
Uniform Delay, d1		7.4			3.7			31.6			29.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		7.2			0.8			21.8			0.6	
Delay (s)		14.6			4.5			53.3			30.0	
Level of Service		B			A			D			C	
Approach Delay (s)		14.6			4.5			53.3			30.0	
Approach LOS		B			A			D			C	

Intersection Summary			
HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	<1>	0	0	<1>	0	0	<1>	0	0	<1>	0
Volume (vph)	8	1034	8	0	308	4	8	1	4	0	1	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.96			0.89	
Flt Protected		1.00			1.00			0.97			1.00	
Satd. Flow (prot)		1888			1860			1767			1695	
Flt Permitted		1.00			1.00			1.00			1.00	
Satd. Flow (perm)		1884			1860			1821			1695	
Peak-hour factor, PHF	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. Flow (vph)	8	1034	8	0	308	4	8	1	4	0	1	4
RTOR Reduction (vph)	0	0	0	0	1	0	0	4	0	0	4	0
Lane Group Flow (vph)	0	1050	0	0	311	0	0	9	0	0	1	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		54.6			54.6			1.4			1.4	
Effective Green, g (s)		54.6			54.6			1.4			1.4	
Actuated g/C Ratio		0.83			0.83			0.02			0.02	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1559			1539			39			36	
v/s Ratio Prot					0.17						0.00	
v/s Ratio Perm		c0.56						c0.00				
v/c Ratio		0.67			0.20			0.23			0.03	
Uniform Delay, d1		2.2			1.2			31.8			31.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.3			0.3			3.1			0.3	
Delay (s)		4.6			1.5			34.8			32.0	
Level of Service		A			A			C			C	
Approach Delay (s)		4.6			1.5			34.8			32.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	66.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	2>	0	1	1>	0	1	1	1
Volume (vph)	51	553	34	21	1505	204	77	4	34	200	4	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	16	16
Grade (%)		1%			-1%			1%			2%	
Total Lost time (s)	3.5	5.3		5.3	5.3		5.2	5.2		5.2	5.2	5.2
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.87		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1796	1806		1814	3532		1796	1637		1787	2132	1812
Flt Permitted	0.10	1.00		0.44	1.00		0.76	1.00		0.73	1.00	1.00
Satd. Flow (perm)	180	1806		844	3532		1428	1637		1377	2132	1812
Peak-hour factor, PHF	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. Flow (vph)	51	553	34	21	1505	204	77	4	34	200	4	191
RTOR Reduction (vph)	0	3	0	0	15	0	0	28	0	0	0	92
Lane Group Flow (vph)	51	584	0	21	1694	0	77	10	0	200	4	99
Heavy Vehicles (%)	0%	4%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt			Perm			Perm			Perm		Perm
Protected Phases	5	2			6			8			8	
Permitted Phases	2			6			8			8		8
Actuated Green, G (s)	43.7	43.7		38.4	38.4		11.6	11.6		11.6	11.6	11.6
Effective Green, g (s)	43.7	43.7		38.4	38.4		11.6	11.6		11.6	11.6	11.6
Actuated g/C Ratio	0.66	0.66		0.58	0.58		0.18	0.18		0.18	0.18	0.18
Clearance Time (s)	3.5	5.3		5.3	5.3		5.2	5.2		5.2	5.2	5.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	164	1199		493	2061		252	289		243	376	319
v/s Ratio Prot	0.01	c0.32			c0.48			0.01			0.00	
v/s Ratio Perm	0.20			0.02			0.05			c0.15		0.05
v/c Ratio	0.31	0.49		0.04	0.82		0.31	0.03		0.82	0.01	0.31
Uniform Delay, d1	9.4	5.5		5.9	11.0		23.6	22.5		26.1	22.4	23.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	1.4		0.2	3.8		0.7	0.0		19.7	0.0	0.6
Delay (s)	10.5	6.9		6.0	14.8		24.3	22.5		45.8	22.4	24.2
Level of Service	B	A		A	B		C	C		D	C	C
Approach Delay (s)		7.2			14.7			23.7			35.1	
Approach LOS		A			B			C			D	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	15.8
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1>	0	1	1>	0	0	<1	1	0	<1>	0
Volume (vph)	60	604	26	9	1786	26	30	0	13	4	4	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1805	1853		1805	1896			1805	1615		1566	
Flt Permitted	0.03	1.00		0.42	1.00			1.00	1.00		0.97	
Satd. Flow (perm)	59	1853		802	1896			1900	1615		1528	
Peak-hour factor, PHF	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. Flow (vph)	60	604	26	9	1786	26	30	0	13	4	4	51
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	13	0	50	0
Lane Group Flow (vph)	60	629	0	9	1812	0	0	30	0	0	9	0
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	128.6	128.6		128.6	128.6			2.4	2.4		2.4	
Effective Green, g (s)	128.6	128.6		128.6	128.6			2.4	2.4		2.4	
Actuated g/C Ratio	0.92	0.92		0.92	0.92			0.02	0.02		0.02	
Clearance Time (s)	5.0	5.0		5.0	5.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	54	1702		737	1742			33	28		26	
v/s Ratio Prot		0.34			0.96							
v/s Ratio Perm	c1.02			0.01				c0.02	0.00		0.01	
v/c Ratio	1.11	0.37		0.01	1.04			0.91	0.01		0.34	
Uniform Delay, d1	5.7	0.7		0.5	5.7			68.7	67.6		68.0	
Progression Factor	1.00	1.00		0.40	0.73			1.00	1.00		1.00	
Incremental Delay, d2	156.5	0.6		0.0	27.8			118.0	0.1		7.7	
Delay (s)	162.2	1.3		0.2	31.9			186.7	67.7		75.7	
Level of Service	F	A		A	C			F	E		E	
Approach Delay (s)		15.3			31.8			150.7			75.7	
Approach LOS		B			C			F			E	

Intersection Summary			
HCM Average Control Delay	30.4	HCM Level of Service	C
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	2>	0	1	1	1	1
Volume (vph)	1632	203	128	660	298	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-2%	0%	
Total Lost time (s)	7.0		7.0	7.0	7.0	7.0
Lane Util. Factor	0.95		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3532		1823	1900	1805	1615
Flt Permitted	1.00		0.07	1.00	0.95	1.00
Satd. Flow (perm)	3532		128	1900	1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1632	203	128	660	298	99
RTOR Reduction (vph)	9	0	0	0	0	10
Lane Group Flow (vph)	1826	0	128	660	298	89
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%
Turn Type			pm+pt			pt+ov
Protected Phases	4		3	8	2	2 3
Permitted Phases			8			
Actuated Green, G (s)	53.1		67.0	67.0	19.0	32.9
Effective Green, g (s)	53.1		67.0	67.0	19.0	32.9
Actuated g/C Ratio	0.53		0.67	0.67	0.19	0.33
Clearance Time (s)	7.0		7.0	7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1875		203	1273	343	531
v/s Ratio Prot	c0.52		0.04	c0.35	c0.17	0.06
v/s Ratio Perm			0.38			
v/c Ratio	0.97		0.63	0.52	0.87	0.17
Uniform Delay, d1	22.8		22.2	8.3	39.3	23.8
Progression Factor	0.86		1.19	0.85	1.00	1.00
Incremental Delay, d2	15.4		5.0	1.2	20.1	0.1
Delay (s)	35.1		31.5	8.3	59.4	24.0
Level of Service	D		C	A	E	C
Approach Delay (s)	35.1			12.1	50.6	
Approach LOS	D			B	D	

Intersection Summary			
HCM Average Control Delay	31.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Controlled Document

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	1	0	1>	0	1	1
Volume (vph)	25	0	612	228	178	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		1%	-1%		-1%	
Total Lost time (s)	5.0		6.0		5.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	1.00		0.96		1.00	0.85
Flt Protected	0.95		1.00		0.95	1.00
Satd. Flow (prot)	1796		1808		1761	1399
Flt Permitted	0.95		1.00		0.95	1.00
Satd. Flow (perm)	1796		1808		1761	1399
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	0	612	228	178	12
RTOR Reduction (vph)	0	0	11	0	0	8
Lane Group Flow (vph)	25	0	829	0	178	4
Heavy Vehicles (%)	0%	0%	2%	1%	3%	16%
Turn Type	Prot					Prot
Protected Phases	2		1		3	3
Permitted Phases						
Actuated Green, G (s)	2.0		67.6		14.4	14.4
Effective Green, g (s)	2.0		67.6		14.4	14.4
Actuated g/C Ratio	0.02		0.68		0.14	0.14
Clearance Time (s)	5.0		6.0		5.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	36		1222		254	201
v/s Ratio Prot	c0.01		c0.46		c0.10	0.00
v/s Ratio Perm						
v/c Ratio	0.69		0.68		0.70	0.02
Uniform Delay, d1	48.7		9.7		40.7	36.7
Progression Factor	1.00		1.12		1.00	1.00
Incremental Delay, d2	44.9		2.4		8.4	0.0
Delay (s)	93.6		13.3		49.2	36.8
Level of Service	F		B		D	D
Approach Delay (s)		93.6	13.3		48.4	
Approach LOS		F	B		D	

Intersection Summary			
HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

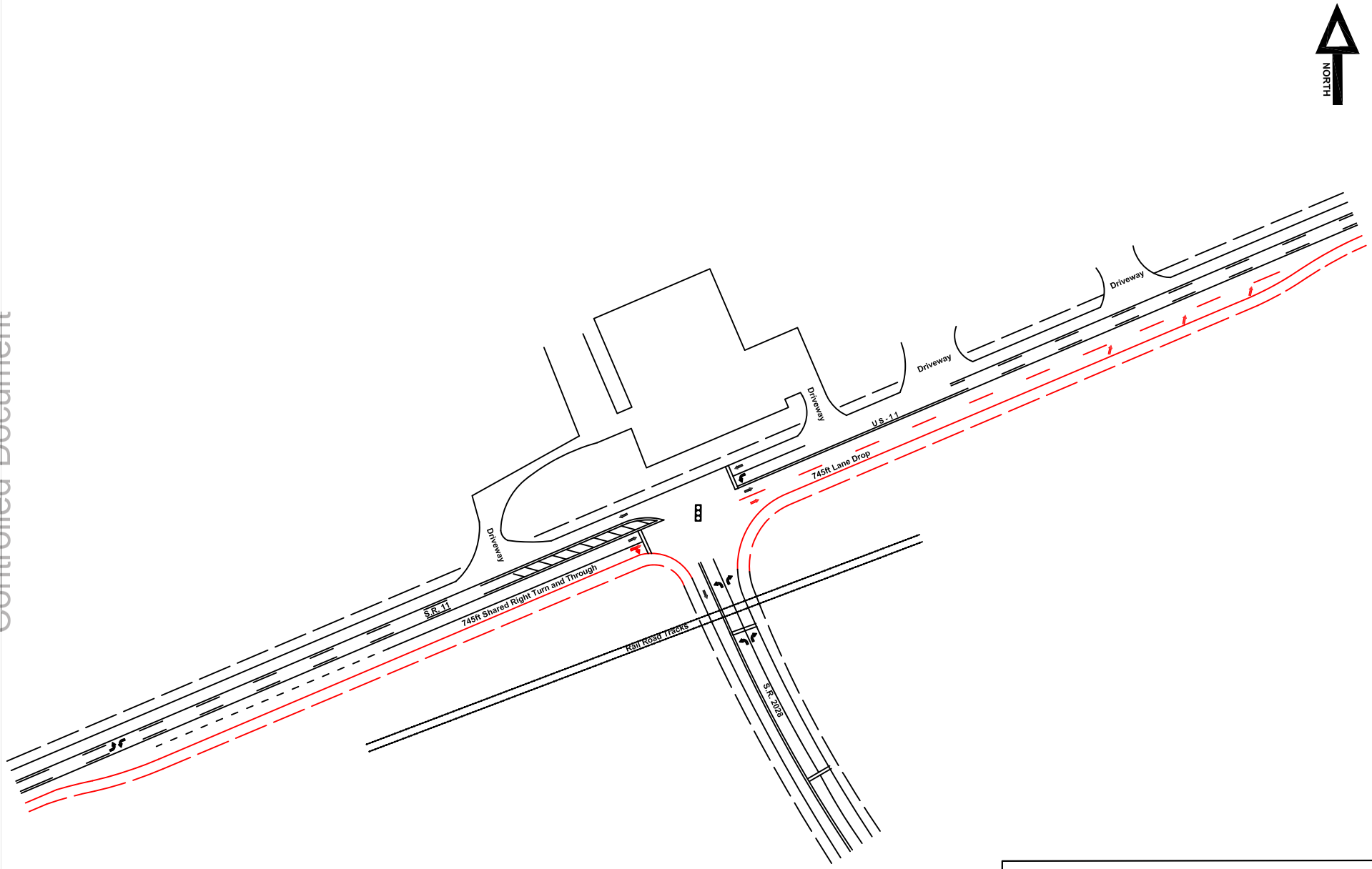
Controlled Document

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	0	0	1	1	1
Volume (vph)	420	0	0	303	585	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	5.5	
Lane Util. Factor	1.00			1.00	1.00	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	1900			1881	1805	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	1900			1881	1805	
Peak-hour factor, PHF	1.00	0.92	0.62	1.00	1.00	1.00
Adj. Flow (vph)	420	0	0	303	585	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	420	0	0	303	585	0
Heavy Vehicles (%)	0%	2%	20%	1%	0%	0%
Turn Type						Free
Protected Phases	4			8	2	
Permitted Phases						Free
Actuated Green, G (s)	14.7			14.7	24.3	
Effective Green, g (s)	14.7			14.7	24.3	
Actuated g/C Ratio	0.29			0.29	0.49	
Clearance Time (s)	5.5			5.5	5.5	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	559			553	877	
v/s Ratio Prot	c0.22			0.16	c0.32	
v/s Ratio Perm						
v/c Ratio	0.75			0.55	0.67	
Uniform Delay, d1	16.0			14.9	9.8	
Progression Factor	1.22			1.00	1.00	
Incremental Delay, d2	2.1			1.1	4.0	
Delay (s)	21.6			16.0	13.8	
Level of Service	C			B	B	
Approach Delay (s)	21.6			16.0	13.8	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

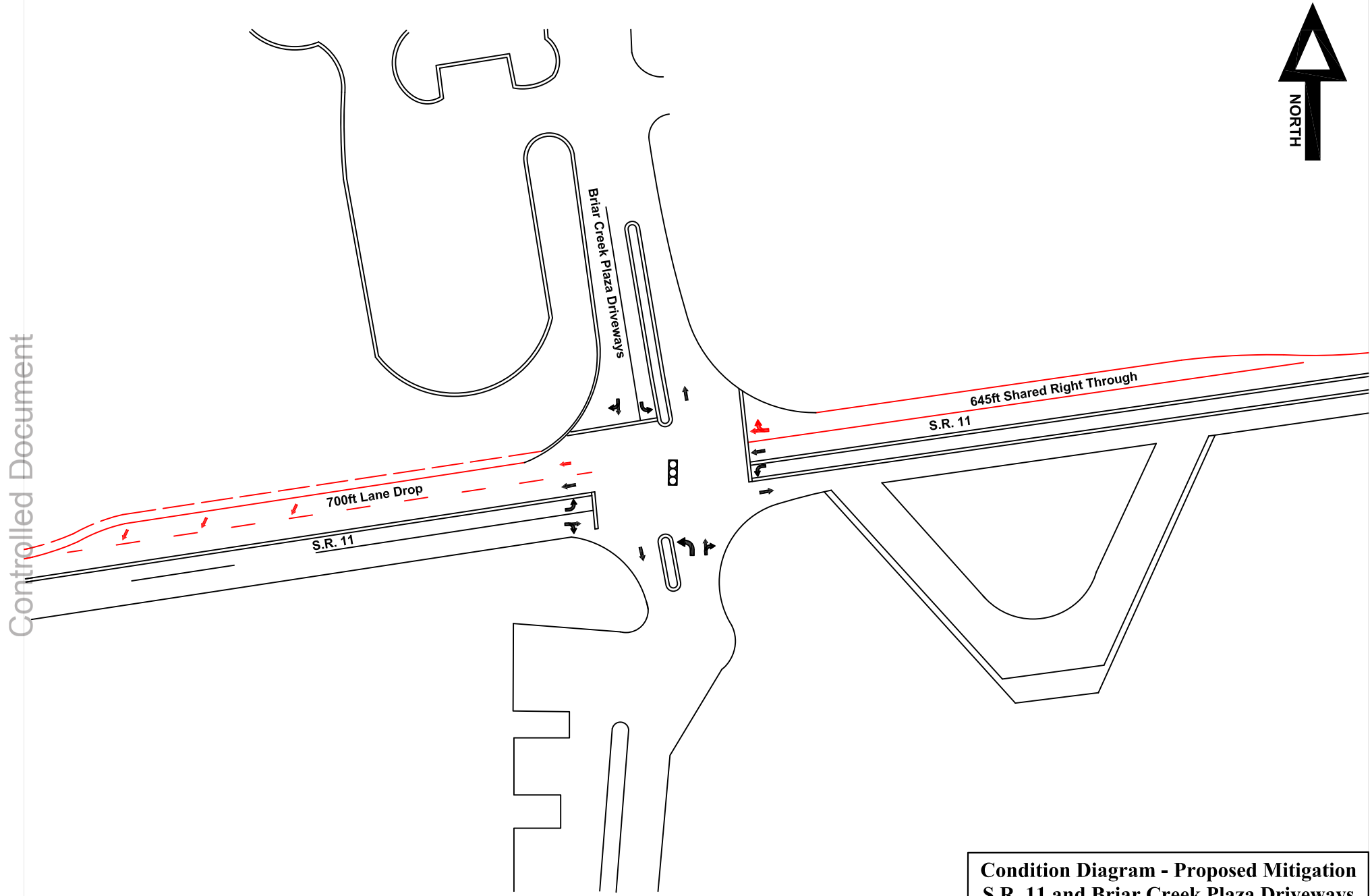
c Critical Lane Group

Controlled Document



Condition Diagram - Proposed Mitigation S.R. 11 and S.R. 2028		
Municipality: South Centre	Date: 6/1/10	Not To Scale Signage Per MUTCD Not Shown
KLD Engineering PC		

Note: Red indicates proposed changes



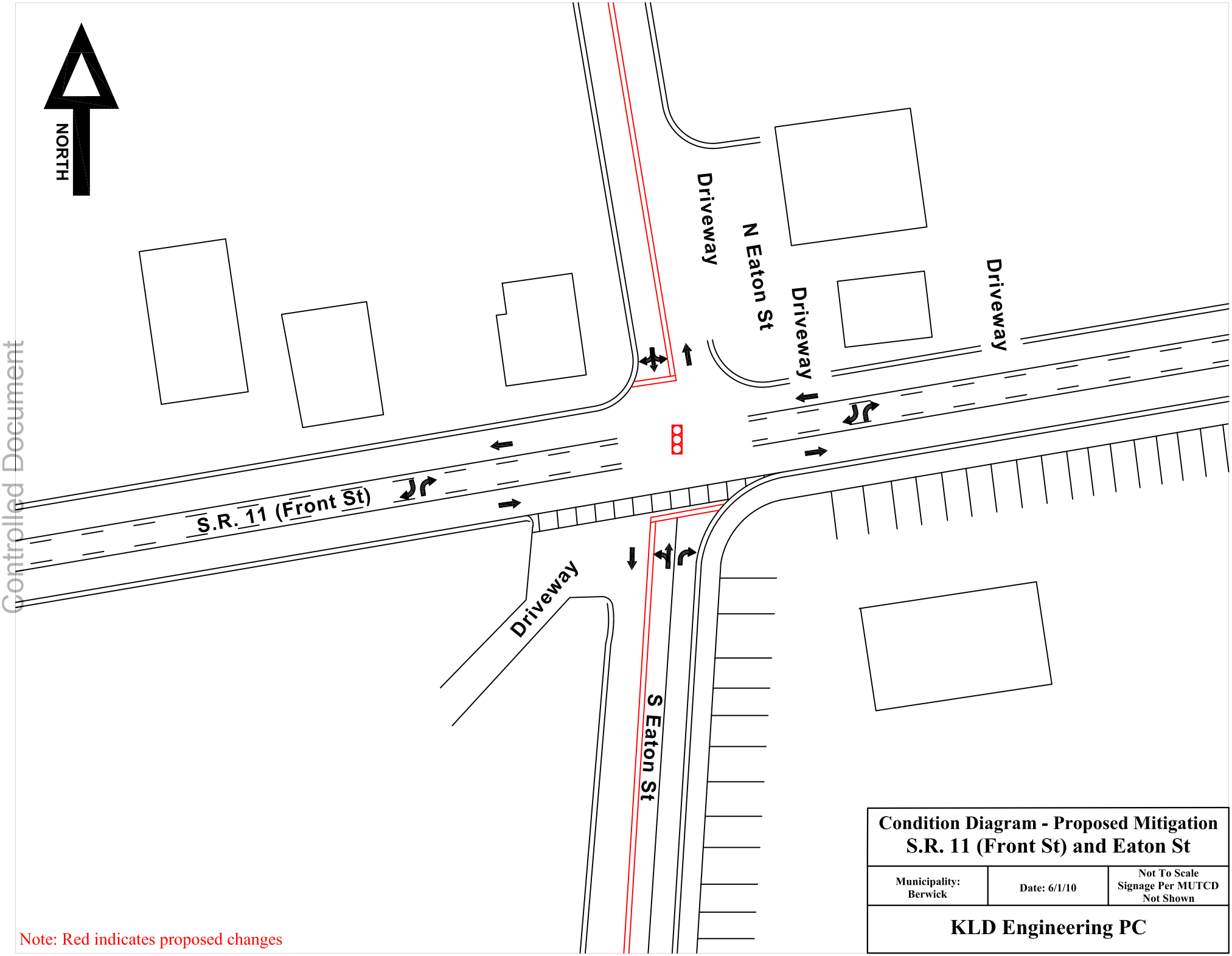
Condition Diagram - Proposed Mitigation
S.R. 11 and Briar Creek Plaza Driveways

Municipality: Briar Creek	Date: 6/1/10	Not To Scale Signage Per MUTCD Not Shown

KLD Engineering PC

Note: Red indicates proposed changes

Controlled Document



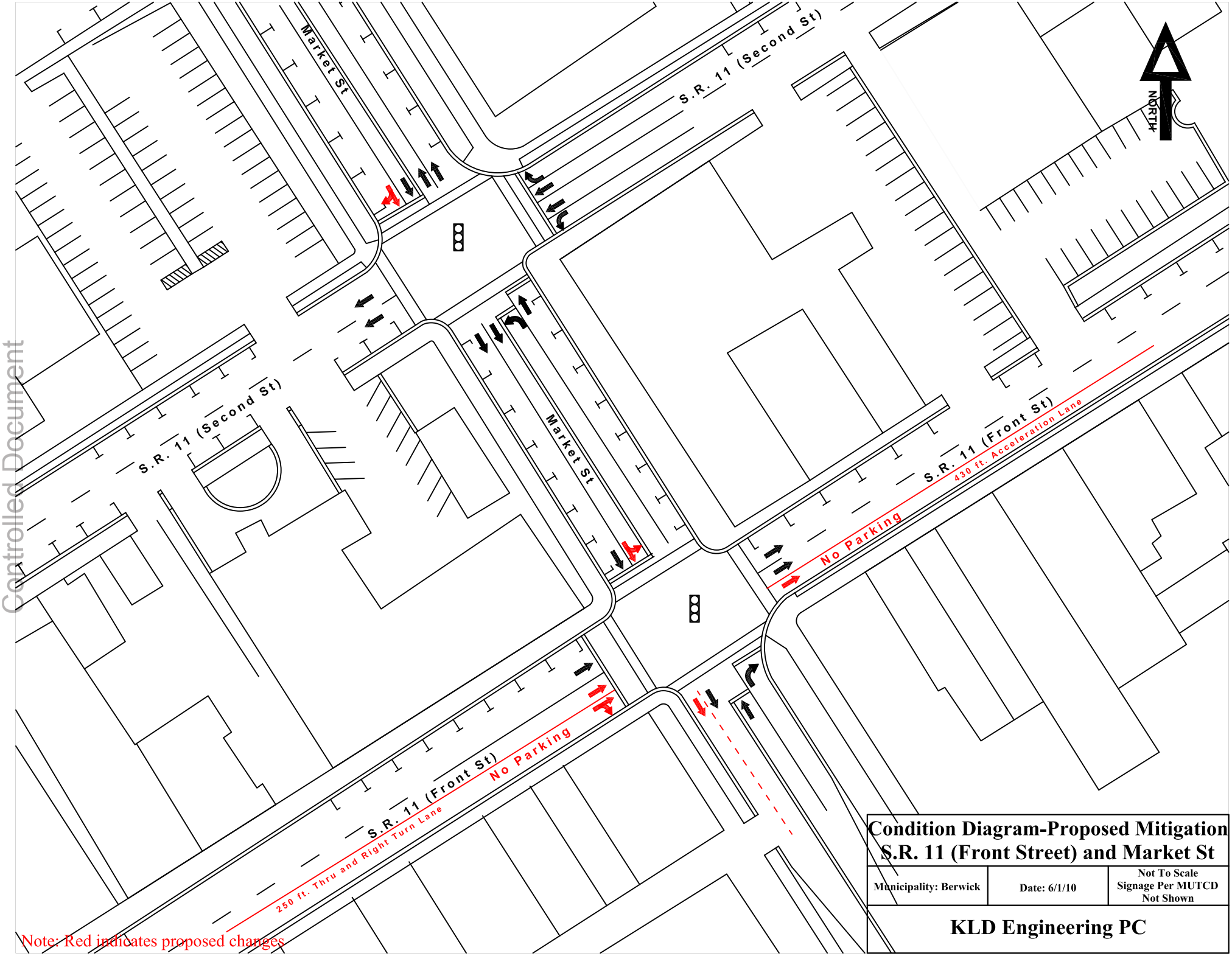
Condition Diagram - Proposed Mitigation
S.R. 11 (Front St) and Eaton St

