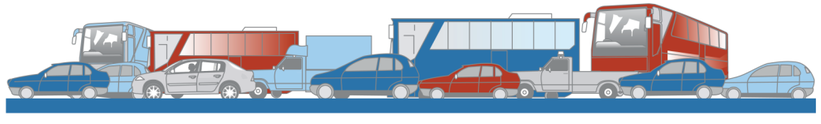
Appendix

PA Route 100 Congestion Mitigation Study



McMahon Associates, Inc. **2/16/2018**
Engineer's Conceptual Opinion of Cost **Prepared By: STH**
Checked By: DHW

Municipality: West Whiteland Township, Chester County, PA
Project Name: Pottstown Pike Congestion Mitigation Feasibility Study
Project Number: 816731.41

Plan Title: Pottstown Pike Congestion Mitigation Feasibility Study
Roadway(s): SR 0100 at Whiteland Woods Boulevard / Mountain View Drive
Project Description: Add a new traffic signal at Whiteland Woods Boulevard and widen SR 0100

Unit Costs Last Revised: 2/15/2018
Source: ECMS Bid Price History and Similar Project Experience

Disclaimer: ***McMahon Associates, Inc. has provided this opinion of cost as requested by the client. Please note that opinions of cost are subject to change based on plan/design revisions, fluctuations in unit costs, field conditions, and differences in locale. Opinions of cost are provided for use in budgeting, but in no way intended to be construed as a final cost for the project. Final costs are contingent only on actual bids from contractors. McMahon Associates, Inc. will not be held responsible for differences between this opinion of cost and contractor bid costs.***

Item No.	Description	Cost
1	***Total Roadway Construction (2018)***	$7,186,000.00
2	***Construction Inspection***	$719,000.00
3	***Right-of-Way and Easements***	$1,500,000.00
4	***Above Ground Utility Relocations***	$500,000.00
5	***Inflation***	$3,407,000.00
6	***Engineering and Permitting***	$1,750,000.00
7	***Total Project Cost (2028 Dollars)***	**$15,062,000.00**

General Notes:

1. Refer to the spreadsheet details relating to cost calculations and assumptions.

2. The contingency and inspection percentages are based on PennDOT Publication 352.

3. The Engineer's Conceptual Opinion of Cost does not include relocating or resetting existing underground utilities within the limits of the project or the provision of any future utilities. Impacts to existing underground utilities will need to be determined during the preliminary engineering of the project through subsurface utility engineering. **Due to visible evidence of subsurface utilities within the project area (underground electric, water, sewer, gas and telecommunication) it is recommended (and likely required by law) that utility test pits be performed during the preliminary engineering of the project.**

4. The Above Gound Utility Relocations cost is a rough estimate. **Underground utility relocations are not included in this estimate.** This cost is subject to change through the development of the project and based on the Utility owner's rights.

5. Estimates of existing and required right of way were developmed based on GIS data obtained from Chester County. Existing legal right-of-way lines or property lines have not been independently verified through field survey or deed research. Existing legal rights-of-way and existing property lines, as well as the size and location of any required rights-of-way (temporary or permanent), will need to be determined during the preliminary engineering of the project.

6. The following costs are rough estimates for budgeting purposes only: Engineering and Permitting, Above Ground Utility Relocations (Poles), and Right of Way. The costs associated with these items will need to be determined through the development of the project.

7. The Engineer's Conceptual Opinion of Cost does not include any off-site roadway improvements such as additional traffic control, traffic signal timing/phasing modifiactions or capacity upgrades at other intersections outside of the project limits depicted on the Conceptual Design Exhibit. Other improvements necessary will need to be further evaluated during the preliminary engineering of the project.

Engineer's Conceptual Opinion of Cost for
Pottstown Pike Congestion Mitigation Feasibility Study
West Whiteland Township, Chester County, PA