Municipality: Berwick	Date: 6/1/10	Not To Scale Signage Per MUTCD Not Shown

KLD Engineering PC

Note: Red indicates proposed changes

Controlled Document



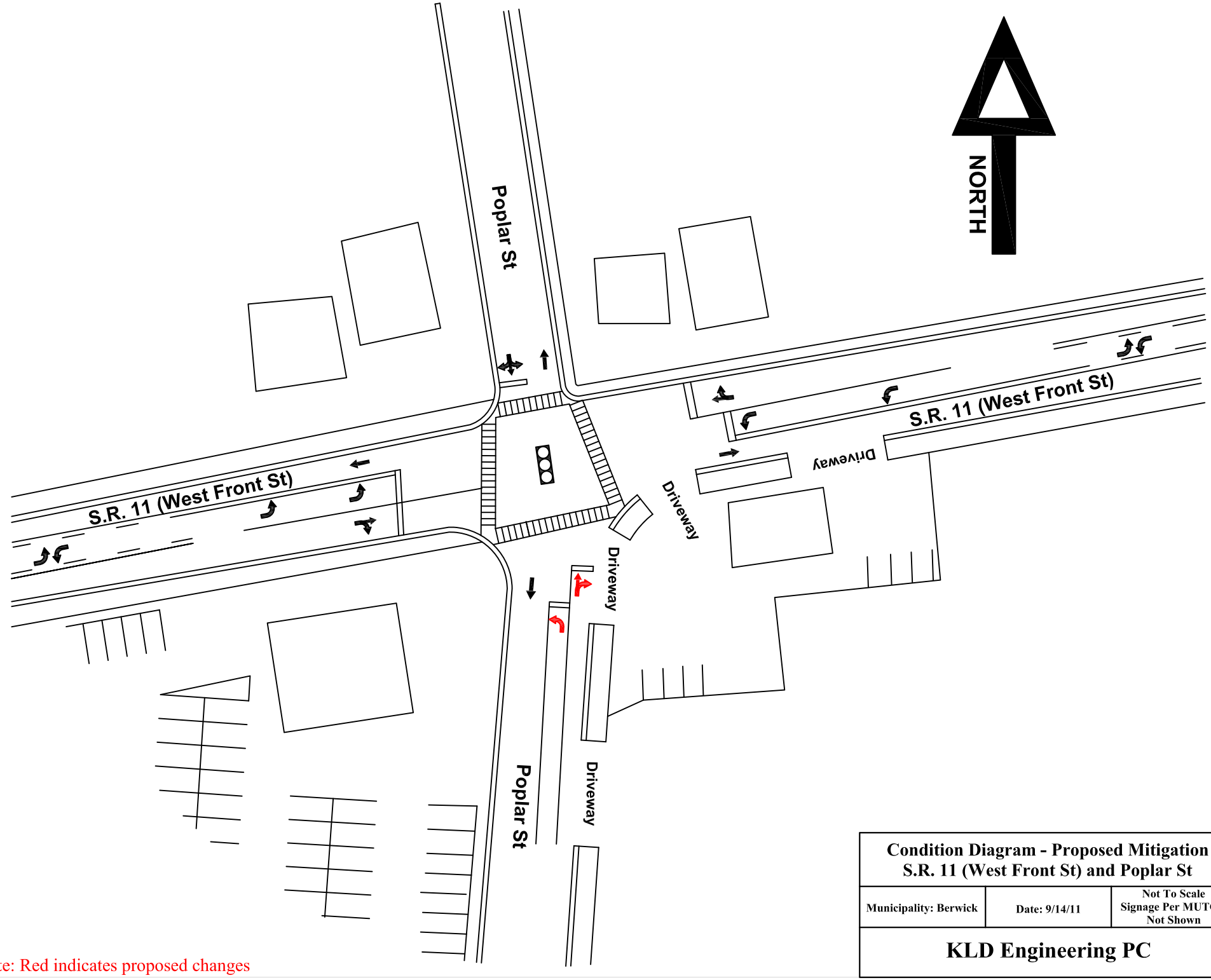
Condition Diagram-Proposed Mitigation
S.R. 11 (Front Street) and Market St

Municipality: Berwick	Date: 6/1/10	Not To Scale Signage Per MUTCD Not Shown

KLD Engineering PC

Note: Red indicates proposed changes

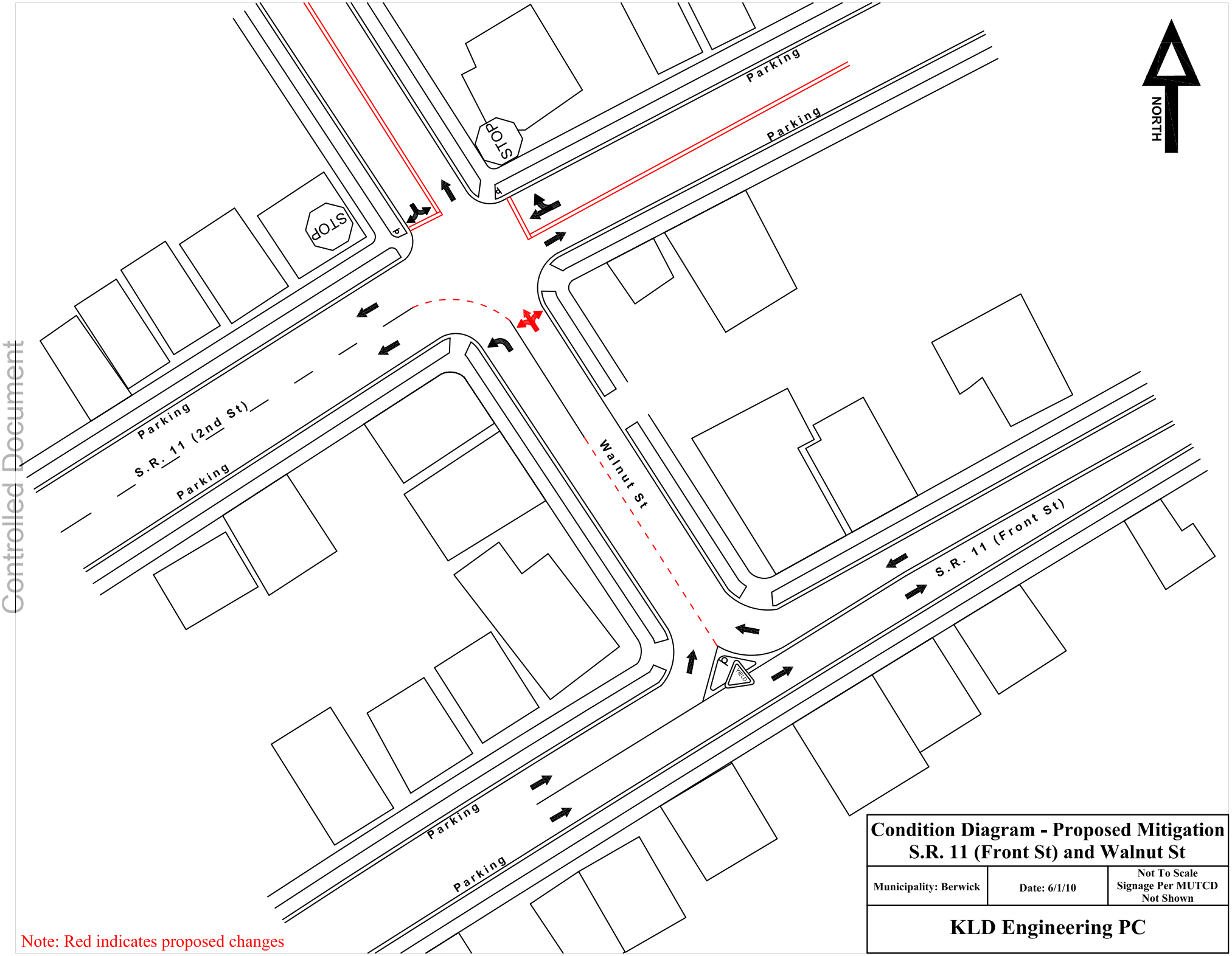
Controlled Document



Condition Diagram - Proposed Mitigation S.R. 11 (West Front St) and Poplar St		
Municipality: Berwick	Date: 9/14/11	Not To Scale Signage Per MUTCD Not Shown
KLD Engineering PC		

Note: Red indicates proposed changes

Controlled Document



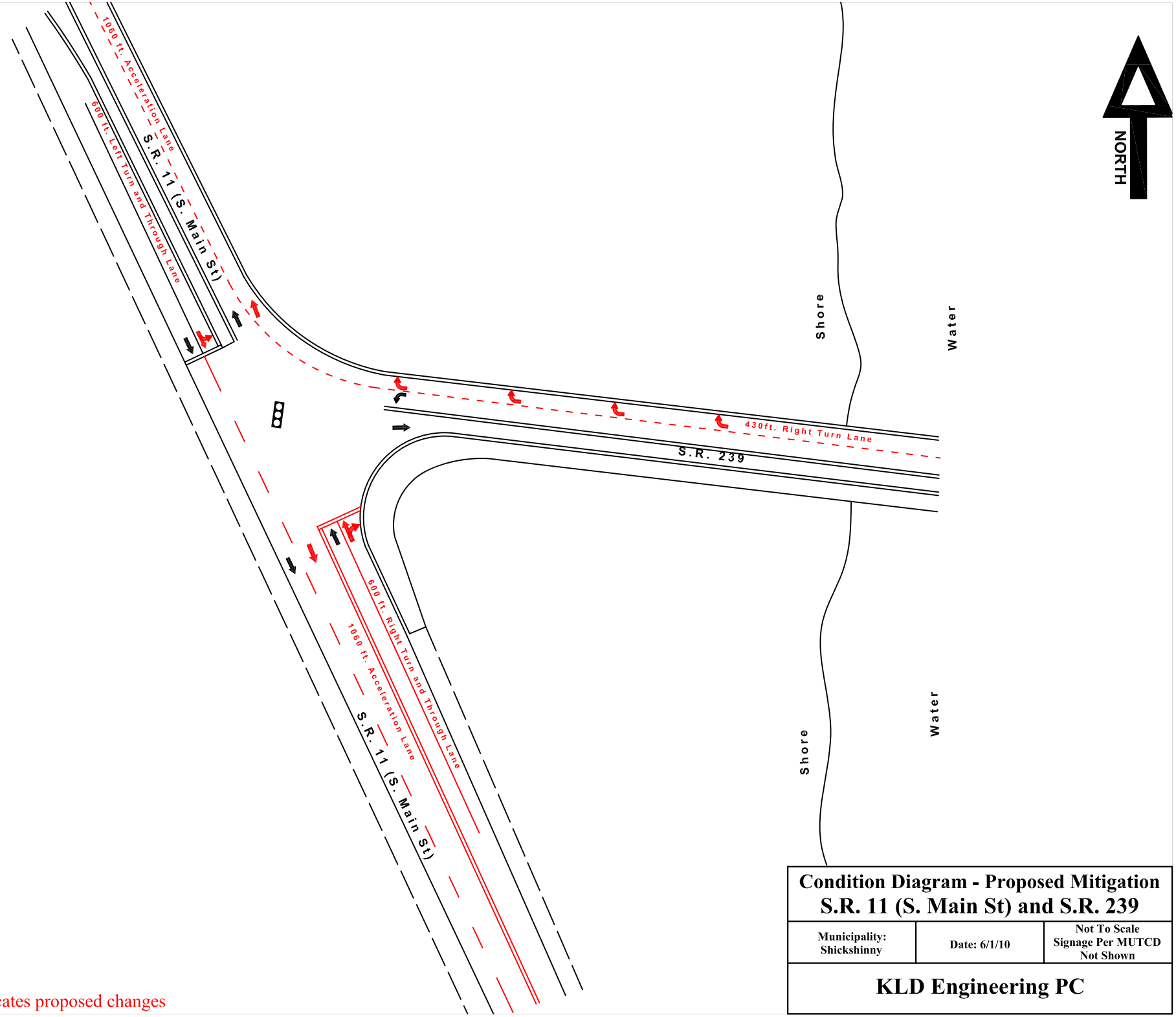
Condition Diagram - Proposed Mitigation
S.R. 11 (Front St) and Walnut St

Municipality: Berwick	Date: 6/1/10	Not To Scale Signage Per MUTCD Not Shown

KLD Engineering PC

Note: Red indicates proposed changes

Controlled Document



Condition Diagram - Proposed Mitigation
S.R. 11 (S. Main St) and S.R. 239

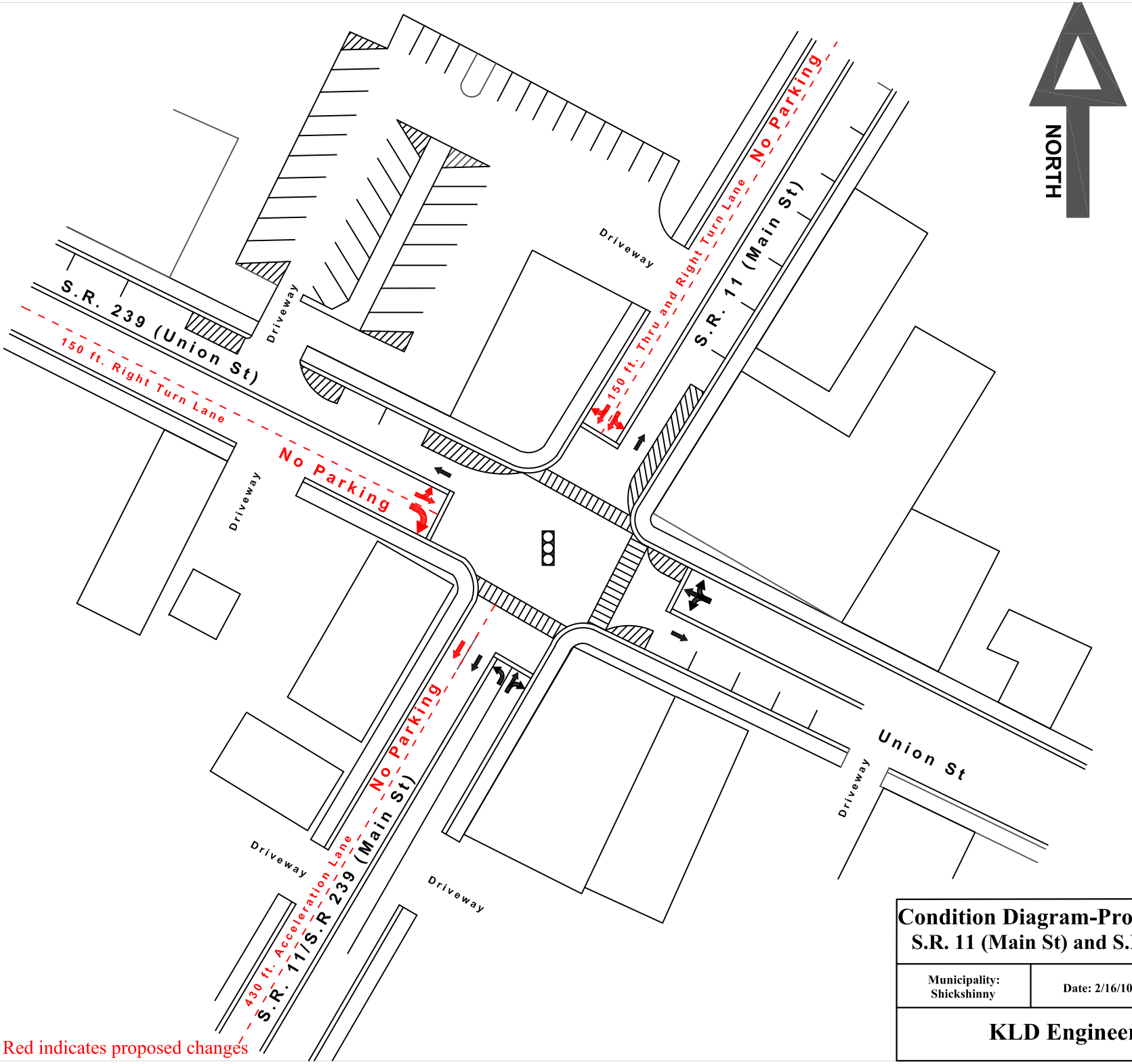
Municipality: Shickshinny	Date: 6/1/10	Not To Scale Signage Per MUTCD Not Shown

KLD Engineering PC

Note: Red indicates proposed changes

Controlled Document

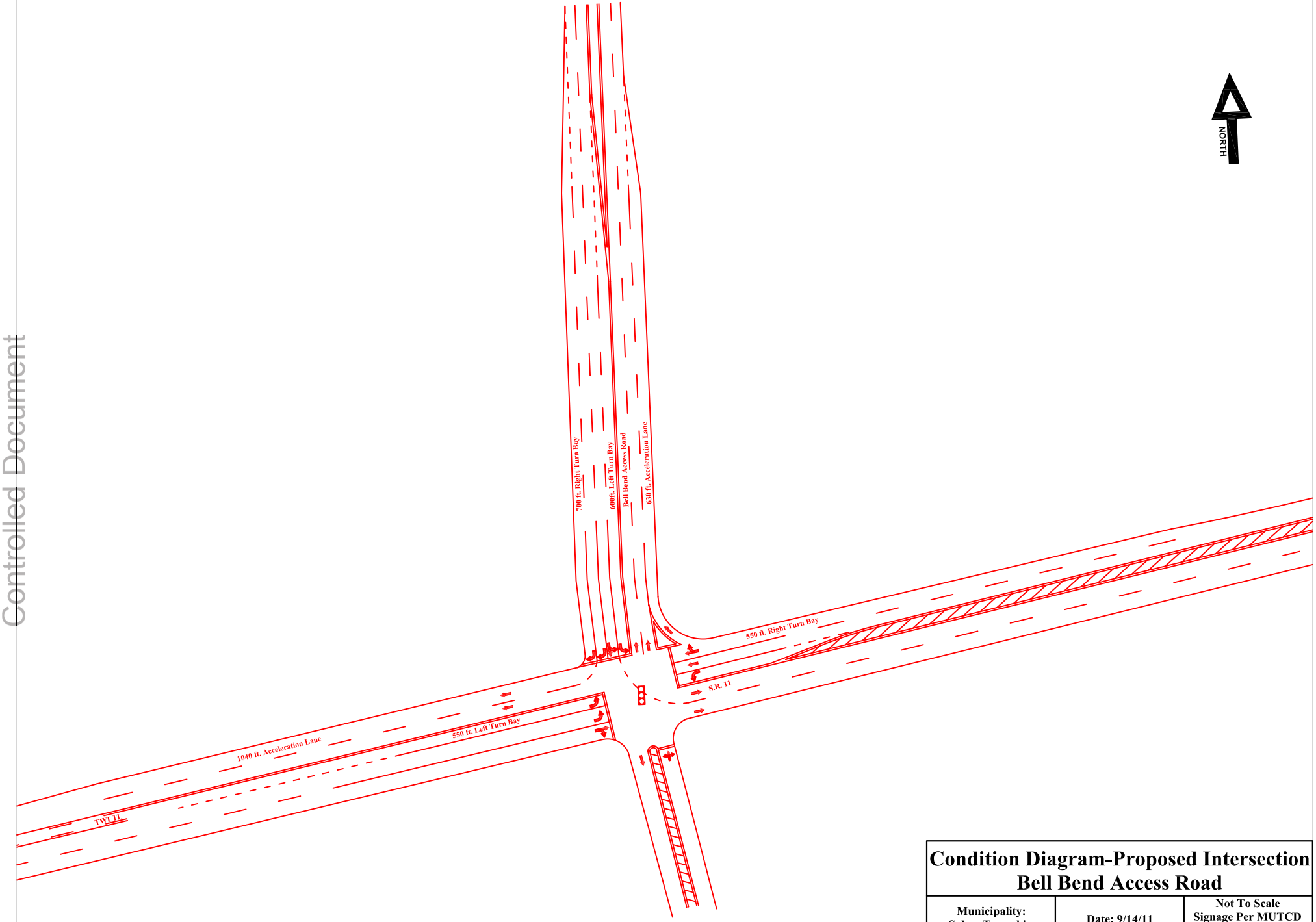
Controlled Document



Condition Diagram-Proposed Mitigation S.R. 11 (Main St) and S.R. 239 (Union St)		
Municipality: Shickshinny	Date: 2/16/10	Not To Scale Signage Per MUTCD Not Shown
KLD Engineering PC		

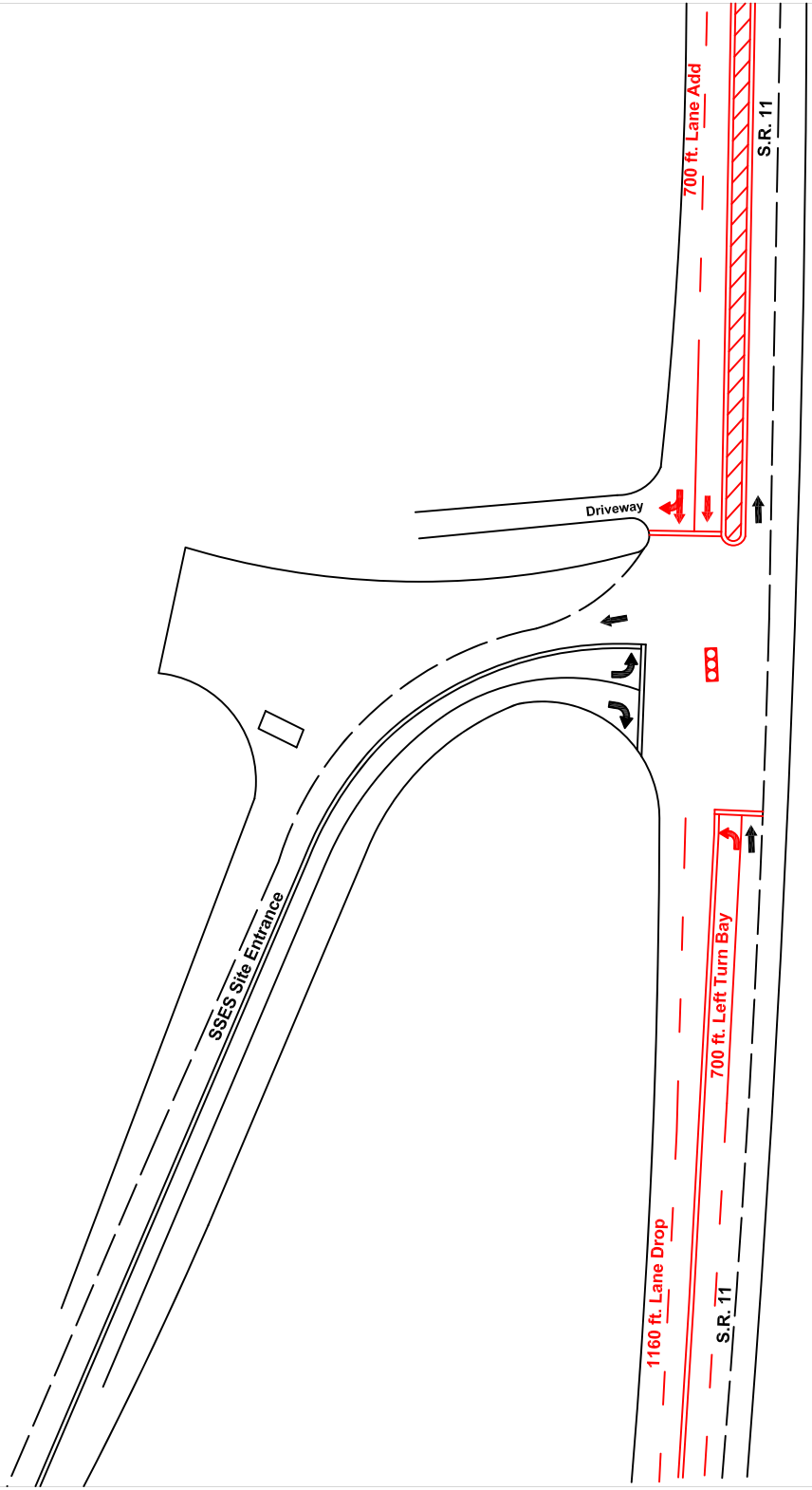
Note: Red indicates proposed changes

Controlled Document



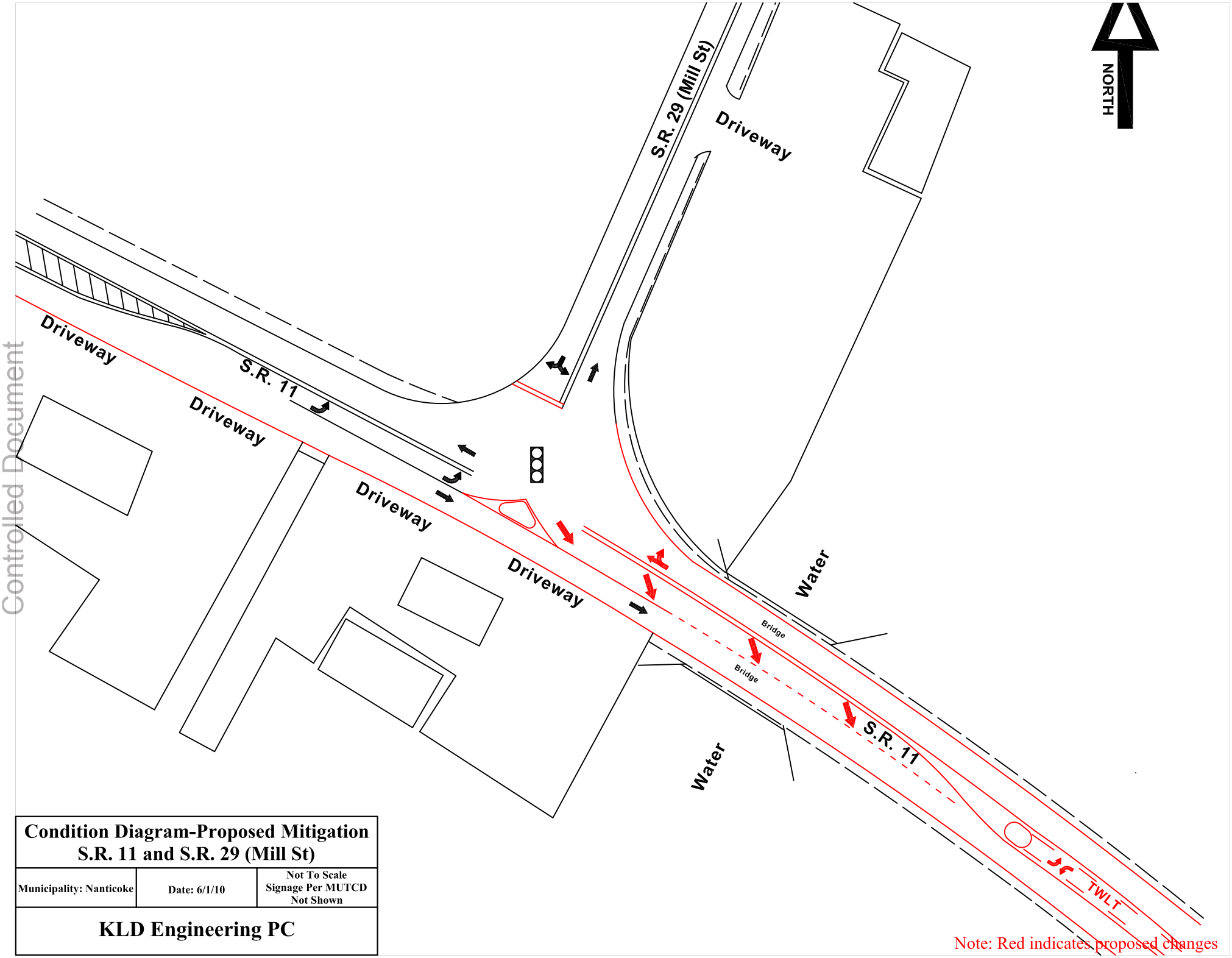
Condition Diagram-Proposed Intersection Bell Bend Access Road		
Municipality: Salem Township	Date: 9/14/11	Not To Scale Signage Per MUTCD Not Shown
KLD Engineering PC		

Controlled Document



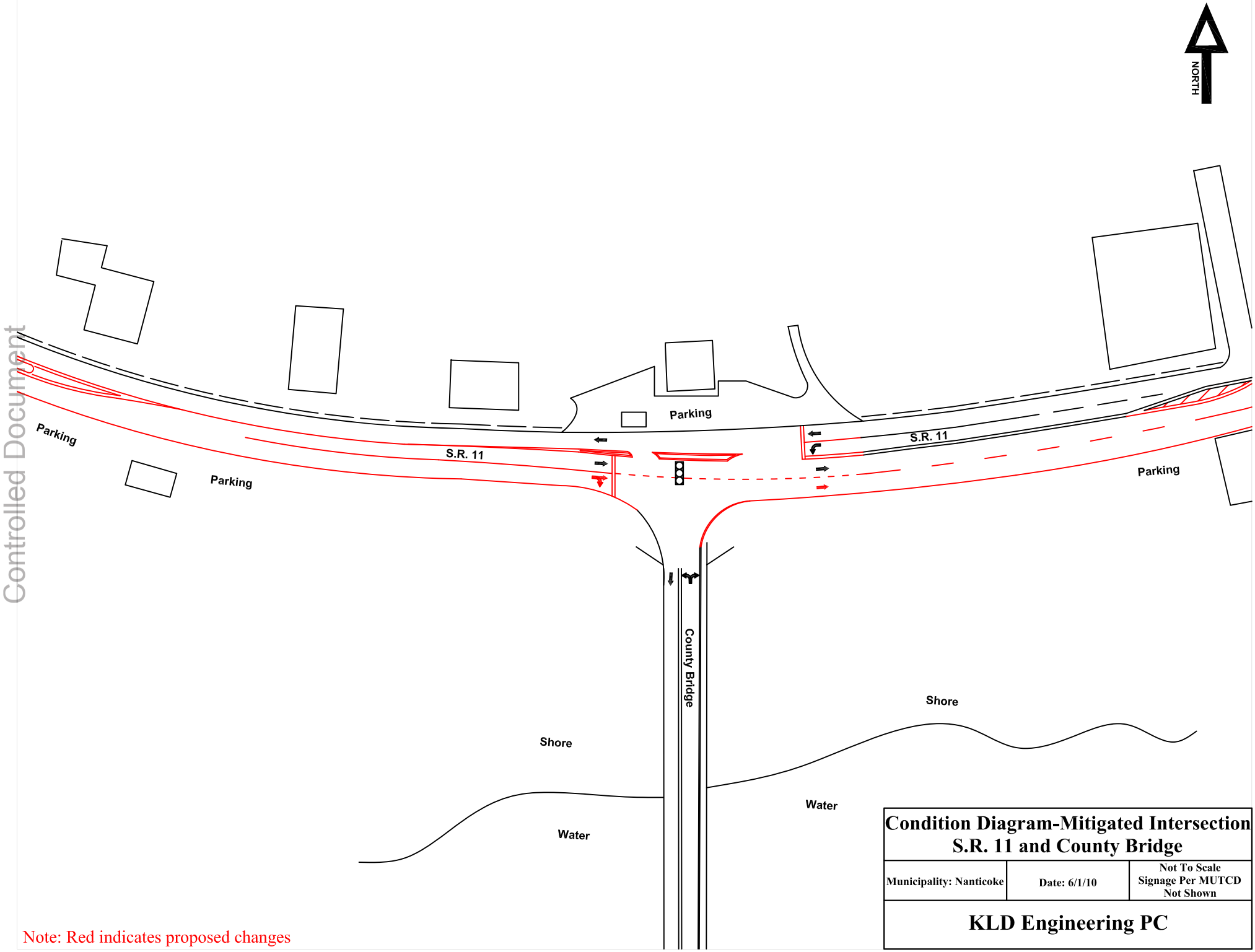
Condition Diagram-Proposed Mitigation S.R. 11 and SSES Site Entrance		
Municipality: Berwick	Date: 6/2/10	Not To Scale Signage Per MUTCD Not Shown
KLD Engineering PC		

Note: Red indicates proposed changes



Condition Diagram-Proposed Mitigation S.R. 11 and S.R. 29 (Mill St)		
Municipality: Nanticoke	Date: 6/1/10	Not To Scale Signage Per MUTCD Not Shown
KLD Engineering PC		

Controlled Document



Condition Diagram-Mitigated Intersection
S.R. 11 and County Bridge

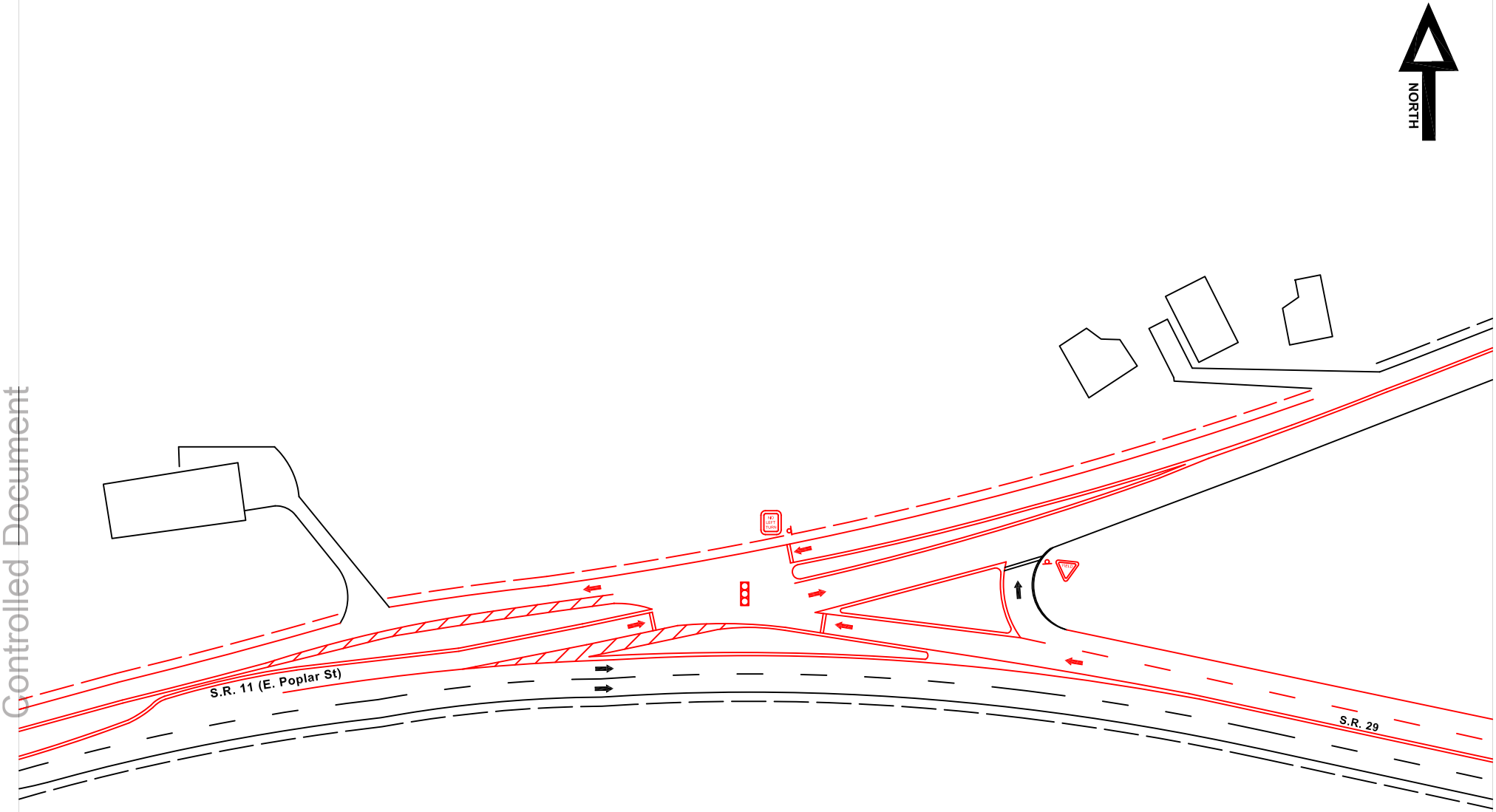
Municipality: Nanticoke	Date: 6/1/10	Not To Scale Signage Per MUTCD Not Shown

KLD Engineering PC

Note: Red indicates proposed changes

Controlled Document

Controlled Document



Condition Diagram - Proposed Mitigation S.R. 11 (E. Poplar St) and S.R. 29		
Municipality: Berwick	Date: 6/1/10	Not To Scale Signage Per MUTCD Not Shown
KLD Engineering PC		

Note: Red indicates proposed changes

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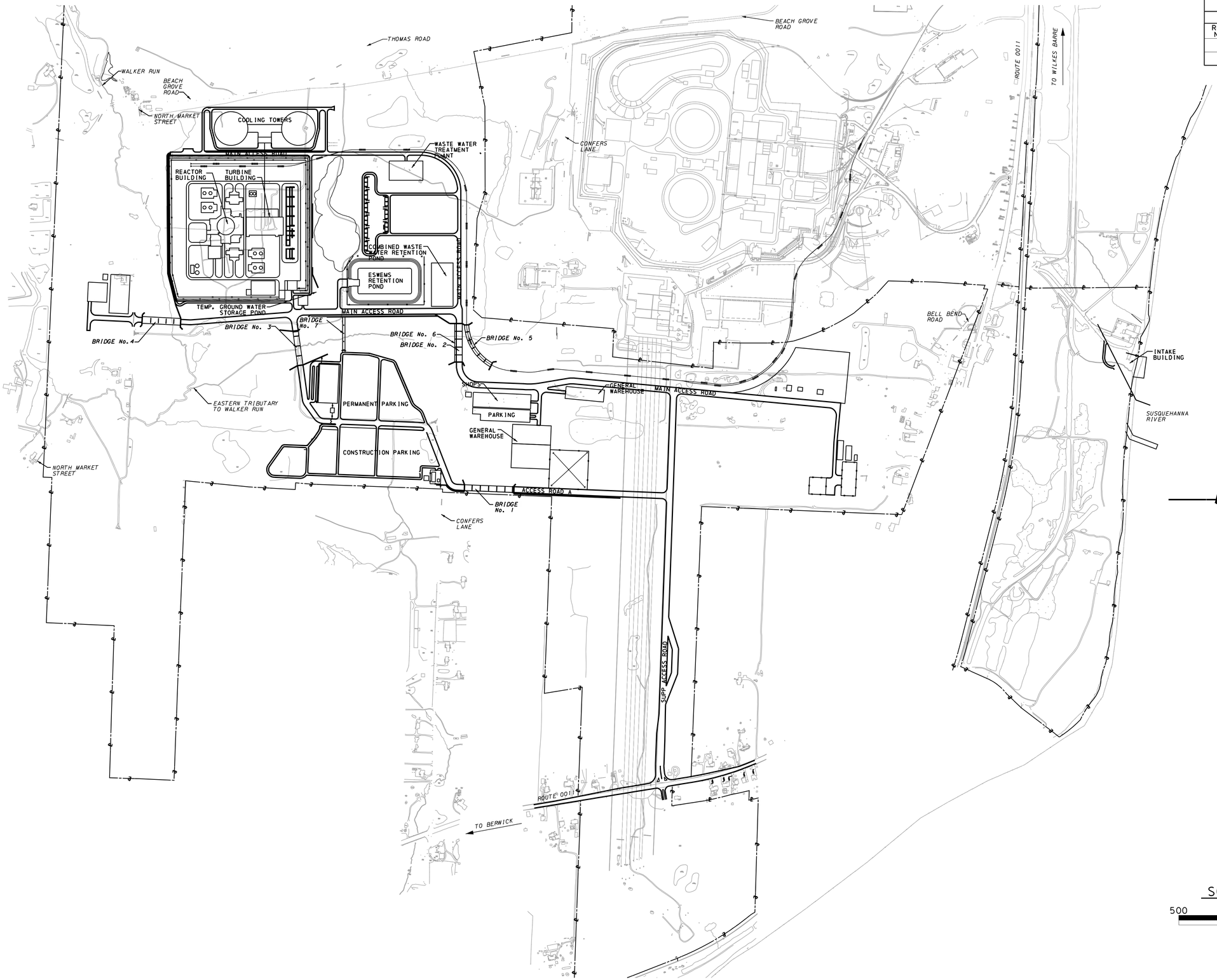
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
4-0	LUZERNE	0011		2 OF 31
SALEM TOWNSHIP				

REVISION NUMBER	REVISIONS	DATE	BY



SITE PLAN

PLOTTED: 3/22/2011

OPERATOR:
FILE NAME: I:\PROJECTS\PPLS\PPLS0902-Bell Bend Land Development\DESIGN\CT\HOP 1\CONST\CT-0201.dgn

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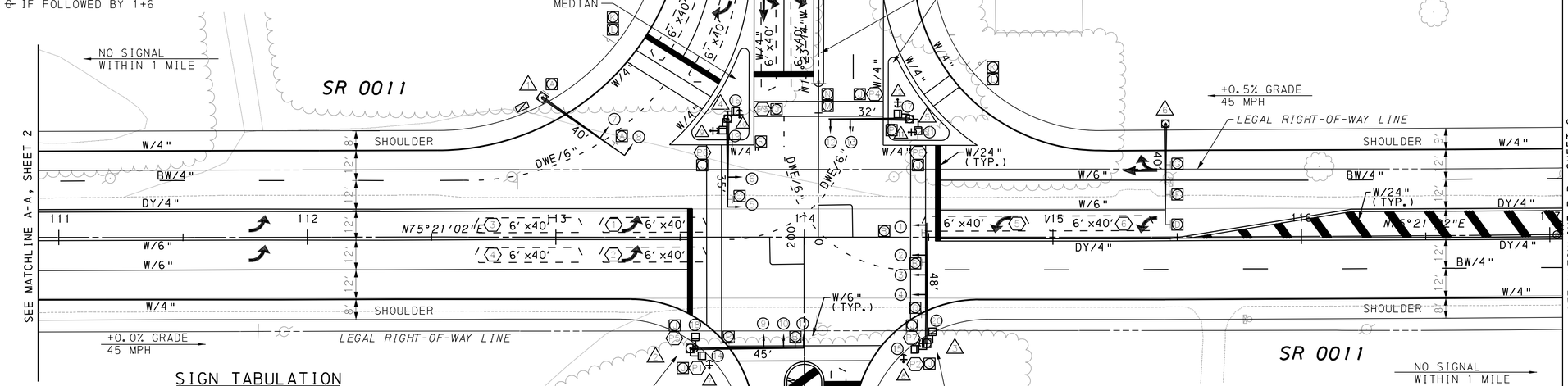
PHASING, TIMING, AND COLOR SEQUENCE CHART

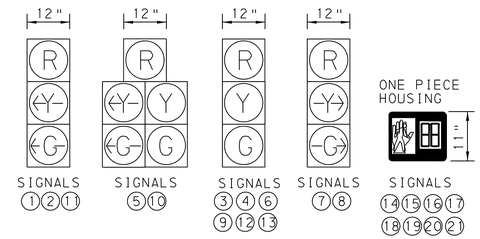
	1+5				1+6				2+5				2+6				3+8				4				EMERGENCY FLASHING
	INTERVALS				INTERVALS				INTERVALS				INTERVALS				INTERVALS				INTERVALS				
SIGNALS	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
1,2	~~G~~	~~G~~	~~Y~~	R①	~~G~~	~~G~~	~~Y~~	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
3,4	R	R	R	R	G	G	Y②	R②	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	Y
5	R/~~G~~	R/~~G~~	R/~~Y~~	R③	R	R	R	R	G/~~G~~	G/~~G~~	Y④	R②	G	G	Y	R	R	R	R	R	R	R	R	R	Y
6	R	R	R	R	R	R	R	R	G	G	Y	R	G	G	Y	R	R	R	R	R	R	R	R	R	Y
7,8	~~G~~	~~G~~	~~Y~~	R⑤	~~G~~	~~G~~	~~Y~~	R	R	R	R	R	R	R	R	R	~~G~~	~~G~~	~~Y~~	R	R	R	R	R	R
9	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R	R	R	R	R	R
10	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G/~~G~~	G/~~G~~	Y/~~Y~~	R	R	R	R	R	R
11	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	~~G~~	~~G~~	~~Y~~	R	R	R	R	R	R
12,13	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R	R
14,15	H	H	H	H	M	FH	H	H	H	H	H	H	M	FH	H	H	H	H	H	H	H	H	H	H	OFF
16,17	H	H	H	H	H	H	H	H	M	FH	H	H	M	FH	H	H	H	H	H	H	H	H	H	H	OFF
18,19	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH	H	H	H	H	H	H	OFF
20,21	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH	H	H	OFF
FIXED																									
MINIMUM																									
PASSAGE																									
MAXIMUM 1																									
MAXIMUM 2																									
MAXIMUM 3																									
PEDESTRIAN																									
MEMORY	NL				NL				NL				mR				NL				NL				

mR = MINIMUM RECALL
NL = NON-LOCKING

OPERATION NOTES
① ~~G~~ IF FOLLOWED BY 1+6
② G IF FOLLOWED BY 2+6
③ R/~~G~~ IF FOLLOWED BY 1+6
④ G/~~Y~~ IF FOLLOWED BY 2+6
⑤ ~~G~~ IF FOLLOWED BY 1+6



SIGNAL INDICATIONS



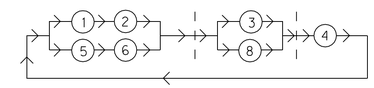
ALL SIGNALS SHALL HAVE LED'S
ALL SIGNALS SHALL HAVE BACKPLATES

WEEKLY PROGRAM CHART

EVENT	DAY*	HOUR	PROGRAM
1	1 TO 7	0600	MAX. 1
2	1 TO 7	0900	MAX. 3
3	1 TO 7	1400	MAX. 2
4	1 TO 7	1800	MAX. 3

* DAY 1 = SUNDAY

NEMA PHASING



SIGN TABULATION

SYMBOL	SERIES	DESCRIPTION	SIZE	QTY.
	R10-11	NO TURN ON RED	24"x30"	2
	R10-10L	LEFT TURN SIGNAL	24"x30"	3
	R10-12	LEFT TURN YIELD ON GREEN ●	30"x36"	1
	R3-5L	LEFT TURN	30"x36"	4
	R3-5R	RIGHT TURN	30"x36"	2
	R3-5S	STRAIGHT THROUGH	30"x36"	1
	R3-6SR	OPTIONAL RIGHT TURN SIGN	30"x36"	2
	R3-6LS	OPTIONAL LEFT TURN SIGN	30"x36"	1
	R10-3E	PUSH BUTTON WITH COUNTDOWN TIMER	9"x15"	8
	W11-2	PEDESTRIAN CROSSING	36"x12"	2
	W16-7P	DIAGONAL DOWNWARD POINTING ARROW	24"x12"	2
	R4-7	KEEP RIGHT	24"x30"	2
	OM1-3	OBJECT MARKER	18"x18"	2
	D3-4	SR 0011	*	2
	D3-5	SUPP ACCESS RD / LAYDOWN ENTRANCE	*	1
	D3-5	LAYDOWN ENTRANCE / SUPP ACCESS RD	*	1

LEGEND

20'	MAST ARM / LENGTH
	4' HIGH PEDESTRIAN POLE
	VEHICULAR SIGNAL HEAD
	SIGN
	PEDESTRIAN PUSH BUTTON
	PEDESTRIAN SIGNAL HEAD
	VEHICULAR DETECTOR
	JUNCTION BOX
	CONTROLLER ASSEMBLY
C/4"	CONDUIT / WIDTH
W/4"	SOLID WHITE LINE/WIDTH
Y/4"	SOLID YELLOW LINE/WIDTH
DY/4"	DOUBLE YELLOW LINE/WIDTH
BW/4"	BROKEN WHITE LINE/WIDTH
DWE/6"	DOTTED WHITE EXT. LINE/WIDTH

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
4-0	LUZERNE	SR 0011	XX	1 OF 3

SALEM TOWNSHIP

PERMIT NO. _____ SHEET 2 OF 4

DATE ISSUED _____ DATE REVISED _____

DATE	REVISION	BY

GENERAL NOTES

INSTALL, OPERATE AND MAINTAIN THIS TRAFFIC SIGNAL IN ACCORDANCE WITH PENNSYLVANIA DEPARTMENT OF TRANSPORTATION REGULATIONS ON OFFICIAL TRAFFIC CONTROL DEVICES, SPECIFICATIONS (PUB 408), TRAFFIC CONTROL STANDARDS AND TRAFFIC SIGNAL DESIGN HANDBOOK (PUB 149).