2/16/2018

Item No.	Description	Comment	Unit	Quantity	Unit Cost	Cost
	Standard Items					
1	Clearing and Grubbing		LS	1	$50,000.00	$50,000.00
2	Class 1 Excavation		CY	13,000	$35.00	$455,000.00
3	Commong Borrow Excavation		CY	3,000	$20.00	$60,000.00
4	Grading (includes topsoil and seeding)		SY	5,000	$10.00	$50,000.00
5	Full Depth Bituminous Pavement	All pavement except SR 0100	SY	5,000	$75.00	$375,000.00
6	Full Depth Concrete Pavement	SR 0100 Pavement Section	SY	17,000	$115.00	$1,955,000.00
7	Driveway Adjustments		SY	53	$50.00	$2,650.00
8	Plain Cement Concrete Curb		LF	2,000	$30.00	$60,000.00
9	Plain Cement Mountable Curb		LF	400	$50.00	$20,000.00
10	Concrete Median Barrier / Single Faced Barrier		LF	3,500	$70.00	$245,000.00
11	Impact Attenuator / End Treatment		EA	7	$2,000.00	$14,000.00
12	Cement Concrete Sidewalk		SY	200	$110.00	$22,000.00
12	Drainage	New Drainage Structures/Pipe	LS	1	$570,000.00	$570,000.00
13	Guiderail		LF	650	$35.00	$22,750.00
14	6" Base Drain		LF	5,000	$13.00	$65,000.00
15	Construction Surveying		LS	1	$50,000.00	$50,000.00
16	Pavement Markings		LS	1	$35,000.00	$35,000.00
17	Signage		LS	1	$15,000.00	$15,000.00
18	ADA Accessible Curb Ramp		EA	4	$6,500.00	$26,000.00
	Special Items					
19	Traffic Signals	One new signal, modify one signal, relocate existing traffic camera and overhead lane use control	LS	1	$350,000.00	$350,000.00
20	Box Culvert Structure Under Jug-Handle		LS	1	$400,000.00	$400,000.00
21	Post Construction Stormwater Management		LS	1	$250,000.00	$250,000.00
22	***Subtotal Roadway Construction Cost***	**Items 1 - 31**				**$5,093,000.00**
23	Maintenance and Protection of Traffic	Approx. 10% of Item 22				$510,000.00
24	Erosion and Sediment Control	Approx. 2.5% of Item 22				$130,000.00
25	Mobilization	5% of Item 22				$255,000.00
26	Contingency	20% of Items 22 - 25				$1,198,000.00
27	***Total Roadway Construction Cost***	**Items 22 - 26**				**$7,186,000.00**
28	Construction Inspection	10% of Item 27				$719,000.00
29	***Total Roadway Construction + Inspection***	**Items 27 - 28**				**$7,905,000.00**
30	Legal Right-of-Way & Easement Acquisition		LS	1	$1,500,000.00	$1,500,000.00
31	Above Ground Utility Relocation		LS	1	$500,000.00	$500,000.00
32	***Total Right-of-Way + Utility + Construction Costs***	**Items 29 - 31**				**$9,905,000.00**
33	Inflation	3% Per Year x Item 32	YR	10		$3,407,000.00
34	Engineering and Permitting	Approx. 25% of Items 27				$1,750,000.00
35	***Total Project Cost (2028 Dollars)***	**Items 32 - 34**				**$15,062,000.00**

Assumptions:

- The Engineer's Conceptual Opinion of Cost assumes the installation of cement concrete pavement within the splitter islands.

- The Engineer's Conceptual Opinion of Cost does not include any improvements or modifications to the Amtrak Railway or Norfolk Southern Railway structures besides the installation of single face barrier in front of the bridge structure abutments

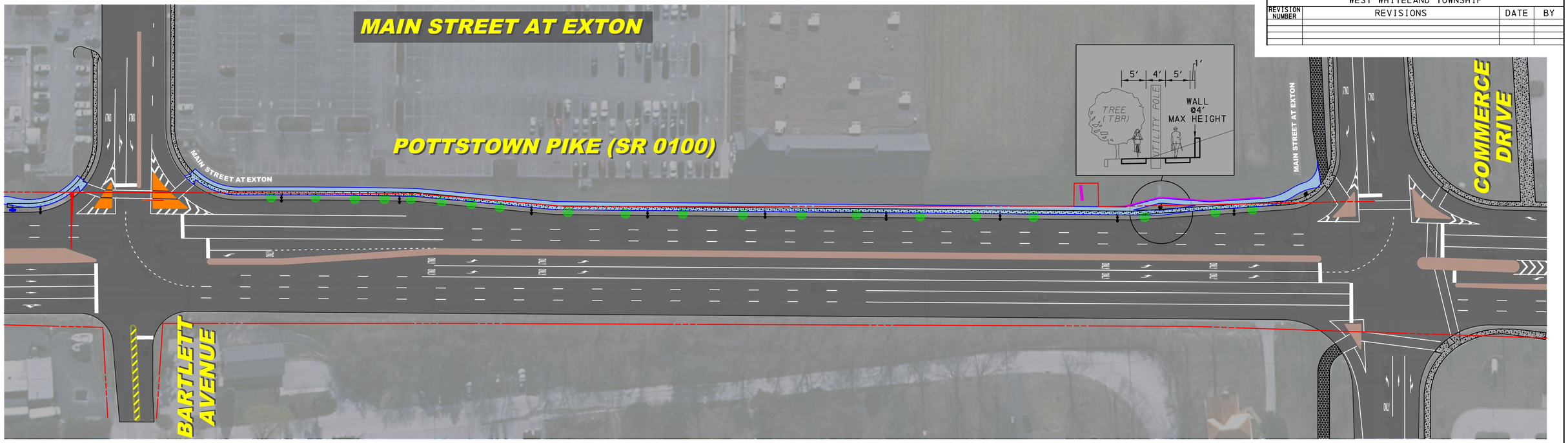
- Assumes full depth pavement reconstruction within the limits of work