NO MODIFICATION OF THIS INSTALLATION IS PERMITTED UNLESS PRIOR APPROVAL IS GRANTED, IN WRITING, BY THE DISTRICT TRAFFIC ENGINEER.

ALL MAINTENANCE NECESSARY FOR THE PROPER VISIBILITY OF THESE SIGNALS, INCLUDING TRIMMING OF TREES, IS THE RESPONSIBILITY OF THE PERMITTEE.

THE PERMITTEE INSTALLS AND MAINTAINS ALL SIGNS IN THE SIGN BLOCK AND ALL PAVEMENT MARKINGS INDICATED ON THIS DRAWING, WHICH ARE CONSIDERED PART OF THE PERMIT, UNLESS OTHERWISE INDICATED.

EACH LOOP MUST BE ASSIGNED TO A SEPARATE DETECTOR INPUT IN THE CONTROLLER TIMER WHICH WILL PROVIDE THE CAPABILITY OF EXTENSIONS AND DELAYS TO ALL INDIVIDUAL LOOPS.

CARD RACK TO BE NEMA TYPE 7-T.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING, UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 121, AS AMENDED, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, CONSULT WITH UTILITY COMPANIES TO RESOLVE ANY CONFLICTS.

THE PERMITTEE IS RESPONSIBLE FOR COORDINATING ANY RELOCATION OF OVERHEAD UTILITIES THAT MAY INTERFERE WITH CLEAR VISION OF THE SIGNAL HEADS.

INSTALL SIGNAL HEADS AND SIGNS WITH BOTTOMS NOT LESS THAN 16 FEET NOR MORE THAN 17 FEET ABOVE THE ROADWAY.

INSTALL SIGNAL SUPPORTS AND POST MOUNTED SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB.

INSTALL ALL SIGNS AND PAVEMENT MARKINGS, AS INDICATED ON THIS PLAN, BEFORE SIGNALS CAN BE PUT INTO RED, YELLOW, GREEN OPERATION.

CONTACT PENNDOT TRAFFIC UNIT TO SCHEDULE A TRAFFIC SIGNAL INSPECTION A MINIMUM OF THREE DAYS PRIOR TO PLACING THE SIGNALS INTO RED, YELLOW, GREEN OPERATION.

NOTIFY THE DISTRICT TRAFFIC ENGINEER SEVEN CALENDAR DAYS PRIOR TO CONDUCTING A PHYSICAL AND FUNCTIONAL SHOP TEST AS REQUIRED IN SECTION 1104 (PUB 408), SO THAT DISTRICT REPRESENTATIVES MAY WITNESS THE TESTING.

SIGNALS MUST FLASH A MINIMUM OF THREE DAYS PRIOR TO RED, YELLOW, GREEN OPERATION.

ALL PAVEMENT MARKINGS TO BE HOT THERMOPLASTIC.

COUNTY: LUZERNE COUNTY

MUNICIPALITY: SALEM TOWNSHIP

INTERSECTION: S.R. 0011 AND SUPP ACCESS ROAD

REVIEWED:

MUNICIPAL OFFICIAL DATE

RECOMMENDED:

DISTRICT TRAFFIC ENGINEER DATE

SCALE: 0 25 50 75

Controlled Document

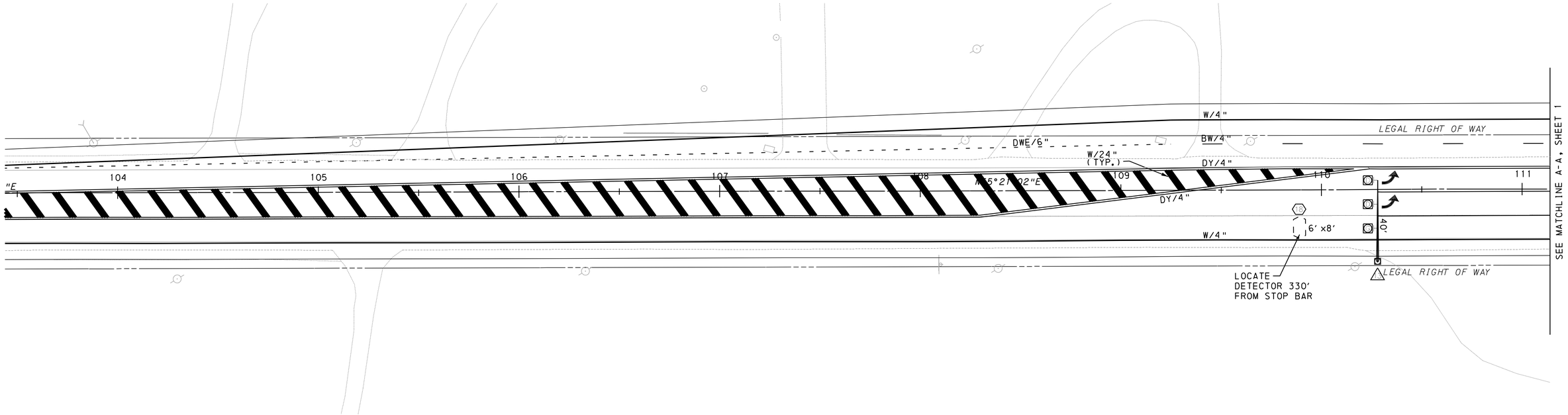
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
4-0	LUZERNE	SR 0011	XX	2 OF 3

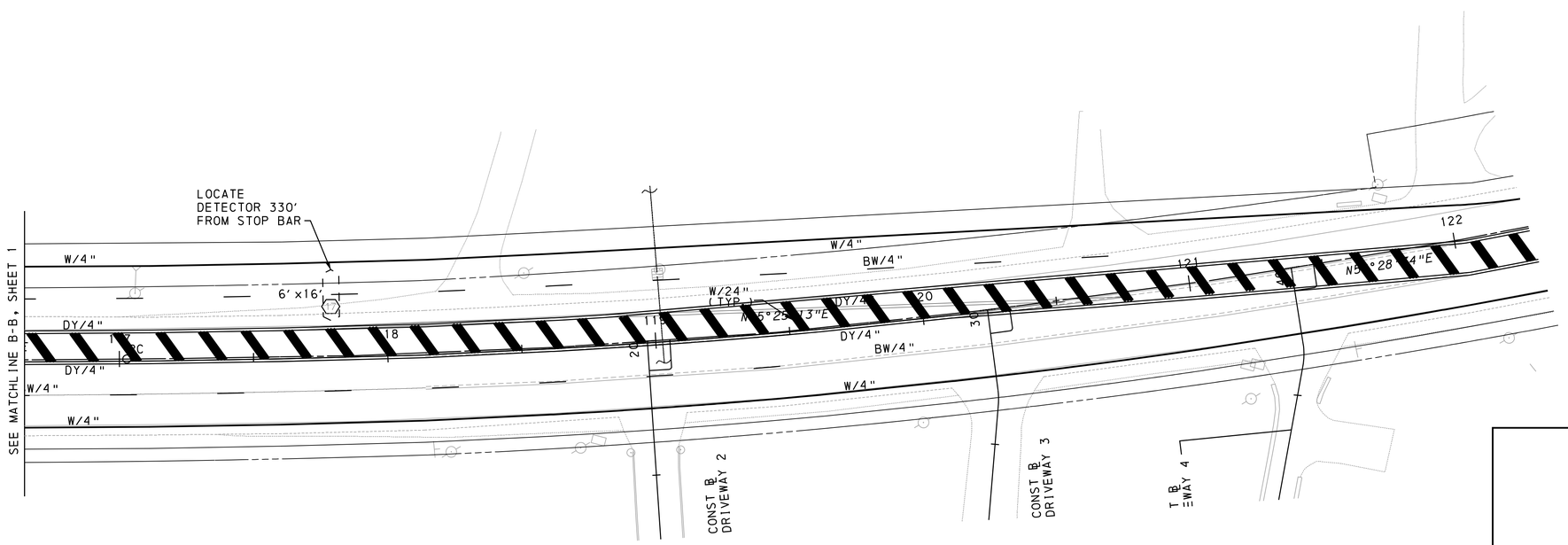
SALEM TOWNSHIP

PERMIT NO. _____ SHEET 3 OF 4

DATE ISSUED _____ DATE REVISED _____

DATE	REVISION	BY





COUNTY: LUZERNE COUNTY

MUNICIPALITY: SALEM TOWNSHIP

INTERSECTION: S.R. 0011 AND SUPP ACCESS ROAD

REVIEWED:

MUNICIPAL OFFICIAL DATE

RECOMMENDED:

DISTRICT TRAFFIC ENGINEER DATE

SCALE: 0 25 50 75

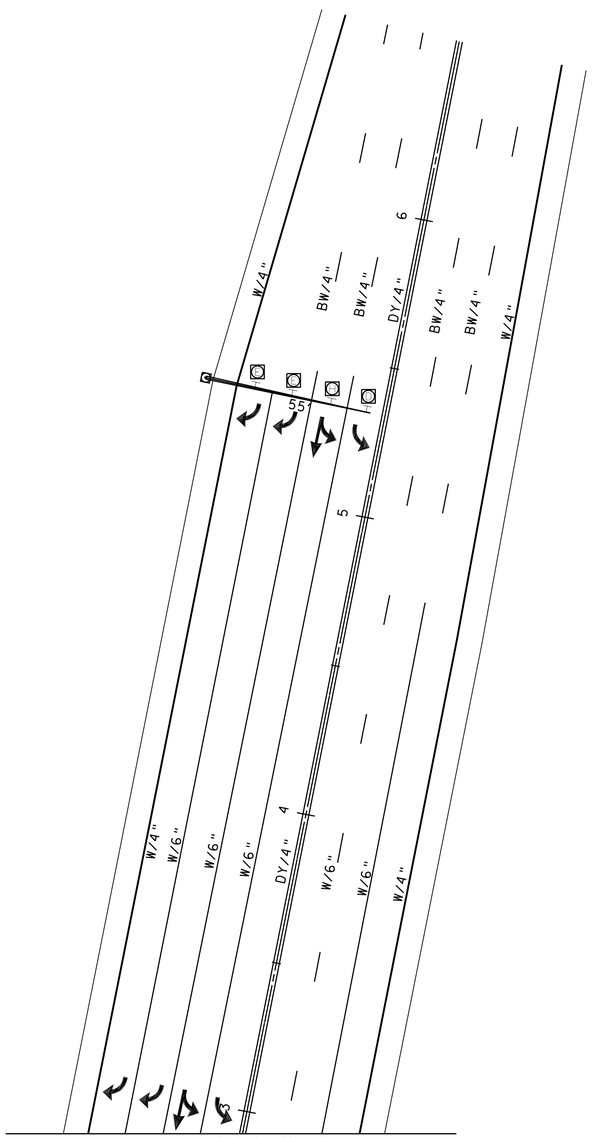
Controlled Document

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
4-0	LUZERNE	SR 0011	XX	3 OF 3
SALEM TOWNSHIP				

PERMIT NO. _____ SHEET 4 OF 4

DATE ISSUED _____ DATE REVISED _____

DATE	REVISION	BY



SEE MATCHLINE C-C, SHEET 1

COUNTY: LUZERNE COUNTY

MUNICIPALITY: SALEM TOWNSHIP

INTERSECTION: S.R. 0011 AND SUPP ACCESS ROAD

REVIEWED:

MUNICIPAL OFFICIAL DATE

RECOMMENDED:

DISTRICT TRAFFIC ENGINEER DATE

SCALE: 0 25 50 75

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and S.R. 2028
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	129	813	16%	50	1.8	100	125	75	175	175	350
SBL	PM	231	1945	12%	100	6.4	275	125	75	350	350	350
Speed (MPH)	45			>10%		Condition:	B or C*					
WBL	AM	124	313	39%	50	1.7	100	#N/A	#N/A	#N/A	100	275
WBL	PM	100	343	29%	100	2.8	150	#N/A	#N/A	#N/A	150	275
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and Briar Creek Plaza Driveways
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	40	929	4%	90	1.0	100	#N/A	#N/A	#N/A	100	175
NBL	PM	107	893	12%	65	1.9	100	#N/A	#N/A	#N/A	100	175
Speed (MPH)	35			>10%		Condition:	A					
SBL	AM	42	545	8%	90	1.0	100	#N/A	#N/A	#N/A	100	135
SBL	PM	21	1376	2%	65	0.4	75	#N/A	#N/A	#N/A	75	135
Speed (MPH)	35			<=10%		Condition:	A					
EBL	AM	54	97	56%	90	1.4	100	#N/A	#N/A	#N/A	100	175
EBL	PM	204	318	64%	65	3.7	175	#N/A	#N/A	#N/A	175	175
Speed (MPH)	30			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Eaton Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	24	889	3%	120	0.8	75	#N/A	#N/A	#N/A	75	150
NBL	PM	64	1070	6%	140	2.5	150	#N/A	#N/A	#N/A	150	150
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	14	631	2%	120	0.5	75	#N/A	#N/A	#N/A	75	150
SBL	PM	63	788	8%	140	2.5	150	#N/A	#N/A	#N/A	150	150
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Poplar Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	0	181	0%	120	0.0	75	#N/A	#N/A	#N/A	75	75
NBL	PM	23	765	3%	140	0.9	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	57	684	8%	120	1.9	100	#N/A	#N/A	#N/A	100	150
SBL	PM	75	1220	6%	140	2.9	150	#N/A	#N/A	#N/A	150	150
Speed (MPH)	35			<=10%		Condition:	A					
WBL	AM	66	107	61%	120	2.2	150	#N/A	#N/A	#N/A	150	250
WBL	PM	136	267	51%	140	5.3	250	#N/A	#N/A	#N/A	250	250
Speed (MPH)	30			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Front Street) and Orchard Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	12	599	2%	120	0.4	75	#N/A	#N/A	#N/A	75	75
NBL	PM	15	862	2%	140	0.6	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	9	680	1%	120	0.3	75	#N/A	#N/A	#N/A	75	75
SBL	PM	10	1163	1%	140	0.4	75	#N/A	#N/A	#N/A	75	75
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and LaSalle Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	58	1324	4%	60	1.0	75	#N/A	#N/A	#N/A	75	100
NBL	PM	92	1060	9%	140	3.6	175	#N/A	#N/A	#N/A	175	100
Speed (MPH)	35			<=10%		Condition:	A					
SBL	AM	11	718	2%	60	0.2	75	#N/A	#N/A	#N/A	75	100
SBL	PM	19	1457	1%	140	0.8	75	#N/A	#N/A	#N/A	75	100
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 1025 (Market Street) and Third Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
EBL	AM	14	306	5%	60	0.2	75	#N/A	#N/A	#N/A	75	90
EBL	PM	24	374	7%	70	0.5	75	#N/A	#N/A	#N/A	75	90
Speed (MPH)	25			<=10%		Condition:	A					
WBL	AM	40	184	22%	60	0.7	75	#N/A	#N/A	#N/A	75	175
WBL	PM	28	230	12%	70	0.5	75	#N/A	#N/A	#N/A	75	175
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and Market Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
WBL	AM	234	344	68%	60	3.9	175	#N/A	#N/A	#N/A	175	170
WBL	PM	256	367	70%	70	5.0	200	#N/A	#N/A	#N/A	200	170
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Second Street) and Pine Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
WBL	AM	26	97	26%	60	0.4	75	#N/A	#N/A	#N/A	75	175
WBL	PM	65	207	31%	70	1.3	100	#N/A	#N/A	#N/A	100	175
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and Bell Bend Site Entrance
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	1028	1647	62%	90	25.7	975	125	75	1050	1050	700
NBL	PM	559	798	70%	90	14.0	500	125	75	575	575	700
Speed (MPH)	45			>10%		Condition:	B or C*					
SBL	AM	0	19	2%	90	0.0	75	125	75	150	150	150
SBL	PM	0	1227	0%	90	0.0	75	125	75	150	150	150
Speed (MPH)	45			<=10%		Condition:	B or C*					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and SSES Site Entrance
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	686	869	79%	90	17.2	625	235	114	739	739	500
NBL	PM	69	581	12%	110	2.1	150	235	114	264	264	500
Speed (MPH)	55			>10%		Condition:	B or C*					
EBL	AM	55	199	27%	90	1.4	100	#N/A	#N/A	#N/A	100	450
EBL	PM	204	714	29%	110	6.2	275	#N/A	#N/A	#N/A	275	450
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (Main Street) and S.R. 239 (Union Street)
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	93	407	23%	60	1.5	100	#N/A	#N/A	#N/A	100	150
NBL	PM	345	1389	25%	90	8.6	350	#N/A	#N/A	#N/A	350	150
Speed (MPH)	25			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and S.R. 29 (Mill Street)
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	39	930	4%	180	2.0	100	#N/A	#N/A	#N/A	100	100
NBL	PM	31	535	6%	100	0.9	75	#N/A	#N/A	#N/A	75	100
Speed (MPH)	35			<=10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

Controlled Document

PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 and County Bridge
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
SBL	AM	94	417	23%	90	2.4	150	#N/A	#N/A	#N/A	150	200
SBL	PM	131	828	16%	100	3.6	175	#N/A	#N/A	#N/A	175	200
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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PennDOT Turn Lane Storage Length Calculations

Location: S.R. 11 (E. Poplar Street) and S.R. 29
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated
Control: Signalized

Movement	Peak Hour	Max LT Volume	Approach Volume	LT%	Cycle Length (sec)	Vehicles/ Cycle	Condition A (X)	Condition B	Condition C1 (Y)	Condition C (X+Y)	Storage Length Needed	Storage Available
NBL	AM	53	927	6%	90	1.3	100	#N/A	#N/A	#N/A	100	300
NBL	PM	265	1281	21%	50	3.7	175	#N/A	#N/A	#N/A	175	300
Speed (MPH)	35			>10%		Condition:	A					

Condition B	
MPH	Length
40	75
45	125
50	175
55	235
60	295

Condition C1	
MPH	Length
40	61
45	75
50	93
55	114
60	131

Speed (MPH)	25-35	25-35	40-45	40-45	50-60	50-60
LT %	>10%	<=10%	>10%	<=10%	>10%	<=10%
Signalized	A	A	B or C*	B or C*	B or C*	B or C*
Unsignalized	A	A	B or C*	B or C*	B or C*	B

Notes: Storage needed exceeds available amount
* Whichever is greater

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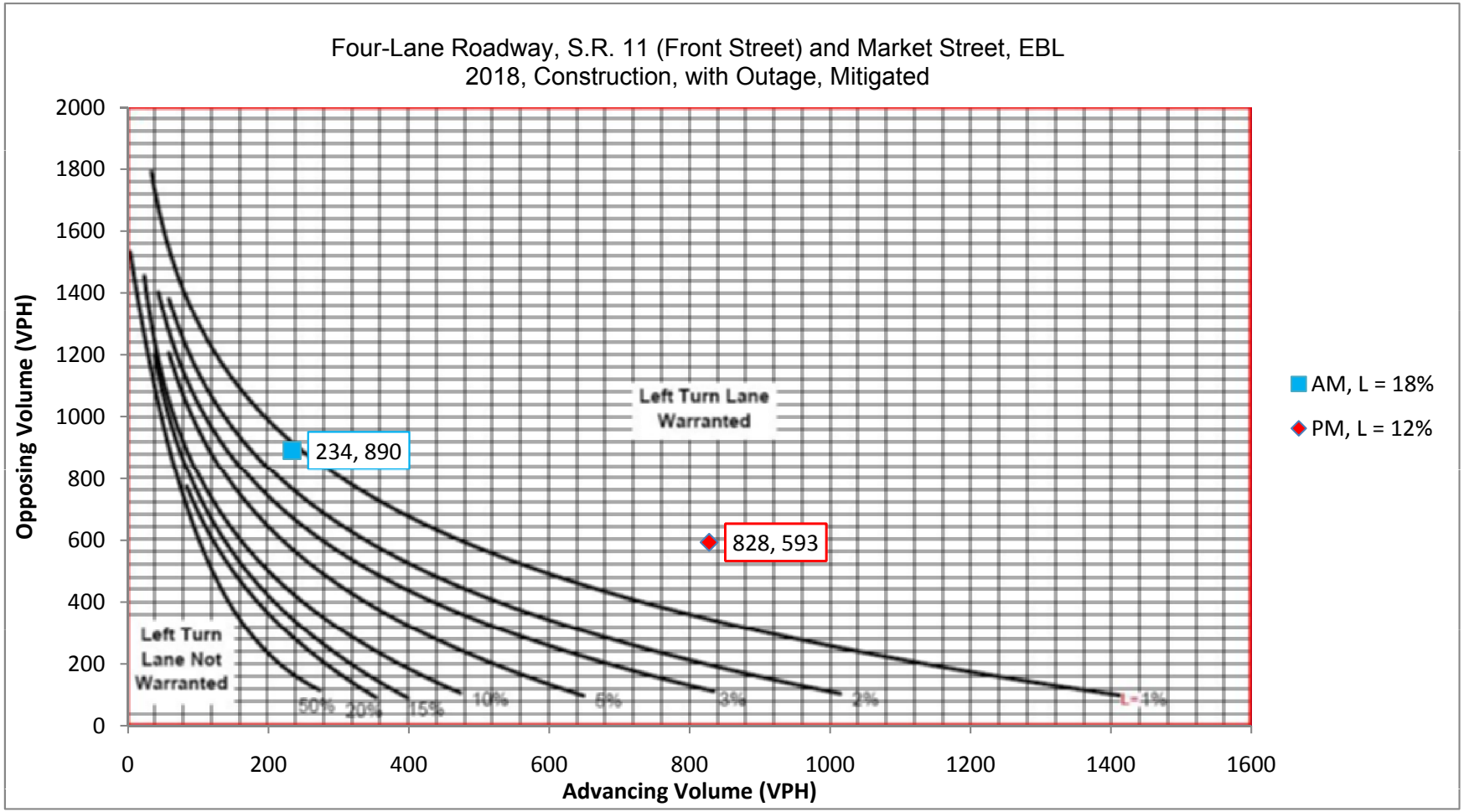

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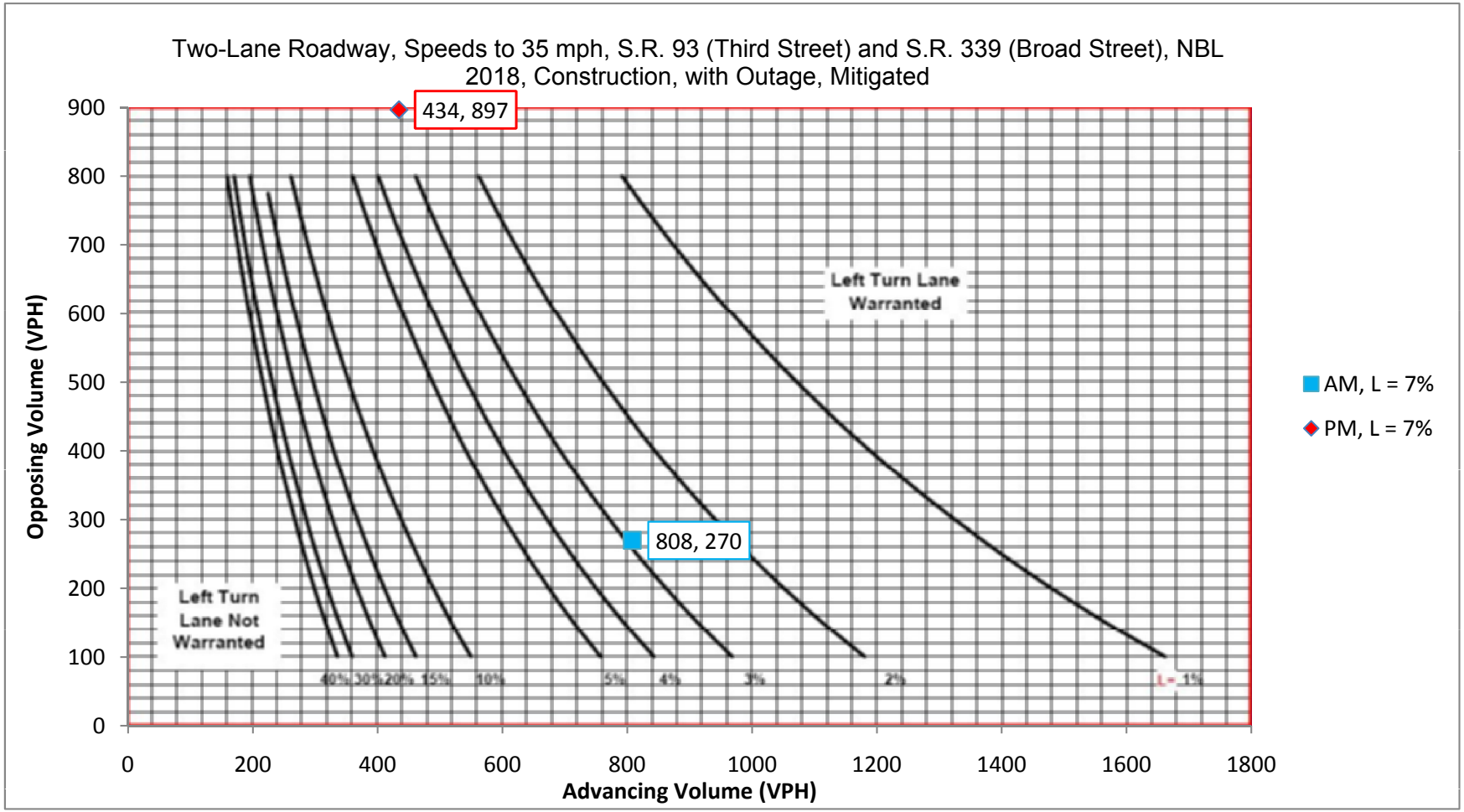

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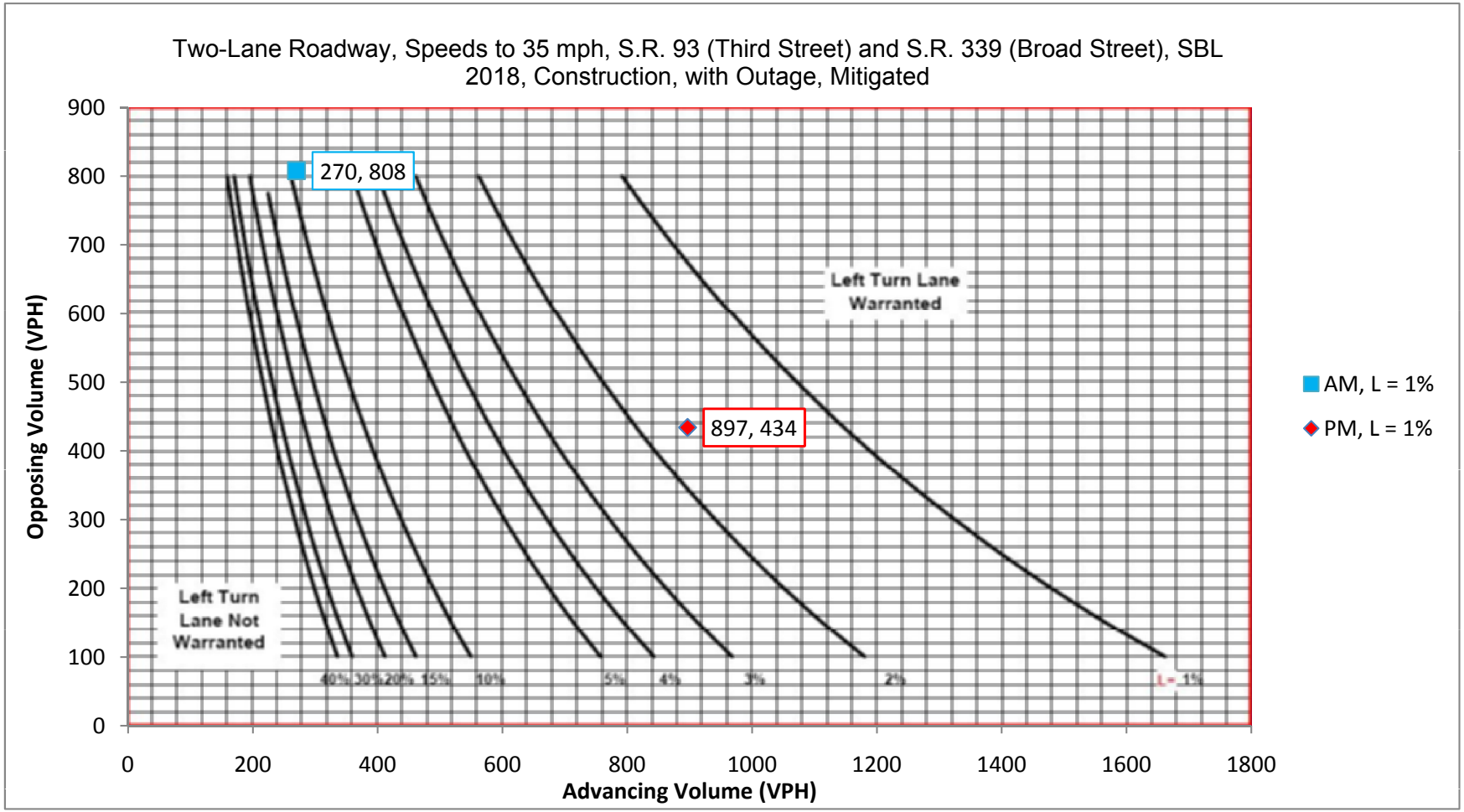

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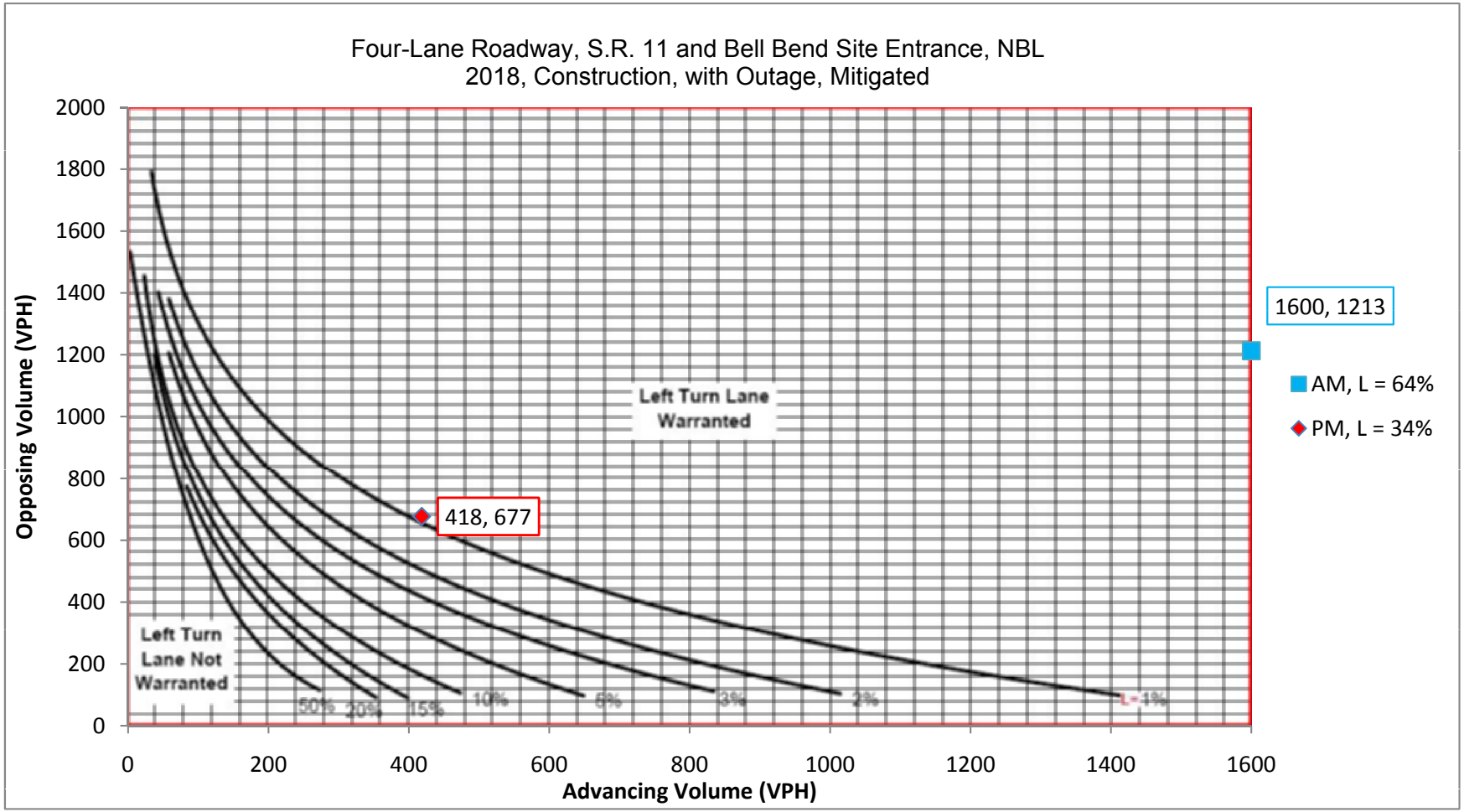

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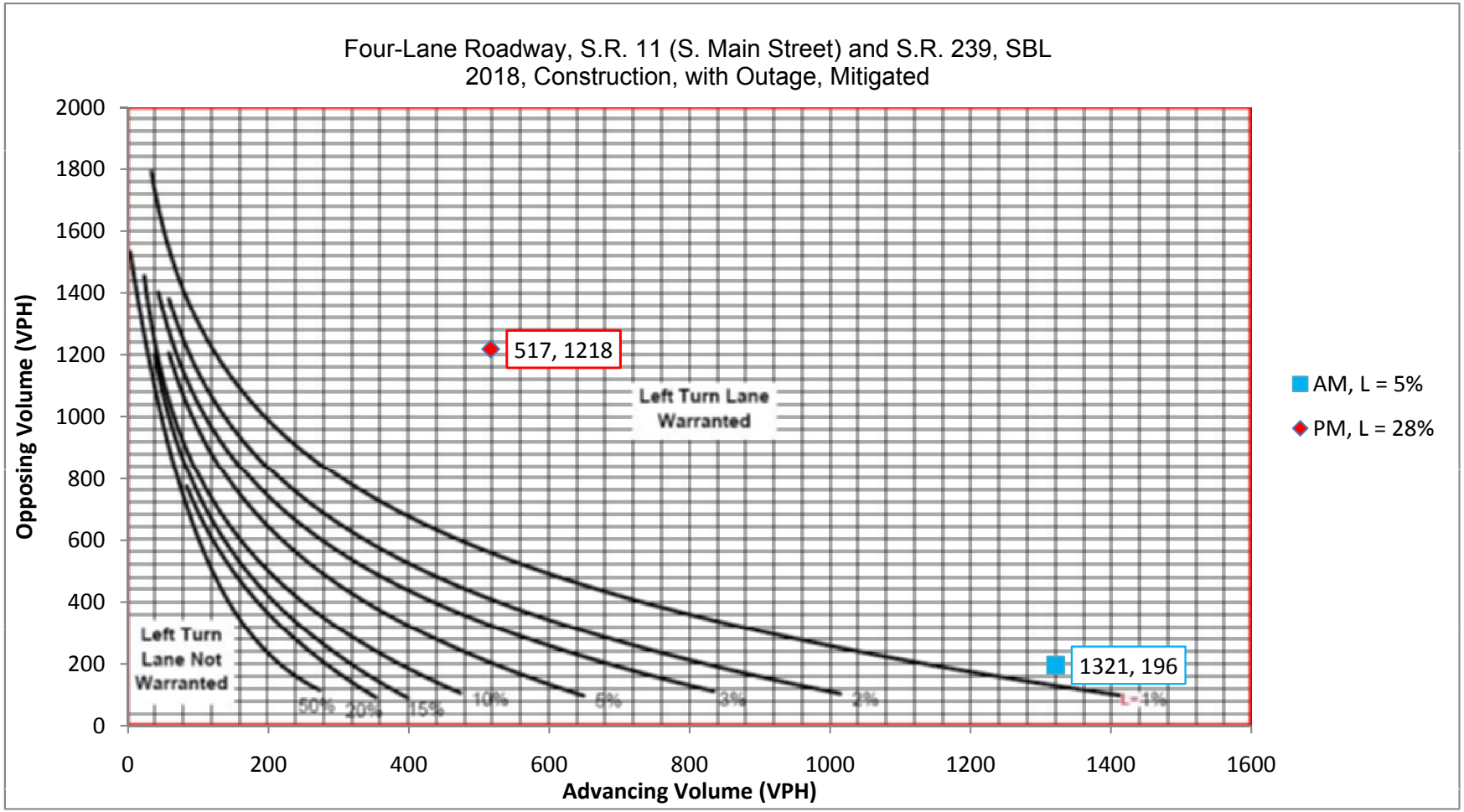

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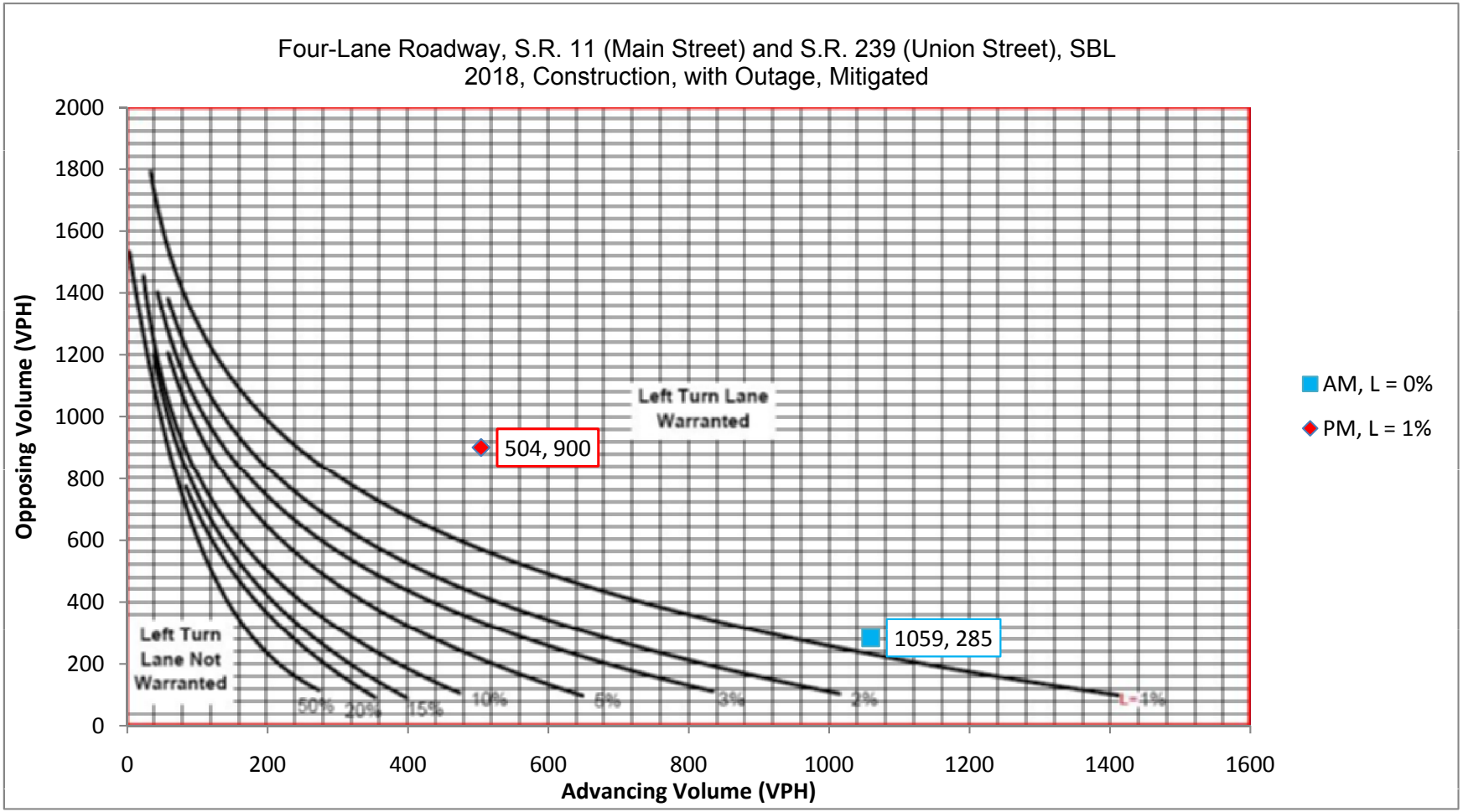

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 and S.R. 2028
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
SBL	1	Dedicated Turning Lane(s)
NBT	2	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	181	0
5:15 AM	12	340	3974
5:30 AM	29	498	14300
5:45 AM	57	862	49027
6:00 AM	73	1179	86412
6:15 AM	89	1254	111974
6:30 AM	105	1341	140307
6:45 AM	111	1089	120389
7:00 AM	123	865	106666
7:15 AM	119	728	86691
7:30 AM	112	558	62259
7:45 AM	113	506	57049
8:00 AM	129	493	63679

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	210	1076	225813
3:15 PM	217	1002	217250
3:30 PM	231	849	195825
3:45 PM	228	743	169243
4:00 PM	222	667	148044
4:15 PM	226	711	160848
4:30 PM	208	753	156853
4:45 PM	199	755	149959
5:00 PM	191	725	138646
5:15 PM	131	503	66011
5:30 PM	88	334	29305
5:45 PM	43	163	7033
6:00 PM	0	19	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	65000	6
Protected	90000	4

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	65000	10
Protected	90000	9

	Total Hours	>= 2 Hrs?
Prot./Perm.	4	Yes
Prot./Prohib.	3.25	Yes

Recommended Phasing: **Prot./Prohib.**

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 and Briar Creek Plaza Driveways
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
NBL	1	Dedicated Turning Lane(s)
SBT	2	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	3	0
5:15 AM	5	61	289
5:30 AM	9	157	1417
5:45 AM	13	273	3633
6:00 AM	19	376	7186
6:15 AM	26	428	11138
6:30 AM	28	452	12481
6:45 AM	39	474	18384
7:00 AM	40	526	21245
7:15 AM	34	536	18217
7:30 AM	37	507	18597
7:45 AM	22	486	10845
8:00 AM	25	430	10738

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	94	998	93342
3:15 PM	86	1146	98645
3:30 PM	94	1242	116163
3:45 PM	87	1275	111054
4:00 PM	81	1251	101014
4:15 PM	99	1047	103512
4:30 PM	94	866	80933
4:45 PM	107	693	74348
5:00 PM	103	601	61939
5:15 PM	72	436	31523
5:30 PM	54	296	16015
5:45 PM	20	196	3950
6:00 PM	0	66	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	65000	0
Protected	90000	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	65000	8
Protected	90000	6

	Total Hours	>= 2 Hrs?
Prot./Perm.	2	Yes
Prot./Prohib.	1.5	No

Recommended Phasing: **Prot./Perm.**

Controlled Document

PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 and Briar Creek Plaza Driveways
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
SBL	1	Dedicated Turning Lane(s)
NBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	181	0
5:15 AM	0	321	0
5:30 AM	1	492	522
5:45 AM	1	823	874
6:00 AM	6	1158	6767
6:15 AM	13	1239	16451
6:30 AM	20	1283	25214
6:45 AM	22	1062	23140
7:00 AM	20	844	17031
7:15 AM	20	718	14111
7:30 AM	28	597	16820
7:45 AM	36	569	20261
8:00 AM	42	550	23088

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	20	978	19739
3:15 PM	21	883	18758
3:30 PM	20	788	15912
3:45 PM	21	680	14459
4:00 PM	16	616	9812
4:15 PM	14	665	9186
4:30 PM	11	712	7562
4:45 PM	6	747	4761
5:00 PM	7	735	5467
5:15 PM	4	542	2305
5:30 PM	3	359	1145
5:45 PM	3	175	558
6:00 PM	0	19	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

Controlled Document

PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 (Front Street) and Eaton Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
NBL	1	Dedicated Turning Lane(s)
SBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	3	0
5:15 AM	5	96	508
5:30 AM	6	195	1244
5:45 AM	12	337	3942
6:00 AM	14	455	6291
6:15 AM	13	477	6085
6:30 AM	22	502	11207
6:45 AM	21	528	11214
7:00 AM	24	570	13923
7:15 AM	23	610	14263
7:30 AM	18	623	11256
7:45 AM	18	627	11332
8:00 AM	15	632	9409

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	63	1181	74040
3:15 PM	64	1352	86214
3:30 PM	57	1428	81952
3:45 PM	62	1449	89323
4:00 PM	53	1425	75687
4:15 PM	50	1166	58230
4:30 PM	51	973	49619
4:45 PM	44	820	35736
5:00 PM	40	703	28405
5:15 PM	29	529	15169
5:30 PM	16	361	5760
5:45 PM	6	197	1254
6:00 PM	0	66	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	6
Protected	67500	5

	Total Hours	>= 2 Hrs?
Prot./Perm.	1.5	No
Prot./Prohib.	1.25	No

Recommended Phasing: **Permitted**

Controlled Document

PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 (Front Street) and Eaton Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
SBL	1	Dedicated Turning Lane(s)
NBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	181	0
5:15 AM	0	329	0
5:30 AM	1	507	539
5:45 AM	4	839	3566
6:00 AM	6	1176	7501
6:15 AM	7	1245	9260
6:30 AM	9	1316	11188
6:45 AM	7	1079	8028
7:00 AM	11	847	8998
7:15 AM	14	716	9894
7:30 AM	14	545	7525
7:45 AM	14	514	7099
8:00 AM	13	499	6622

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	16	1065	16973
3:15 PM	14	948	13096
3:30 PM	17	832	14141
3:45 PM	24	723	17283
4:00 PM	30	615	18611
4:15 PM	39	662	26019
4:30 PM	33	707	23303
4:45 PM	40	715	28505
5:00 PM	63	702	44386
5:15 PM	52	504	26218
5:30 PM	49	317	15509
5:45 PM	33	150	4946
6:00 PM	0	19	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

Controlled Document

PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 (Front Street) and Poplar Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
NBL	1	Dedicated Turning Lane(s)
SBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	3	0
5:15 AM	0	99	0
5:30 AM	0	226	0
5:45 AM	0	375	0
6:00 AM	0	513	0
6:15 AM	0	534	0
6:30 AM	0	529	0
6:45 AM	0	567	0
7:00 AM	0	582	0
7:15 AM	0	628	0
7:30 AM	0	647	0
7:45 AM	0	610	0
8:00 AM	0	612	0

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	10	1139	11049
3:15 PM	14	1289	18062
3:30 PM	15	1379	20798
3:45 PM	18	1463	26802
4:00 PM	23	1419	32107
4:15 PM	20	1170	23959
4:30 PM	19	985	19097
4:45 PM	13	626	8093
5:00 PM	6	387	2500
5:15 PM	1	228	246
5:30 PM	0	60	0
5:45 PM	0	63	0
6:00 PM	0	66	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 (Front Street) and Poplar Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
SBL	1	Dedicated Turning Lane(s)
NBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	181	0
5:15 AM	3	361	1167
5:30 AM	6	548	3544
5:45 AM	12	908	10765
6:00 AM	22	1202	25917
6:15 AM	25	1230	31161
6:30 AM	41	1256	52100
6:45 AM	47	997	47296
7:00 AM	52	814	42520
7:15 AM	57	662	37467
7:30 AM	43	531	22908
7:45 AM	39	524	20593
8:00 AM	47	492	23087

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	75	1048	78515
3:15 PM	70	962	66845
3:30 PM	68	878	60101
3:45 PM	53	835	44558
4:00 PM	56	710	39809
4:15 PM	53	759	40096
4:30 PM	42	761	31976
4:45 PM	33	553	18464
5:00 PM	13	403	5216
5:15 PM	9	197	1700
5:30 PM	0	25	0
5:45 PM	0	22	0
6:00 PM	0	19	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	1
Protected	67500	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	3
Protected	67500	1

	Total Hours	>= 2 Hrs?
Prot./Perm.	1	No
Prot./Prohib.	0.25	No

Recommended Phasing: **Permitted**

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 (Front Street) and Orchard Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
NBL	1	Dedicated Turning Lane(s)
SBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	3	0
5:15 AM	3	79	209
5:30 AM	3	175	465
5:45 AM	3	302	803
6:00 AM	4	436	1621
6:15 AM	1	474	503
6:30 AM	2	535	1137
6:45 AM	3	590	1882
7:00 AM	4	669	2844
7:15 AM	6	703	4479
7:30 AM	10	699	6686
7:45 AM	12	709	8283
8:00 AM	11	629	6687

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	7	1238	9207
3:15 PM	12	1358	15868
3:30 PM	14	1425	20435
3:45 PM	15	1430	22028
4:00 PM	15	1378	21229
4:15 PM	12	1147	14020
4:30 PM	10	957	9156
4:45 PM	11	805	8980
5:00 PM	14	725	10396
5:15 PM	13	547	7270
5:30 PM	10	381	3847
5:45 PM	4	229	974
6:00 PM	0	66	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

Controlled Document

PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 (Front Street) and Orchard Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
SBL	1	Dedicated Turning Lane(s)
NBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	181	0
5:15 AM	0	318	0
5:30 AM	0	489	0
5:45 AM	0	821	0
6:00 AM	0	1159	0
6:15 AM	2	1257	2671
6:30 AM	3	1331	4243
6:45 AM	4	1122	4768
7:00 AM	9	882	7496
7:15 AM	6	746	4759
7:30 AM	6	611	3893
7:45 AM	5	585	3109
8:00 AM	3	554	1765

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	5	1048	5570
3:15 PM	6	997	6359
3:30 PM	5	929	4938
3:45 PM	4	845	3592
4:00 PM	7	754	5210
4:15 PM	10	779	7860
4:30 PM	10	805	8123
4:45 PM	10	801	8085
5:00 PM	6	800	5099
5:15 PM	2	584	1242
5:30 PM	1	384	408
5:45 PM	0	193	0
6:00 PM	0	19	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

Controlled Document

PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 (Second Street) and LaSalle Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
NBL	1	Dedicated Turning Lane(s)
SBT	2	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	3	0
5:15 AM	9	109	935
5:30 AM	18	220	4031
5:45 AM	36	371	13189
6:00 AM	57	507	28968
6:15 AM	58	519	30216
6:30 AM	57	536	30621
6:45 AM	52	577	29841
7:00 AM	53	656	34619
7:15 AM	53	684	36096
7:30 AM	48	719	34883
7:45 AM	43	664	28603
8:00 AM	32	608	19659

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	72	1379	99568
3:15 PM	80	1529	121894
3:30 PM	81	1625	131363
3:45 PM	80	1676	133640
4:00 PM	82	1662	136101
4:15 PM	74	1403	104318
4:30 PM	92	1169	107061
4:45 PM	69	773	53308
5:00 PM	45	484	21916
5:15 PM	36	257	9133
5:30 PM	0	60	0
5:45 PM	0	63	0
6:00 PM	0	66	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	65000	0
Protected	90000	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	65000	7
Protected	90000	7

	Total Hours	>= 2 Hrs?
Prot./Perm.	1.75	No
Prot./Prohib.	1.75	No

Recommended Phasing: **Permitted**

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 1025 (Market Street) and Third Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
EBL	1	Dedicated Turning Lane(s)
WBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	0	0
5:15 AM	0	3	0
5:30 AM	1	15	16
5:45 AM	2	38	81
6:00 AM	3	64	203
6:15 AM	9	94	795
6:30 AM	11	101	1073
6:45 AM	12	116	1360
7:00 AM	13	124	1579
7:15 AM	10	117	1118
7:30 AM	13	143	1829
7:45 AM	13	126	1606
8:00 AM	14	131	1813

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	24	162	3947
3:15 PM	21	190	4042
3:30 PM	24	193	4714
3:45 PM	20	202	4087
4:00 PM	19	194	3709
4:15 PM	18	188	3398
4:30 PM	9	183	1554
4:45 PM	7	162	1201
5:00 PM	13	162	2066
5:15 PM	10	115	1098
5:30 PM	10	72	691
5:45 PM	7	36	269
6:00 PM	0	0	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

Controlled Document

PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 1025 (Market Street) and Third Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
WBL	1	Dedicated Turning Lane(s)
EBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	0	0
5:15 AM	2	40	86
5:30 AM	2	74	158
5:45 AM	7	107	798
6:00 AM	10	160	1534
6:15 AM	11	182	1936
6:30 AM	14	209	2892
6:45 AM	17	226	3848
7:00 AM	27	211	5617
7:15 AM	35	193	6763
7:30 AM	37	198	7370
7:45 AM	38	210	8048
8:00 AM	40	235	9358

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	9	277	2353
3:15 PM	6	276	1758
3:30 PM	9	273	2317
3:45 PM	13	279	3557
4:00 PM	15	267	3976
4:15 PM	19	287	5498
4:30 PM	28	304	8558
4:45 PM	23	308	7040
5:00 PM	20	320	6298
5:15 PM	15	240	3692
5:30 PM	3	151	483
5:45 PM	2	76	161
6:00 PM	0	0	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 (Second Street) and Market Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
WBL	1	Dedicated Turning Lane(s)
EBT	2	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	0	0
5:15 AM	23	35	807
5:30 AM	46	64	2972
5:45 AM	66	88	5857
6:00 AM	103	118	12157
6:15 AM	110	126	13907
6:30 AM	124	132	16448
6:45 AM	151	145	21806
7:00 AM	179	152	27207
7:15 AM	196	147	28671
7:30 AM	220	142	31320
7:45 AM	234	141	33038
8:00 AM	214	142	30299

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	256	205	52275
3:15 PM	247	231	57099
3:30 PM	217	225	48718
3:45 PM	204	230	46827
4:00 PM	202	245	49558
4:15 PM	212	249	52824
4:30 PM	222	253	56149
4:45 PM	215	243	52117
5:00 PM	212	230	48769
5:15 PM	156	157	24482
5:30 PM	105	102	10677
5:45 PM	59	48	2820
6:00 PM	0	0	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	65000	0
Protected	90000	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	65000	0
Protected	90000	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 (Front Street) and Market Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
EBL	0	Dedicated Turning Lane(s)
WBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	0	0
5:15 AM	11	31	327
5:30 AM	16	63	1008
5:45 AM	24	112	2740
6:00 AM	38	172	6474
6:15 AM	41	193	7912
6:30 AM	42	227	9522
6:45 AM	46	252	11507
7:00 AM	38	297	11204
7:15 AM	38	308	11604
7:30 AM	46	333	15221
7:45 AM	49	335	16539
8:00 AM	56	312	17399

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	66	356	23452
3:15 PM	84	366	30730
3:30 PM	88	335	29521
3:45 PM	103	329	33898
4:00 PM	106	323	34326
4:15 PM	90	334	30185
4:30 PM	92	366	33793
4:45 PM	72	355	25683
5:00 PM	73	349	25555
5:15 PM	57	259	14847
5:30 PM	35	164	5738
5:45 PM	19	88	1687
6:00 PM	0	0	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	35000	0
Protected	N/A	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	35000	0
Protected	N/A	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 93 (Third Street) and S.R. 339 (Broad St
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
NBL	0	Dedicated Turning Lane(s)
SBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	1	0
5:15 AM	7	46	336
5:30 AM	13	90	1204
5:45 AM	26	149	3933
6:00 AM	37	196	7310
6:15 AM	38	216	8255
6:30 AM	53	234	12467
6:45 AM	53	262	13961
7:00 AM	58	286	16552
7:15 AM	62	289	17751
7:30 AM	44	296	13144
7:45 AM	42	267	11158
8:00 AM	40	246	9911

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	26	384	9933
3:15 PM	29	546	15801
3:30 PM	25	678	16819
3:45 PM	31	756	23445
4:00 PM	28	825	23032
4:15 PM	30	675	20249
4:30 PM	31	535	16596
4:45 PM	31	431	13371
5:00 PM	33	369	12194
5:15 PM	24	262	6233
5:30 PM	17	174	2883
5:45 PM	7	96	697
6:00 PM	0	11	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	35000	0
Protected	N/A	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	35000	0
Protected	N/A	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

Controlled Document

PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 93 (Third Street) and S.R. 339 (Broad St
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
SBL	0	Dedicated Turning Lane(s)
NBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	30	0
5:15 AM	0	83	0
5:30 AM	0	139	0
5:45 AM	0	315	0
6:00 AM	0	490	0
6:15 AM	3	600	1860
6:30 AM	3	751	2329
6:45 AM	3	671	2081
7:00 AM	3	612	1899
7:15 AM	0	518	0
7:30 AM	2	378	780
7:45 AM	4	351	1452
8:00 AM	4	303	1251

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	5	574	2966
3:15 PM	5	522	2701
3:30 PM	5	455	2352
3:45 PM	5	400	2065
4:00 PM	7	341	2470
4:15 PM	8	344	2843
4:30 PM	5	376	1944
4:45 PM	5	385	1989
5:00 PM	2	370	765
5:15 PM	1	292	301
5:30 PM	1	180	186
5:45 PM	0	81	0
6:00 PM	0	4	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	35000	0
Protected	N/A	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	35000	0
Protected	N/A	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 93 (Third Street) and Dewey Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
NBL	0	Dedicated Turning Lane(s)
SBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	1	0
5:15 AM	0	57	0
5:30 AM	0	121	0
5:45 AM	0	171	0
6:00 AM	0	238	0
6:15 AM	1	251	259
6:30 AM	5	258	1336
6:45 AM	5	286	1478
7:00 AM	5	291	1502
7:15 AM	8	291	2408
7:30 AM	7	286	2069
7:45 AM	7	269	1947
8:00 AM	7	250	1809

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	8	399	3302
3:15 PM	6	565	3501
3:30 PM	3	701	2174
3:45 PM	2	770	1593
4:00 PM	0	837	0
4:15 PM	0	688	0
4:30 PM	1	554	572
4:45 PM	2	465	962
5:00 PM	2	398	823
5:15 PM	2	288	595
5:30 PM	1	189	196
5:45 PM	0	96	0
6:00 PM	0	11	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	35000	0
Protected	N/A	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	35000	0
Protected	N/A	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

Controlled Document

PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 93 (Third Street) and Dewey Street
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
SBL	0	Dedicated Turning Lane(s)
NBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	30	0
5:15 AM	0	95	0
5:30 AM	0	180	0
5:45 AM	0	364	0
6:00 AM	0	550	0
6:15 AM	1	658	681
6:30 AM	2	786	1624
6:45 AM	4	714	2952
7:00 AM	4	648	2679
7:15 AM	3	546	1693
7:30 AM	5	399	2063
7:45 AM	4	356	1471
8:00 AM	5	305	1575

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	18	563	10185
3:15 PM	14	518	7502
3:30 PM	11	459	5216
3:45 PM	11	418	4749
4:00 PM	10	362	3738
4:15 PM	10	375	3880
4:30 PM	8	402	3321
4:45 PM	8	404	3340
5:00 PM	9	378	3516
5:15 PM	7	285	2062
5:30 PM	6	177	1100
5:45 PM	3	76	235
6:00 PM	0	4	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	35000	0
Protected	N/A	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	35000	0
Protected	N/A	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

Controlled Document

PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 and Bell Bend Site Entrance
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
NBL	2	Dedicated Turning Lane(s)
SBT	2	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	45	2	74
5:15 AM	64	69	4467
5:30 AM	84	122	10251
5:45 AM	342	192	65427
6:00 AM	599	289	173177
6:15 AM	814	305	248470
6:30 AM	1028	315	323677
6:45 AM	765	332	254016
7:00 AM	502	298	149780
7:15 AM	261	274	71563
7:30 AM	20	254	4998
7:45 AM	17	210	3485
8:00 AM	14	196	2663

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	559	717	401218
3:15 PM	420	686	288385
3:30 PM	281	607	170859
3:45 PM	143	548	78102
4:00 PM	4	465	1715
4:15 PM	5	404	1997
4:30 PM	6	406	2520
4:45 PM	7	380	2836
5:00 PM	9	358	3124
5:15 PM	8	279	2239
5:30 PM	7	198	1450
5:45 PM	7	124	815
6:00 PM	6	60	353

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	0	13
Protected	0	13

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	0	13
Protected	0	13

	Total Hours	>= 2 Hrs?
Prot./Perm.	6.5	Yes
Prot./Prohib.	6.5	Yes

Recommended Phasing: **Prot./Prohib.**

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 and Bell Bend Site Entrance
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
SBL	1	Dedicated Turning Lane(s)
NBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	166	65
5:15 AM	0	339	132
5:30 AM	0	507	197
5:45 AM	0	680	265
6:00 AM	0	839	326
6:15 AM	0	704	274
6:30 AM	0	619	241
6:45 AM	0	523	203
7:00 AM	0	393	153
7:15 AM	0	381	148
7:30 AM	0	325	126
7:45 AM	0	262	102
8:00 AM	0	263	102

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	0	238	93
3:15 PM	0	231	90
3:30 PM	0	255	99
3:45 PM	0	275	107
4:00 PM	0	275	107
4:15 PM	0	287	112
4:30 PM	0	294	115
4:45 PM	0	285	111
5:00 PM	0	284	110
5:15 PM	0	227	88
5:30 PM	0	142	55
5:45 PM	0	79	31
6:00 PM	0	16	6

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	50000	0
Protected	67500	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 and SSES Site Entrance
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
NBL	1	Dedicated Turning Lane(s)
SBT	2	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	166	18	2985
5:15 AM	301	56	16877
5:30 AM	439	94	41339
5:45 AM	568	358	203380
6:00 AM	686	628	430943
6:15 AM	544	860	468333
6:30 AM	409	1098	449106
6:45 AM	278	915	254868
7:00 AM	150	701	105084
7:15 AM	136	488	66210
7:30 AM	109	248	27007
7:45 AM	92	210	19324
8:00 AM	73	205	15007

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	16	739	11721
3:15 PM	16	633	10423
3:30 PM	16	507	8153
3:45 PM	21	408	8446
4:00 PM	23	257	5982
4:15 PM	31	232	7225
4:30 PM	45	235	10577
4:45 PM	55	225	12324
5:00 PM	69	233	16001
5:15 PM	61	179	10906
5:30 PM	48	122	5873
5:45 PM	34	60	2027
6:00 PM	16	4	61

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	65000	7
Protected	90000	6

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	65000	0
Protected	90000	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	1.75	No
Prot./Prohib.	1.5	No

Recommended Phasing: **Permitted**

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 (S. Main Street) and S.R. 239
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
SBL	0	Dedicated Turning Lane(s)
NBT	2	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	3	0
5:15 AM	9	36	340
5:30 AM	32	85	2706
5:45 AM	46	132	6119
6:00 AM	65	171	11012
6:15 AM	68	181	12286
6:30 AM	65	183	11820
6:45 AM	64	213	13616
7:00 AM	64	246	15615
7:15 AM	70	247	17260
7:30 AM	69	241	16665
7:45 AM	76	202	15383
8:00 AM	70	170	11932

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	102	456	46335
3:15 PM	105	767	80677
3:30 PM	121	1018	123486
3:45 PM	142	1164	165528
4:00 PM	140	1242	173435
4:15 PM	129	873	112708
4:30 PM	90	515	46099
4:45 PM	48	258	12345
5:00 PM	22	80	1746
5:15 PM	0	25	0
5:30 PM	0	27	0
5:45 PM	0	28	0
6:00 PM	0	30	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	45000	0
Protected	N/A	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	45000	7
Protected	N/A	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	1.75	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 (Main Street) and S.R. 239 (Union Str
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
NBL	1	Dedicated Turning Lane(s)
SBT	2	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	1	47	25
5:15 AM	9	99	864
5:30 AM	19	177	3374
5:45 AM	32	441	14305
6:00 AM	45	682	30571
6:15 AM	49	867	42610
6:30 AM	53	1025	54771
6:45 AM	71	804	56739
7:00 AM	78	614	47616
7:15 AM	84	410	34281
7:30 AM	93	212	19654
7:45 AM	86	211	18194
8:00 AM	92	189	17310

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	245	655	160162
3:15 PM	272	556	150933
3:30 PM	326	482	157058
3:45 PM	324	383	124024
4:00 PM	345	269	92955
4:15 PM	304	273	82926
4:30 PM	268	267	71641
4:45 PM	203	203	41281
5:00 PM	125	148	18600
5:15 PM	75	81	6105
5:30 PM	10	8	81
5:45 PM	11	7	77
6:00 PM	12	6	73

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	65000	0
Protected	90000	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	65000	7
Protected	90000	5

	Total Hours	>= 2 Hrs?
Prot./Perm.	1.75	No
Prot./Prohib.	1.25	No

Recommended Phasing: **Permitted**

Controlled Document

PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 (Main Street) and S.R. 239 (Union Str
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
SBL	0	Dedicated Turning Lane(s)
NBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	2	0
5:15 AM	0	42	0
5:30 AM	0	111	0
5:45 AM	0	164	0
6:00 AM	0	211	0
6:15 AM	0	235	0
6:30 AM	0	221	0
6:45 AM	0	254	0
7:00 AM	2	303	630
7:15 AM	4	293	1223
7:30 AM	5	297	1545
7:45 AM	6	263	1646
8:00 AM	6	205	1282

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	9	373	3497
3:15 PM	7	654	4769
3:30 PM	8	859	7159
3:45 PM	6	970	6064
4:00 PM	4	1022	4257
4:15 PM	5	727	3785
4:30 PM	3	493	1540
4:45 PM	3	274	857
5:00 PM	2	140	292
5:15 PM	1	79	82
5:30 PM	0	16	0
5:45 PM	0	17	0
6:00 PM	0	18	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	35000	0
Protected	N/A	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	35000	0
Protected	N/A	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 and S.R. 29 (Mill Street)
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
NBL	0	Dedicated Turning Lane(s)
SBT	1	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	47	0
5:15 AM	0	67	0
5:30 AM	0	87	0
5:45 AM	7	350	2378
6:00 AM	11	624	6780
6:15 AM	19	845	16060
6:30 AM	29	1100	31370
6:45 AM	33	920	30000
7:00 AM	39	728	28680
7:15 AM	35	546	19292
7:30 AM	33	354	11542
7:45 AM	22	262	5695
8:00 AM	11	172	1873

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	18	785	13835
3:15 PM	24	832	19839
3:30 PM	29	921	26735
3:45 PM	29	839	24345
4:00 PM	25	742	18442
4:15 PM	23	789	17992
4:30 PM	29	806	23375
4:45 PM	31	772	24012
5:00 PM	28	586	16398
5:15 PM	24	380	9069
5:30 PM	12	164	2041
5:45 PM	0	7	0
6:00 PM	0	6	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	35000	0
Protected	N/A	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	35000	0
Protected	N/A	0

	Total Hours	>= 2 Hrs?
Prot./Perm.	0	No
Prot./Prohib.	0	No

Recommended Phasing: **Permitted**

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PennDOT Left Turn Conflict Factors & Phasing

Location: S.R. 11 and County Bridge
Scenario: 2018, Construction, with Outage
Mitigation: Mitigated

Movement	#Lanes	Lane Type
SBL	1	Dedicated Turning Lane(s)
NBT	2	Opposing Lane(s)

AM	Turning Volume	Opposing Volume	Conflict Factor
5:00 AM	0	2	0
5:15 AM	7	109	789
5:30 AM	18	275	4825
5:45 AM	36	456	16501
6:00 AM	52	622	32476
6:15 AM	55	678	37512
6:30 AM	53	718	38248
6:45 AM	56	769	43302
7:00 AM	68	811	55357
7:15 AM	86	837	71815
7:30 AM	94	769	72331
7:45 AM	85	679	57534
8:00 AM	82	583	47615

PM	Turning Volume	Opposing Volume	Conflict Factor
3:00 PM	116	538	62346
3:15 PM	115	804	92203
3:30 PM	118	1026	120866
3:45 PM	125	1143	142997
4:00 PM	121	1210	146296
4:15 PM	119	909	108105
4:30 PM	125	676	84193
4:45 PM	127	523	66180
5:00 PM	131	416	54456
5:15 PM	101	311	31373
5:30 PM	65	198	12918
5:45 PM	36	93	3353
6:00 PM	0	18	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	65000	2
Protected	90000	0

Consider Phasing	If CF >	# 15 Minute Periods
Prot./Perm.	65000	7
Protected	90000	5

	Total Hours	>= 2 Hrs?
Prot./Perm.	2.25	Yes
Prot./Prohib.	1.25	No

Recommended Phasing: **Prot./Perm.**

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Appendix N
Crash Analysis

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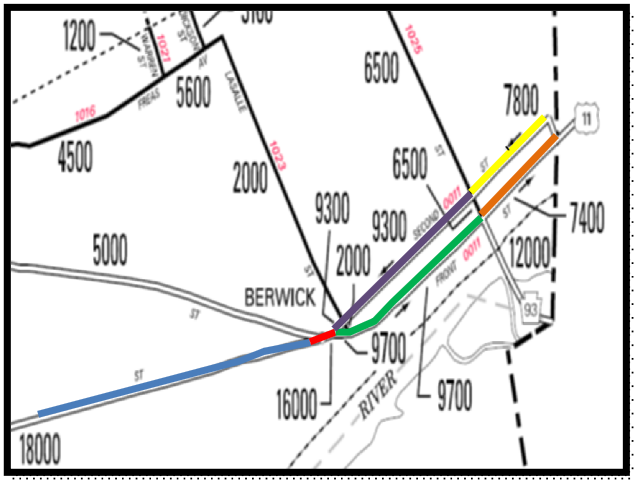
Crash Rate Comparison with Statewide Averages

Crash reports were collected for Luzerne and Columbia counties in the study area on highway segments between and within the boroughs of Berwick and Shickshinny. The crash reports spanned 5 years from 2003-2007. The crash statistics were converted into crash rates using AADT by route segment. This process was repeated for sections of S.R. 11 in Berwick (Figure N-1) and sections of S.R. 11 through Shickshinny (Figure N-2). The resulting 0.719 crashes/MVMT in Berwick and 1.233 crashes/MVMT in Shickshinny are both below the statewide average of corresponding roads of the same-classification (State Highway Other) which average 1.29 crashes/MVMT.



Growth rate 0.77%

AADT

Year	Section	1	2	3	4	5	6	Growth factor	VMT/year	Crashes/MVMT
	2003	17456	15517	9407	7176	7564	9019	0.969783891	12601726	1.032
	2004	17591	15636	9479	7232	7623	9088	0.977251227	12698759	0.709
	2005	17726	15756	9552	7287	7681	9158	0.984776061	12796540	0.703
	2006	17862	15878	9626	7343	7740	9229	0.992358837	12895073	0.388
	2007	18000	16000	9700	7400	7800	9300	1	12994365	0.770
									63986463	0.719 Total

Length (miles)	1.04	0.08	0.57	0.32	0.32	0.56

Figure N-1 – Crash Rate Calculation (Berwick Area)

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Growth rate 0.42%

Year	Section	1	2	3	Growth factor	VMT/year	Crashes/MVMT
		AADT					
	2003	5999	8654	6982	0.983374929	4662884	1.072
	2004	6024	8690	7011	0.987505104	4682468	0.854
	2005	6049	8727	7041	0.991652625	4702134	0.638
	2006	6074	8763	7070	0.995817566	4721883	2.118
	2007	6100	8800	7100	1	4741715	1.476
						23511084	1.233 Total

Length (miles)	0.69	0.53	0.58

2007 Pennsylvania Averages (Crashes/MVM)

State Highway Interstate	0.44
State Highway Other	1.29
Turnpike	0.45
Local Road	2.00

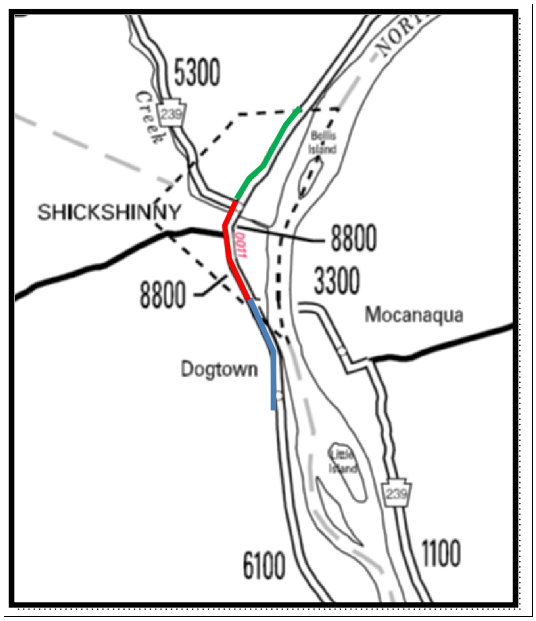

Figure N-2 – Crash Rate Calculation (Shickshinny Area)

Crash Diagrams

Crash statistics were compiled and mapped by location. The resulting diagrams for the Berwick area (Figure N-3) and Shickshinny (Figure N-4) can be seen below. Analysis of the diagrams results in the following conclusions:

1. S.R. 11 and Poplar Street has the highest share of crashes in the study are with 12 occurring over the past 5 years. The majority of these incidents are rear end collisions involving vehicles traveling SB on S.R. 11 . Poor visibility resulting from vegetation blocking this signal head in months where foliage is lush is a potential contributing factor.

    - Recommendation: Consider trimming back and/or removing trees in the north east corner of the intersection of S.R. 11 and Poplar St.

2. One fatality occurred as a vehicle attempting to make a WB left turn from S.R. 239 was struck by a truck headed NB on S.R. 11. It is possible that this was partially due to the fact that the territory of vehicles making this WB left turn movement is not clearly defined.

    - Recommendation: Consider improving lane markings and stop line delineation at the intersection of S.R. 11 (S. Main Street) and S.R. 239 as is shown in the mitigated design for this intersection in Figure 32 in the main body of this report.

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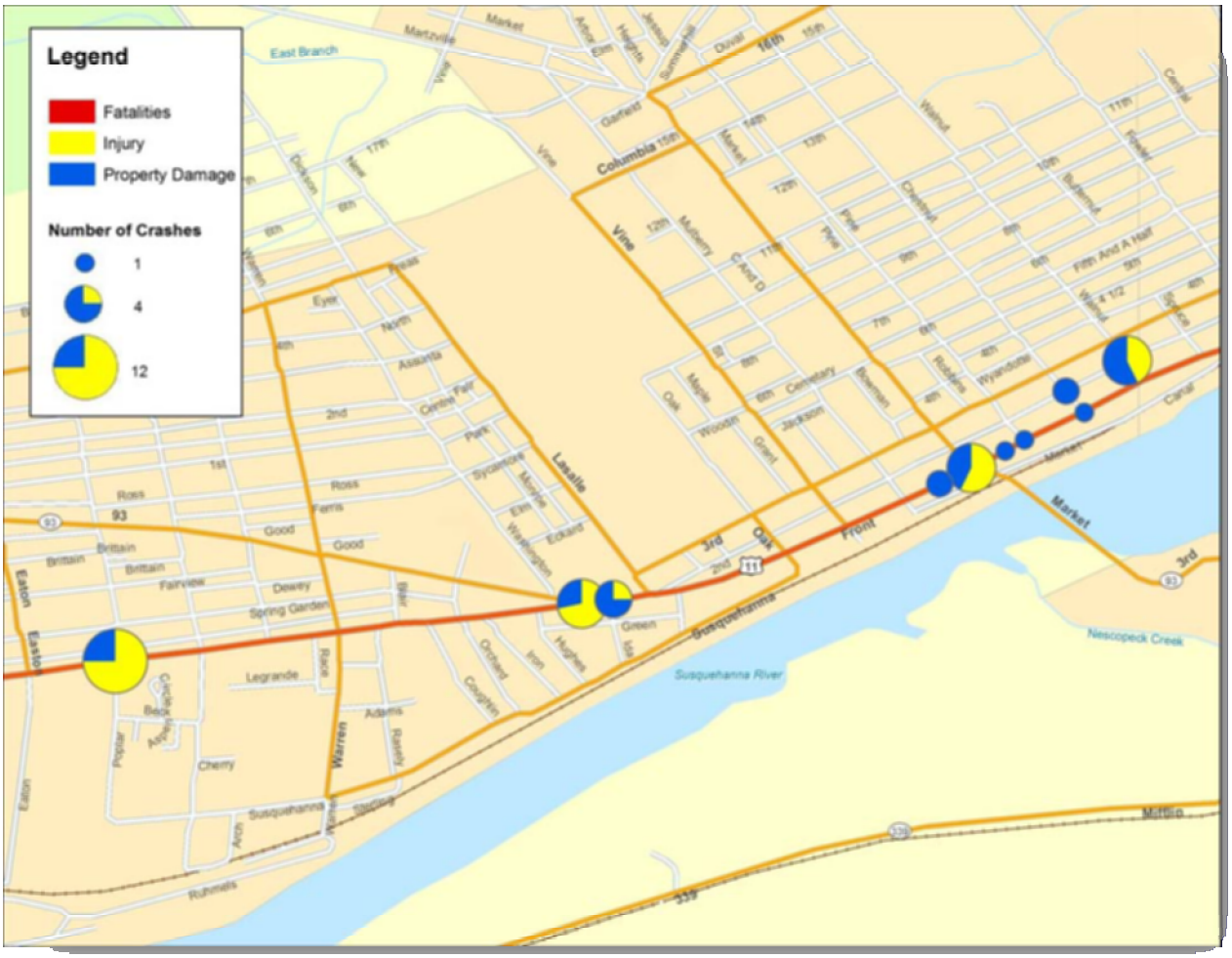

Figure N–3 - Crash Diagram 2003-2007 (Berwick Area)

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Figure N-4 – Crash Diagram 2003-2007 (Shickshinny Area)

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Case	(CO) County	State Route/Segment/Offset	Date of Accident	Day	Time	Lighting	Road Surface	Weather	Fatality	Injury	Pedestrian	Vehicle	Max Severity	Manner of Collision	Environmental Roadway Factors		Vehicle 1	Vehicle 1 Direction of Travel	Vehicle 1 Pre-Accident Action	Vehicle 1 Vehicle Events
2003087942	40	0011/0200/2474, VINE ST	3/14/2003	FRI	7:37	DAYLIGHT	DRY	CLEAR	0	1	0	2	MINOR INJURY	HEAD-ON	GLARE	4WAY	AUTOMOBILE	TRAVELING EAST IN RIGHT LANE	TURNING RIGHT	HIT UNIT 02
2004024020	40	0011/0200/1392	9/3/2003	WED	17:28	DAYLIGHT	DRY	CLEAR	0	2	0	2	UNKNOWN SEVERITY	REAR-END	NONE	MIDB	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02
2004036636	40	0011/0200/2587	10/20/2003	MON	15:50	DAYLIGHT	DRY	CLEAR	0	0	0	3	PROPERTY DAMAGE ONLY	ANGLE	NONE	4WAY	SMALL TRUCK	TRAVELING NORTH IN RIGHT LANE	CHANGING LANES OR MERGING	HIT UNIT 02
2004047610	40	0011/0200/0064	11/27/2003	THR	22:35	DARK	WET	RAIN	0	0	0	2	PROPERTY DAMAGE ONLY	REAR-END	NONE	MIDB	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02
2004078757	40	0011/0210/0000, 0239/0190/0000, E UNION ST	12/23/2003	TUES	17:30	DUSK	DRY	CLEAR	0	0	0	2	PROPERTY DAMAGE ONLY	ANGLE	NONE	4WAY	SMALL TRUCK	TRAVELING NORTH IN LEFT TURN LANE	TURNING LEFT	HIT UNIT 02
TOTAL ACCIDENTS 2003:		**5**	**FATAL ACCIDENTS 2003: 0**					**PERSONAL INJURY ACCIDENTS 2003: 2**					**PROPERTY DAMAGE ONLY 200 3**		**0**					
2005060201	40	0011/0210/0235	2/17/2004	TUES	18:10	STREET LT	DRY	CLEAR	0	0	0	1	PROPERTY DAMAGE ONLY	HIT FIXED OBJECT	NONE	MIDB	AUTOMOBILE	TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	HIT SNOW BANK
2005077808	40	0011/0200/2166	2/19/2004	THR	7:30	DAYLIGHT	DRY	CLEAR	0	0	0	1	PROPERTY DAMAGE ONLY	HIT FIXED OBJECT	NONE	MIDB	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	NEGOTIATING CURVE - LEFT	HIT CURB
2004043785	40	0011/0200/1753, GRANT ST	3/4/2004	THR	3:50	STREET LT	WET	RAIN	0	0	0	1	PROPERTY DAMAGE ONLY	HIT FIXED OBJECT	NONE	Y-INT	LARGE TRUCK	TRAVELING NORTH IN RIGHT LANE	NEGOTIATING CURVE - RIGHT	HIT CURB, HIT UTILITY POLE
2005028631	40	0011/0200/2474, VINE ST	4/3/2004	SAT	20:16	STREET LT	DRY	CLEAR	0	1	0	2	MINOR INJURY	SAME DIR SIDESWIPE	NONE	4WAY	VAN	TRAVELING NORTH IN SHOULDER RIGHT	PASSING/OVERTAKING VEH	HIT UNIT 02
TOTAL ACCIDENTS 2004:		**4**	**FATAL ACCIDENTS 2004: 0**					**PERSONAL INJURY ACCIDENTS 2004: 1**					**PROPERTY DAMAGE ONLY 200 3**							
2005200178	40	0011/0200/1918, 4004/0100/2245, BUTLER ST	1/30/2005	SUN	20:30	STREET LT	DRY	CLEAR	0	1	0	2	MODERATE INJURY	ANGLE	NONE	T-INT	AUTOMOBILE	TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02
2005172554	40	0011/0200/1918, 4004/0100/2245, BUTLER ST	6/2/2005	THR	15:02	DAYLIGHT	DRY	CLEAR	0	3	0	2	MINOR INJURY	HEAD-ON	NONE	4WAY	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02
2006009483	40	0011/0200/2553	12/31/2005	SAT	14:00	DAYLIGHT	SNOW	SNOW	0	0	0	2	PROPERTY DAMAGE ONLY	ANGLE	SLIPPERY ROAD (ICE/S	MIDB	AUTOMOBILE	TRAVELING NORTH IN LEFT LANE	GOING STRAIGHT	HIT UNIT 02
TOTAL ACCIDENTS 2005:		**3**	**FATAL ACCIDENTS 2005: 0**					**PERSONAL INJURY ACCIDENTS 2005: 2**					**PROPERTY DAMAGE ONLY 200 1**							
2006017586	40	0011/0190/3041	1/3/2006	TUES	7:05	DAYLIGHT	SLUSH	RAIN	0	1	0	1	UNKNOWN SEVERITY	HIT FIXED OBJECT	SLIPPERY ROAD (ICE/S	MIDB	AUTOMOBILE	TRAVELING NORTH IN NOT APPLICABLE	GOING STRAIGHT	HIT TREE OR SHRUBBERY
2006044874	40	0011/0200/0000, 0239/0188/0205	3/11/2006	SAT	9:55	DAYLIGHT	DRY	CLEAR	0	1	0	2	MINOR INJURY	REAR-END	NONE	T-INT	SMALL TRUCK	TRAVELING NORTH IN RIGHT LANE	TURNING RIGHT ON RED	HIT UNIT 02
2006072314	40	0011/0200/0000, 0239/0188/0205	5/12/2006	FRI	21:42	STREET LT	DRY	CLEAR	1	2	0	3	FATAL	ANGLE	NONE	T-INT	AUTOMOBILE	TRAVELING WEST IN LEFT TURN LANE	TURNING LEFT	HIT UNIT 02, HIT UNIT 03
2006054735	40	0011/0210/0000, 0239/0190/0000, E UNION ST	5/12/2006	FRI	21:52	DARK	DRY	CLEAR	0	2	0	2	UNKNOWN SEVERITY	ANGLE	NONE	4WAY	AUTOMOBILE	TRAVELING NORTH IN ONCOMING TRAFFIC LANE	TURNING LEFT	HIT UNIT 02
2006095305	40	0011/0200/2447	8/19/2006	SAT	20:41	DARK	WET	RAIN	0	1	1	1	MODERATE INJURY	PEDESTRIAN	SUDDEN WEATHER CO	MIDB	AUTOMOBILE	TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02
2006109830	40	0011/0200/2389	9/14/2006	THR	6:10	DAWN	WET	RAIN	0	1	0	1	MINOR INJURY	HIT FIXED OBJECT	NONE	MIDB	SUV	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	HIT TREE OR SHRUBBERY
2006130636	40	0011/0200/0000, 0239/0188/0205	11/20/2006	MON	19:26	STREET LT	DRY	CLEAR	0	2	0	2	UNKNOWN SEVERITY	ANGLE	UNKNOWN	T-INT	SMALL TRUCK	TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02
2007013200	40	0011/0200/2474, VINE ST	12/16/2006	SAT	18:00	STREET LT	DRY	CLEAR	0	0	0	2	PROPERTY DAMAGE ONLY	REAR-END	NONE	4WAY	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02
2007013549	40	0011/0200/1353	12/8/2006	FRI	23:35	STREET LT	DRY	CLEAR	0	1	0	1	MINOR INJURY	HEAD-ON	NONE	MIDB	SMALL TRUCK	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02
TOTAL ACCIDENTS 2006:		**9**	**FATAL ACCIDENTS 2006: 1**					**PERSONAL INJURY ACCIDENTS 2006: 8**					**PROPERTY DAMAGE ONLY 200 1**							
2007017584	40	0011/0200/1105	1/4/2007	THR	0:05	STREET LT	DRY	CLEAR	0	1	0	1	MODERATE INJURY	HIT FIXED OBJECT	NONE	MIDB	SUV	TRAVELING NORTH IN RIGHT LANE	NEGOTIATING CURVE - RIGHT	HIT TREE OR SHRUBBERY
2007035556	40	0011/0200/0204	2/15/2007	THR	12:15	DAYLIGHT	DRY	CLEAR	0	0	0	2	PROPERTY DAMAGE ONLY	SAME DIR SIDESWIPE	NONE	MIDB	AUTOMOBILE	TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01
2007035558	40	0011/0210/0000, 0239/0190/0000, E UNION ST	2/18/2007	SUN	18:57	STREET LT	DRY	CLEAR	0	3	0	2	MINOR INJURY	HEAD-ON	NONE	T-INT	AUTOMOBILE	TRAVELING SOUTH IN ONCOMING TRAFFIC LANE	TURNING LEFT	HIT UNIT 02
2007038973	40	0011/0190/2814	3/3/2007	SAT	4:30	STREET LT	ICE PATCH	CLEAR	0	0	0	1	PROPERTY DAMAGE ONLY	HIT FIXED OBJECT	OBSTACLE ON ROADW	MIDB	VAN	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	HIT BOULDER/OBST IN ROADWAY OVERTURN/ROLL OVER
2007044458	40	0011/0200/2474, VINE ST	3/15/2007	THR	15:23	DAYLIGHT	WET	RAIN	0	2	0	3	MINOR INJURY	REAR-END	NONE, OTHER WEATHER CONDITIONS	T-INT	VAN	TRAVELING SOUTH IN OTHER FWD MOVING LANE	STOPPED IN TRAFFIC	STRUCK BY UNIT 02
2007076539	40	0011/0200/1918, 4004/0100/2245, BUTLER ST	6/19/2007	TUES	18:20	DAYLIGHT	WET	RAIN	0	2	0	2	MINOR INJURY	ANGLE	NONE	4WAY	SMALL TRUCK	TRAVELING WEST IN OTHER	GOING STRAIGHT	STRUCK BY UNIT 02
2007100424	40	0011/0210/0440	8/29/2007	WED	4:30	STREET LT	DRY	CLEAR	0	0	0	1	PROPERTY DAMAGE ONLY	REAR-END	NONE	MIDB	SMALL TRUCK	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02
TOTAL ACCIDENTS 2007:		**7**	**FATAL ACCIDENTS 2007: 0**					**PERSONAL INJURY ACCIDENTS 2007: 4**					**PROPERTY DAMAGE ONLY 200 3**							
2004030153	40	0239/0190/0535, UNKNOWN RD	9/30/2003	TUES	15:50	DAYLIGHT	DRY	CLEAR	0	1	0	1	MINOR INJURY	ANGLE	NONE	T-INT	PEDALCYCLE	TRAVELING SOUTH IN OTHER	GOING STRAIGHT	HIT UNIT 02
2004078757	40	0011/0210/0000, 0239/0190/0000, E UNION ST	12/23/2003	TUES	17:30	DUSK	DRY	CLEAR	0	0	0	2	PROPERTY DAMAGE ONLY	ANGLE	NONE	4WAY	SMALL TRUCK	TRAVELING NORTH IN LEFT TURN LANE	TURNING LEFT	HIT UNIT 02
TOTAL ACCIDENTS 2003:		**2**	**FATAL ACCIDENTS 2003: 0**					**PERSONAL INJURY ACCIDENTS 2003: 1**					**PROPERTY DAMAGE ONLY 200 1**							
2005058734	40	0239/0190/0594	6/20/2004	SUN	2:10	STREET LT	DRY	CLEAR	0	0	0	1	PROPERTY DAMAGE ONLY	HIT FIXED OBJECT	NONE	MIDB	SUV	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	HIT UTILITY POLE
2005078349	40	0239/0190/0929	11/23/2004	TUES	18:30	DARK	DRY	CLEAR	0	1	0	2	MINOR INJURY	ANGLE	NONE	MIDB	AUTOMOBILE	TRAVELING NORTH IN SHOULDER RIGHT	TURNING LEFT	HIT UNIT 02
TOTAL ACCIDENTS 2004:		**2**	**FATAL ACCIDENTS 2004: 0**					**PERSONAL INJURY ACCIDENTS 2004: 1**					**PROPERTY DAMAGE ONLY 200 1**							
2005180792	40	0239 UNION ST	3/18/2005	FRI	18:11	DAYLIGHT	DRY	CLEAR	0	0	0	3	PROPERTY DAMAGE ONLY	REAR-END	NONE	MIDB	SUV	TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02
TOTAL ACCIDENTS 2005:		**1**	**FATAL ACCIDENTS 2005: 0**					**PERSONAL INJURY ACCIDENTS 2005: 0**					**PROPERTY DAMAGE ONLY 200 1**							
2006044874	40	0011/0200/0000, 0239/0188/0205	3/11/2006	SAT	9:55	DAYLIGHT	DRY	CLEAR	0	1	0	2	MINOR INJURY	REAR-END	NONE	T-INT	SMALL TRUCK	TRAVELING NORTH IN RIGHT LANE	TURNING RIGHT ON RED	HIT UNIT 02
2006054735	40	0011/0210/0000, 0239/0190/0000, E UNION ST	5/12/2006	FRI	21:52	DARK	DRY	CLEAR	0	2	0	2	UNKNOWN SEVERITY	ANGLE	NONE	4WAY	AUTOMOBILE	TRAVELING NORTH IN ONCOMING TRAFFIC LANE	TURNING LEFT	HIT UNIT 02
2006072314	40	0011/0200/0000, 0239/0188/0205	5/12/2006	FRI	21:42	STREET LT	DRY	CLEAR	1	2	0	3	FATAL	ANGLE	NONE	T-INT	AUTOMOBILE	TRAVELING WEST IN LEFT TURN LANE	TURNING LEFT	HIT UNIT 02, HIT UNIT 03
2006130636	40	0011/0200/0000, 0239/0188/0205	11/20/2006	MON	19:26	STREET LT	DRY	CLEAR	0	2	0	2	UNKNOWN SEVERITY	ANGLE	UNKNOWN	T-INT	SMALL TRUCK	TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02
TOTAL ACCIDENTS 2006:		**4**	**FATAL ACCIDENTS 2006: 1**					**PERSONAL INJURY ACCIDENTS 2006: 4**					**PROPERTY DAMAGE ONLY 200 0**							
2007035558	40	0011/0210/0000, 0239/0190/0000, E UNION ST	2/18/2007	SUN	18:57	STREET LT	DRY	CLEAR	0	3	0	2	MINOR INJURY	HEAD-ON	NONE	T-INT	AUTOMOBILE	TRAVELING SOUTH IN ONCOMING TRAFFIC LANE	TURNING LEFT	HIT UNIT 02
TOTAL ACCIDENTS 2007:		**1**	**FATAL ACCIDENTS 2007: 0**					**PERSONAL INJURY ACCIDENTS 2007: 1**					**PROPERTY DAMAGE ONLY 200 0**							

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	Vehicle 2					Vehicle 3				
Driver Actions	Vehicle 2	Direction of Travel	Pre-Accident Action	Vehicle Events	Driver Actions	Vehicle 3	Direction of Travel	Pre-Accident Action	Vehicle Events	Driver Actions
NO CONTRIBUTING ACTION	LARGE TRUCK	TRAVELING WEST IN LEFT LANE	STOPPED IN TRAFFIC LANE	STRUCK BY UNIT 01	TURNING FROM WRONG LANE, DRIVING WRONG SIDE OF ROAD					
TOO FAST FOR CONDITIONS, OTHER IMPROPER DRIV ACTIONS	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	STOPPED IN TRAFFIC LANE	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION					
CARELESS PASS OR LANE CHANGE	AUTOMOBILE	TRAVELING EAST IN OTHER	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	PASSING/OVERTAK	STRUCK BY UNIT 02	NO CONTRIBUTING ACTION
TAILGATING, TOO FAST FOR CONDITIONS	LARGE TRUCK	TRAVELING SOUTH IN RIGHT LANE	SLOWING OR STOPPING IN LANE	STRUCK BY UNIT 01	RUNNING STOP SIGN					
IMPROPER/CARELESS TURN	SUV	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION					
OTHER IMPROPER DRIV ACTIONS, ALCOHOL TEST:30										
DRIVER WAS DISTRACTED										
TOO FAST FOR CONDITIONS, OTHER IMPROPER DRIV ACTIONS, ALCOHOL TEST:95										
CARELESS PASS OR LANE CHANGE	VAN	TRAVELING NORTH IN RIGHT LANE	TURNING RIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION					
OTHER IMPROPER DRIV ACTIONS	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION					
USING HAND-HELD PHONE	AUTOMOBILE	TRAVELING NORTH IN LEFT LANE	TURNING LEFT	HIT UNIT 01	IMPROPER/CARELESS TURN					
TOO FAST FOR CONDITIONS	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION					
TOO FAST FOR CONDITIONS										
IMPROPER/CARLESS TURN, USING HAND-HELD PHONE	AUTOMOBILE	TRAVELING NORTH IN RIGHT LANE	TURNING RIGHT ON RED	STRUCK BY UNIT 01	SUDDEN SLOWING/STOPPING					
IMPROPER/CARLESS TURN, ALCOHOL TEST:25	SMALL TRUCK	TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 01, HIT FENCE OR WALL	NO CONTRIBUTING ACTION	SMALL TRUCK	TRAVELING SOUTH IN LEFT TURN LANE	STOPPED IN TRAFFI	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION
IMPROPER/CARELESS TURN	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 01	NO CONTRIBUTING ACTION					
NO CONTRIBUTING ACTION										
AFFECTED BY PHYSICAL COND										
NO CONTRIBUTING ACTION	AUTOMOBILE	TRAVELING SOUTH IN LEFT TURN LANE	TURNING LEFT	STRUCK BY UNIT 01	IMPROPER/CARELESS TURN, DRIVER INEXPERIECE, FAILURE TO RESPOND TO TCD					
TAILGATING	SMALL TRUCK	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION					
AFFECTED BY PHYSICAL COND										
AFFECTED BY PHYSICAL COND										
NO CONTRIBUTING ACTION										
IMPROPER/CARELESS TURN	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION					
NO CONTRIBUTING ACTION										
NO CONTRIBUTING ACTION	SUV	TRAVELING SOUTH IN OTHER FWD MOVING LANE	STOPPED IN TRAFFIC LANE	STRUCK BY UNIT 03	NO CONTRIBUTING ACTION	AUTOMOBILE	TRAVELING SOUTH IN OTHER FWD MOVING LANE	GOING STRAIGHT	HIT UNIT 02, HIT UNIT	DRIVER WAS DISTRACTED, UNKNOWN, OTHER IMPROPER DRIV ACTIONS
RUNNING STOP SIGN, IMPROPER ENTRANCE TO HIGHWAY	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 01	TOO FAST FOR CONDITIONS, DRIVER WAS DISTRACTED					
DRIVER WAS DISTRACTED										
OTHER IMPROPER DRIV ACTIONS	AUTOMOBILE	TRAVELING EAST IN RIGHT LANE	SLOWING OR STOPPING IN LANE	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION					
IMPROPER/CARELESS TURN	SUV	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION					
OTHER IMPROPER DRIV ACTIONS										
OTHER IMPROPER DRIV ACTIONS	AUTOMOBILE	TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION					
NO CONTRIBUTING ACTION	AUTOMOBILE	TRAVELING EAST IN RIGHT LANE	STOPPED IN TRAFFIC LANE	STRUCK BY UNIT 01, HIT UNIT 03	NO CONTRIBUTING ACTION	AUTOMOBILE	TRAVELING EAST IN RIGHT LANE	STOPPED IN TRAFFI	STRUCK BY UNIT 02	NO CONTRIBUTING ACTION
IMPROPER/CARELESS TURN, USING HAND-HELD PHONE	AUTOMOBILE	TRAVELING NORTH IN RIGHT LANE	TURNING RIGHT ON RED	STRUCK BY UNIT 01	SUDDEN SLOWING/STOPPING					
IMPROPER/CARELESS TURN	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 01	NO CONTRIBUTING ACTION					
IMPROPER/CARELESS TURN, ALCOHOL TEST:25	SMALL TRUCK	TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 01, HIT FENCE OR WALL	NO CONTRIBUTING ACTION	SMALL TRUCK	TRAVELING SOUTH IN LEFT TURN LANE	STOPPED IN TRAFFI	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION
NO CONTRIBUTING ACTION	AUTOMOBILE	TRAVELING SOUTH IN LEFT TURN LANE	TURNING LEFT	STRUCK BY UNIT 01	IMPROPER/CARELESS TURN, DRIVER INEXPERIECE, FAILURE TO RESPOND TO TCD					
IMPROPER/CARELESS TURN	AUTOMOBILE	TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION					

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Case	(CO) County	State Route/Segment/Offset	Date of Accident	Day	Time	Lighting	Road Surface	Weather	Fatality	Injury	Pedestrian	Vehicle	Max Severity	Manner of Collision	Environmental Roadway	
	19	0011/0430/1154 0093/0020/0224 1025/0010/0000 1025/0011/0000	4/20/2003	SUN	19:26	DAYLIGHT	DRY	CLEAR	0	1	0	2	MODERATE INJURY	REAR-END	NONE	4WAY
	19	0011/0430/1154 0093/0020/0224 1025/0010/0000 1025/0011/0000	11/14/2003	FRI	13:05	DAYLIGHT	DRY	CLEAR	0	0	0	2	PROPERTY DAMAGE ONL	ANGLE	NONE	4WAY
	19	0011/0430/1154 0093/0020/0224 1025/0010/0000 1025/0011/0000	7/15/2004	THUR	20:15	DAYLIGHT	DRY	CLEAR	0	2	0	2	MINOR INJURY	ANGLE	NONE	4WAY
	19	0011/0430/1154 0093/0020/0224 1025/0010/0000	12/26/2004	TUES	12:10	DAYLIGHT	DRY	CLEAR	0	1	0	2	MINOR INJURY	REAR-END	NONE	4WAY
	19	0011/0430/1154 0093/0020/0224 1025/0010/0000 1025/0011/0000	11/25/2006	SAT	12:32	DAYLIGHT	UNK	UNK	0	0	0	2	UNK IF INJURED	REAR-END	NONE	4WAY
	19	0011/0430/1154 0093/0020/0224 1025/0010/0000 1025/0011/0000	10/4/2007	THUR	13:29	DAYLIGHT	DRY	CLEAR	0	2	0	2	MINOR INJURY	REAR-END	NONE	4WAY
	19	0011/0430/1154 0093/0020/0224 1025/0010/0000 1025/0011/000	11/29/2007	THR	22:53	STREET LT	DRY	CLEAR	0	0	0	2	PROP DMG ONLY	ANGLE	NONE	4WAY
	19	0011/0430/1179	12/11/2003	THR	20:01	STREET LT	DRY	CLEAR	0	0	1	1	UNK IF INJURED	PEDESTRIAN	NONE	MIDB
	19	0011/0430/1179	8/1/2003	MON	15:40	UNKNOWN	UNK	UNK	0	0	0	2	PROP DMG ONLY	REAR-END	NONE	MIDB
	19	0011/0430/1279	9/16/2003	TUES	10:30	DAYLIGHT	DRY	CLEAR	0	0	1	1	PROP DMG ONLY	ANGLE	NONE	MIDB
	19	0011/0430/1739	12/7/2004	TUES	12:22	DAYLIGHT	WET	RAIN	0	0	0	2	PROP DMG ONLY	ANGLE	NONE	4WAY
	19	0011/0430/2291	8/15/2005	MON	22:49	DARK	DRY	CLEAR	0	0	0	2	PROP DMG ONLY	ANGLE	NONE	4WAY
	19	0011/0431/1144 CHESTNUT ST	10/15/2003	WED	7:35	DAYLIGHT	DRY	CLEAR	0	1	0	2	MINOR INJURY	ANGLE	NONE	4WAY
	19	0011/0431/1144 CHESTNUT ST	11/20/2007	TUES	12:20	DAYLIGHT	WET	RAIN	0	0	0	2	PROP DMG ONLY	ANGLE	NONE	4WAY
	19	0011/0431/1607	5/5/2006	FRI	16:10	DAYLIGHT	DRY	CLEAR	0	0	0	2	PROP DMG ONLY	REAR-END	NONE	MIDB
	19	0011/0431/1687	8/9/2004	MON	16:50	DAYLIGHT	DRY	CLEAR	0	1	0	1	MAJOR INJURY	REAR-END	NONE	MIDB
	19	0011/0431/1697	1/31/2005	MON	15:05	DAYLIGHT	DRY	CLEAR	0	0	0	1	UNK IF INJURED	HIT FIXED OBJE	NONE	MIDB
	19	0011/0431/1707 SECOND ST WALNUT ST	7/1/2003	TUES	10:06	DAYLIGHT	DRY	CLEAR	0	0	0	3	PROP DMG ONLY	ANGLE	NONE	4WAY
	19	0011/0431/1707 SECOND ST WALNUT ST	10/5/2003	SUN	2:31	STREET LT	WET	FOG	0	3	0	1	MODERATE INJURY	HIT FIXED OBJE	NONE	T-INT
	19	0011/0431/1707 SECOND ST WALNUT ST	12/4/2005	SUN	2:48	STREET LT	SNOW	SNOW	0	0	0	1	PROP DMG ONLY	UNKNOWN	NONE	T-INT
	19	0011/0431/1707 WALNUT ST	12/4/2005	SUN	13:55	DAYLIGHT	WET	RAIN	0	1	0	2	MINOR INJURY	ANGLE	NONE	4WAY
	19	0011/0410/1252	12/9/2004	THUR	16:15	DAYLIGHT	WET	RAIN	0	1	2	1	MODERATE INJURY	PEDESTRIAN	UNKNOW	MIDB
	19	0011/0410/1252	10/8/2003	WED	8:51	DAYLIGHT	DRY	FOG	0	0	0	2	PROP DMG ONLY	REAR-END	NONE	MIDB
	19	0011/0410/1302	8/28/2003	THUR	7:37	DAYLIGHT	DRY	CLEAR	0	1	0	2	UNK IF INJURED	PEDESTRIAN	UNKNOW	MIDB
	19	0011/0410/1352	6/7/2005	SUN	20:42	STREET LT	DRY	CLEAR	0	1	0	2	MODERATE INJURY	HIT FIXED OBJECT	UNKNOW	MIDB
	19	0011/0410/1362 0093/0040/0000	2/16/2006	THUR	15:40	UNKNOWN	UNK	UNK	0	10	0	2	MINOR INJURY	REAR-END	NONE	Y-INT
	19	0011/0410/1352 0093/0040/0000	3/8/2007	THUR	16:20	DAYLIGHT	DRY	CLEAR	0	1	0	3	MINOR INJURY	REAR-END	NONE	4WAY
	19	0011/0410/1394	12/31/2005	SAT	14:30	DAYLIGHT	DRY	CLEAR	0	1	0	2	MODERATE INJURY	HEAD-ON	NONE	MIDB
	19	0011/0410/1480 IDA ST	3/25/2005	FIR	17:01	DAYLIGHT	DRY	CLEAR	0	0	0	3	PROP DMG ONLY	ANGLE	NONE	4WAY
	19	0011/0410/1480 IDA ST	9/6/2005	TUES	10:37	DAYLIGHT	DRY	CLEAR	0	1	0	1	MODERATE INJURY	NON-COLLISION	NONE	T-INT
	19	0011/0410/1480 IDA ST	4/3/2007	TUES	21:20	DAYLIGHT	DRY	CLEAR	0	0	0	2	PROPERTY DAMAGE ONL	ANGLE	NONE	T-INT
	19	0011/0410/1480 IDA ST	10/21/2007	SUN	0:31	STREET LT	DRY	CLEAR	0	2	0	2	UNK SEVERITY	HIT FIXED OBJE	NONE	T-INT
	19	0011/0420/0187	11/8/2004	MON	12:10	DAYLIGHT	DRY	CLEAR	0	0	0	2	PROP DMG ONLY	REAR-END	NONE	MIDB
	19	0011/0420/0217	11/11/2007	SUN	2:38	STREET LT	WET	RAIN/FOG	0	0	0	1	PROP DMG ONLY	HIT FIXED OBJE	NONE	MIDB
	19	0011/0390/1536	3/24/2003	MON	10:48	DAYLIGHT	DRY	CLEAR	0	1	0	4	MINOR INJURY	REAR-END	NONE	MIDB
	19	0011/0390/1586	5/22/2004	SAT	15:00	DAYLIGHT	DRY	CLEAR	0	1	0	2	MINOR INJURY	REAR-END	NONE	MIDB
	19	0011/0390/1636 POPLAR ST	1/29/2003	WED	21:00	STREET LAT	DRY	CLEAR	0	1	0	2	PROP DMG ONLY	ANGLE	NONE	4WAY
	19	0011/0390/1636 POPLAR ST	2/1/2004	SUN	10:08	DAYLIGHT	DRY	CLEAR	0	4	0	2	MINOR INJURY	REAR-END	NONE	4WAY
	19	0011/0390/1636 POPLAR ST	7/21/2005	THUR	8:37	DAYLIGHT	DRY	CLEAR	0	1	0	4	MINOR INJURY	REAR-END	NONE	4WAY
	19	0011/0390/1636 POPLAR ST	10/12/2006	THUR	8:38	DAWN	DRY	CLEAR	0	1	0	3	MODERATE INJURY	ANGLE	NONE	4WAY
	19	0011/0390/1636 POPLAR ST	2/19/2007	MON	12:01	DAYLIGHT	DRY	CLEAR	0	2	0	2	MODERATE INJURY	ANGLE	NONE	4WAY
	19	0011/0390/1636 POPLAR ST	5/16/2007	WED	8:50	DAYLIGHT	DRY	CLEAR	0	1	0	2	MODERATE INJURY	ANGLE	NONE	4WAY
	19	0011/0390/1636 POPLAR ST	10/11/2007	THUR	14:56	DAYLIGHT	WET	RAIN	0	1	0	2	MINOR INJURY	ANGLE	NONE	4WAY
	19	0011/0390/1649 POPLAR ST	11/26/2006	SUN	17:07	STREET LT	DRY	CLEAR	0	0	0	2	UNK IF INJURED	ANGLE	NONE	4WAY
	19	0011/0390/1656	12/15/2004	WED	17:27	STREET LT	DRY	CLEAR	0	1	0	2	MINOR INJURY	REAR-END	NONE	MIDB
	19	0011/0390/1736	4/12/2003	SAT	14:10	DAYLIGHT	DRY	CLEAR	0	0	0	2	PROP DMG ONLY	REAR-END	NONE	MIDB

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	Vehicle 1					
	Vehicle 1	Direction of Travel	Pre-Accident Action	Vehicle Events	Driver Actions	Vehicle 2
	SUV	TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 02	PROCEED W/O CLEARANCE	AUTOMOBILE
	SUV	TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	RUNNING RED LIGHT	SUV
	SMALL TRUCK	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 2	RUNNING RED LIGHT	AUTOMOBILE
	AUTOMOBILE	TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	OTHER IMPROPER DRIVING ACTIONS	VAN
	AUTOMOBILE	TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	TAILGATING	AUTOMOBILE
	AUTOMOBILE	TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	DRIVER WAS DISTRACTED	AUTOMOBILE
	SMALL TRUCK	TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 02	RUNNING RED LIGHT	SMALL TRUCK
	OTHER VEHICLE	TRAVELING NORTH IN UNKNOWN	UNKNOWN	HIT UNIT 02	NO CONTRIBUTING ACTION	
	VAN	TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	OTHER IMPROPER DRIVING ACTIONS	AUTOMOBILE
	AUTOMOBILE	TRAVELING NORTH IN RIGHT LANE	BACKING UP	HIT UNIT 02	OTHER IMPROPER DRIVING ACTIONS CARELESS/ILLEGAL BACKING UP	
	AUTOMOBILE	TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 02	PROCEED W/O CLEARANCE	AUTOMOBILE
	AUTOMOBILE	TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	PROCEED W/O CLEARANCE	AUTOMOBILE
	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	PROCEED W/O CLEARANCE	SMALL TRUCK
	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 02	PROCEED W/O CLEARANCE	LARGE TRUCK
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	TAILGATING	AUTOMOBILE
	OTHER PEDALCYCLE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	TAILGATING	AUTOMOBILE
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT CONCRETE/LONGIT BARRIER	DRIVING WRONG WAY ON 1-WAY	
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02 STRUCK BY UNIT 02	RUNNING STOP SIGN	AUTOMOBILE
	AUTOMOBILE	TRAVELING WEST IN RIGHT TURN LANE	TURNING RIGHT	HIT CURB HIT BUILDING	IMPROPER/CARELESS TURN	
	AUTOMOBILE	TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	AFFECTED BY PHYSICAL COND	
	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 02	RUNNING STOP SIGN	AUTOMOBILE
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	NO CONTRIBUTING ACTION	
	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	OTHER IMPROPER DRIVING ACTIONS	VAN
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	NO CONTRIBUTING ACTION	
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT FENCE OR WALL	OTHER IMPROPER DRIVING ACTIONS	AUTOMOBILE
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	OTHER IMPROPER DRIVING ACTIONS	AUTOMOBILE
	SMALL TRUCK	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	TAILGATING	SMALL TRUCK
	AUTOMOBILE	TRAVELING EAST IN RIGHT LANE	TURNING LEFT	STRUCK BY UNIT 02	IMPROPER/CARELESS TURN	AUTOMOBILE
	AUTOMOBILE	TRAVELING EAST IN RIGHT LANE	TURNING LEFT	STRUCK BY UNIT 02 HIT UNIT 03	PROCEED W/O CLEARANCE	SUV
	MOTORCYCLE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	OTHER NON-COLLISION	OTHER IMPROPER DRIVIER ACTIONS	
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	TURNING LEFT	HIT UNIT 02	IMPROPER/CARELESS TURN	AUTOMOBILE
	AUTOMOBILE	TRAVELING WEST IN ONCOMING TRAFI	NEGOTIATING CURVE - RIGHT	HIT UNTILITY POLE HIT UNIT 02	SPEEDING	SUV
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	OTHER IMPROPER DRIVER ACTIONS	LARGE TRUCK
	AUTOMOBILE	TRAVELING EAST IN ONCOMING TRAFF	GOING STRAIGHT	HIT OTHER FIXED OBJECT	AFFECTED BY PHYSICAL COND	
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 02	NO CONTRIBUTING ACTION	SUV
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	OTHER IMPROPER DRIVING ACTIONS	AUTOMOBILE
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	DRIVER WAS DISTRACTED	AUTOMOBILE
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	PROCEED W/O CLEARANCE	AUTOMOBILE
	AUTMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	OTHER IMPROPER DRIVER ACTIONS	AUTOMOBILE
	AUTOMOBILE	TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	RUNNING RED LIGHT	SMALL TRUCK
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	OTHER IMPROPER DRIVER ACTIONS	AUTOMOBILE
	SMALL TRUCK	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	PROCEED W/O CLEARANCE	AUTOMOBILE
	SMALL TRUCK	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	RUNNING RED LIGHT	VAN
	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	RUNNING RED LIGHT	AUTOMOBILE
	AUTOMOBILE	TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 02	TAILGATING	SUV
	SMALL TRUCK	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 02	IMPROPER/CARELESS TURN	VAN

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Vehicle 2				Vehicle 3		
Direction of Travel	Pre-Accident Action	Vehicle Events	Driver Actions	Vehicle 3	Direction of Travel	Pre-Accident Action
TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING NORTH IN NOT APPLICABLE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING EAST IN RIGHT LANE	SLOWING OR STOPPING IN LANE	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING SOUTH IN UNKNOWN	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING WEST IN RIGHT LANE	SLOWING OR STOPPING IN LANE	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING WEST IN RIGHT LANE	SLOWING OR STOPPING IN LANE	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING NORTH IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01 HIT UNIT 01	NO CONTRIBUTING ACTION	AUTOMOBILE	TRAVELING SOUTH IN RIGHT LANE	STOPPED IN TRAFFIC LANE
TRAVELING EAST IN RIGHT LANE	TURNING RIGHT	HIT UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING SOUTH IN RIGHT LANE	STOPPED IN TRAFFIC LANE	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	OTHER NON-COLLISION	NO CONTRIBUTING ACTION			
TRAVELING WEST IN RIGHT LANE	STOPPED IN TRAFFIC LANE	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING WEST IN RIGHT LANE	STOPPED IN TRAFFIC LANE	STRUCK BY UNIT 01 HIT UNIT 03	NO CONTRIBUTING ACTION	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	STOPPED IN TRAFFIC LANE
TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 01	NO CONTRIBUTING ACTION	VAN	TRAVELING WEST IN RIGHT LANE	STOPPED IN TRAFFIC LANE
TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 03 HIT UNIT 01	NO CONTRIBUTING ACTION	SUV	TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT
TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING WEST IN RIGHT LANE	STOPPED IN TRAFFIC LANE	STRUCK BY UNIT 01 HIT UNIT 03	NO CONTRIBUTING ACTION	AUTOMOBILE	TRAVELING WEST IN RIGHT LANE	STOPPED IN TRAFFIC LANE
TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01 HIT OTHER FIXED OB	RUNNING RED LIGHT	AUTOMOBILE	TRAVELING EAST IN NOT APPLICABLE	STOPPED IN TRAFFIC LANE
TRAVELING SOUTH IN RIGHT LANE	GOING STRIAGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING SOUTH IN RIGHT LANE	TURNING RIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING SOUTH IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING NORTH IN RIGHT LANE	TURNING LEFT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING EAST IN RIGHT LANE	GOING STRAIGHT	STRUCK BY UNIT 01	NO CONTRIBUTING ACTION			
TRAVELING WEST IN RIGHT LANE	GOING STRAIGHT	HIT UNIT 01	NO CONTRIBUTING ACTION			

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Vehicle Events	Driver Actions	Vehicle 4	Direction of Travel	Pre-Accident Action	Vehicle Events	Driver Actions

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Appendix O
PennDOT District 3-0 Comments and Responses

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	District 3-0 Comments – Received December 10, 2010	
No	**Comment**	**Resolution**
1	The trip generation rates and trip distribution and assignment rates are based on information provided by the adjacent SSES site and are considered acceptable.	Acknowledged
2	The executive summary discusses the possibility of some percentage of traffic rerouting for various reasons. There is no calculation of how these percentages were obtained. Without calculations to back up these numbers, it is recommended that the more conservative numbers be used for the analysis.	Based on discussion with district, this approach will be clarified in the text. However, the district stated their preference for the "conservative estimate" and the TIS will be updated accordingly. The results are presented without rerouting/dispersion as a "worst case" condition.
3	There are several instances where SimTraffic suggests that traffic is behaving in a certain manner. Have these intersections been field verified to ensure Synchro is modeling the real traffic behavior.	Yes, to the extent possible, namely existing conditions. Some of the observations correspond to future year conditions with higher traffic volumes, which could not be observed. SimTraffic is used to predict traffic conditions for these conditions and based on our experience with this tool and engineering judgment, we hold that this are reasonable representations.
4	There are several intersections in which it is assumed that the traffic will reroute. One such intersection is S.R. 11 and S.R. 93 in which it is thought that traffic heading towards interstate 80 using S.R. 11 might find alternate routes alone 93 attractive. It is highly unlikely that those vehicles will take S.R. 93, then have to find a gap in opposing traffic on S.R. 93 to make a left onto a local road and then make a right back onto S.R. 11 to continue to Interstate 80. Although they may find alternate routes. For this reason it is recommended that the analysis focus on the traffic utilizing the main roadways and be updated accordingly.	Understood. See comment # 2

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	District 3-0 Comments – Received December 10, 2010	
No	**Comment**	**Resolution**
5	The submission states that a traffic signal is warranted in the existing and future no-build conditions for the intersection of S.R. 11 and Eaton Street. Table 29, Summary of Mitigation Measures indicates a temporary traffic signal for this intersection. It is recommended that this be upgraded to a permanent signal due to existing condition volumes and the construction duration. However this is contingent upon the municipality agreeing to own, operate, and maintain the signal upon completion of the project. Coordination with the Borough of Berwick needs to occur.	Understood. PPL met with Berwick Borough officials in late 2010 and briefed them on the expected traffic impacts and mitigation actions. During HOP permitting phase PPL will coordinate closely with the Borough as required
6	The restriction of parking in several areas as mitigation may be a concern for the Borough of Berwick as that is a central business district. Coordination with the borough is required. Please provide proof that coordination is occurring.	Understood. See resolution of Comment #5 above.
7	Although the optimization of the traffic signals in Berwick is agreeable to the department, obtaining the desired level of optimization may be a challenge due to the age/condition of the existing signal equipment at most of the intersections. Many of the intersections are not fully actuated and those that are may have broken loop detectors. Video detection would be an option to overcome this challenge; however, the controller cabinets may not be able to accommodate video detection. It is recommended that the operating capabilities of the signal equipment be verified prior to developing a mitigation plan. This will also require coordination with the Borough of Berwick.	Done. Spoke with the signal contractor and assessed the general condition of the signal hardware. The assessment indicated that the proposed mitigation plan is feasible but would require an investment of approximately $150,000 in repairs/upgrades to the signal hardware in the Borough of Berwick. This has been factored into the construction cost estimate provided in Table 28.

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Appendix P
PennDOT District 4-0 Comments and Responses

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District 4-0 Comments – Received December 10, 2010		
No	**Comment**	**Resolution**
1	Provide driveway designation as low, medium, or high volume for the proposed Bell Bend Driveway. Also, provide a driveway plan.	Done. The driveway will have a designation of "high" during construction. The driveway plan is included in Appendix M.
2	Provide an overall site plan showing the entire property with all accesses existing and proposed.	Done, it is included in Appendix M and referenced in the text.
3	Provide the Synchro file and HCS on disk for our review. Also, signalized intersections must be optimized. All design year analyses with recommended improvements will be simulated using five runs of SimTraffic with ten minute seeding, four fifteen minute analysis periods, and with peak hour factor adjust set to "yes" to determine the overall operations adequacy. Do not model pedestrian timing in the Synchro unless there is a significant number of pedestrians in the peak hour expected to use the intersection and thereby drive the signal timing.	Done. The companion disk is included with the submittal.
4	For existing analysis, geometry, phasing, clearance intervals, and right turn on red restrictions must match the existing signal permit.	Done. The signal permit plans have been reviewed and checked for consistency with the analysis.
5	Provide left turn phasing conflict factors for each intersection that was studied; also provide left turn lane warrant analysis.	Done.
6	Provide conflict factor calculations for left turn phases, District 4-0 policy is to provide for left turn protected permitted lefts unless left turn crashes support the installation of the protected prohibited phase, or sight distance can't be obtained. Also, dual (or more) left turn lanes shall operate as protected prohibited.	Done.
7	Provide a recommendations section in the T.I.S., showing all proposed recommendations for each intersection.	Done. Table 29 presents the recommendations by intersection.

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District 4-0 Comments – Received December 10, 2010		
No	**Comment**	**Resolution**
8	Upon acceptance of the T.I.S., submit the study on disk.	Will do.
9	Any revisions to existing signal permit plans, or additions of a new signalized intersection require an application and resolution from the respective municipalities.	Understood. PPL has been meeting with Borough officials in late 2010 and briefing them on the expected traffic impacts and mitigation actions. During HOP permitting phase PPL will coordinate closely with the Boroughs as required.
10	Any revisions to existing signal permit plans; including timing revisions must be sealed by a professional engineer registered in Pennsylvania	Understood.
11	For the proposed signal modifications at the Bell Bend driveway, provide a separate sealed study for all opening day timing, clearance interval, and phasing calculations. Also provide a separate disk of the Synchro analysis for the opening day timing. This may be submitted simultaneously with the highway occupancy permit plans.	Will do. Will create a separate document for the site access intersection as part of the HOP application.
12	For the next submission, break down the T.I.S. to only provide the information needed for District 4-0, to help alleviate confusion with the District 3-0 information.	Will do. Agreed to keep the TIS as a single document, though. Section 8 that discusses mitigation by intersection is divided into two parts corresponding to each District.