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-O	CHESTER	0100		1 OF 1
WEST WHITELAND TOWNSHIP				

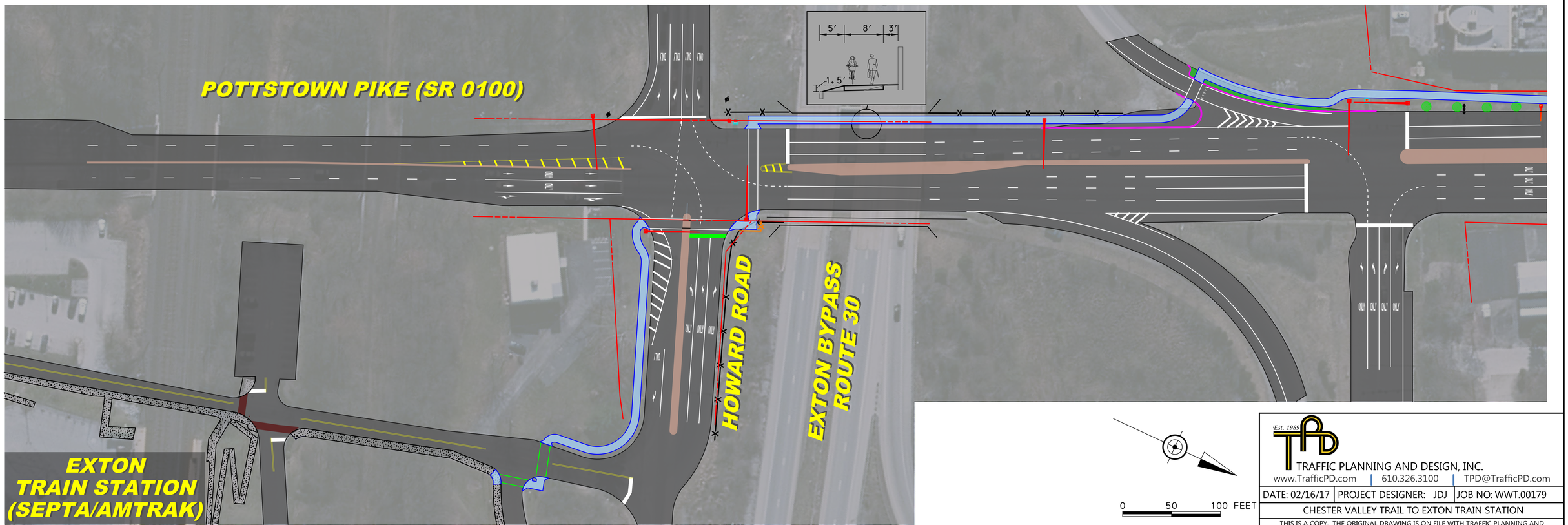
REVISION NUMBER	REVISIONS	DATE	BY

MAIN STREET AT EXTON

POTTSTOWN PIKE (SR 0100)



POTTSTOWN PIKE (SR 0100)



0 50 100 FEET

Est. 1989
TRAFFIC PLANNING AND DESIGN, INC.
www.TrafficPD.com | 610.326.3100 | TPD@TrafficPD.com

DATE: 02/16/17 | PROJECT DESIGNER: JDJ | JOB NO: WWT.00179

CHESTER VALLEY TRAIL TO EXTON TRAIN STATION

DRN BY: JDJ

pw:\\PTO-PWIS.tpd.trafficpd.com:TPDProjectWise\Documents\Engineering\WWT\00179 - Route 100 - Multimodal\CADD\Concept\Concept.dgn
2/16/2017 4:31:28 PM jjanos 1:50

Preliminary Improvements Delay Reductions

		Alternative 2			Alternative 3			Alternative 4			Alternative 5								
	No Build	Third Travel Lane			Third Travel Lane+Station			Third Travel Lane+RevStation			Jug Handle			Flyover			SPUI			DDI			DLTI		
		Red	Delay		Red	Delay		Red	Delay		Red	Delay		Red	Delay		Red	Delay		Red	Delay		Red	Delay	
Ex AM	96.1	-27.6	68.5	29%																					
Ex PM	182.8	-70.5	112.3	39%																					
Fut AM	232.6	-67.5	165.1	29%	-119.3	113.3	51%	-147.2	85.4	63%	-162	70.6	70%	-156.1	76.5	67%	-98.8	133.8	42%	-196.8	35.8	85%		232.6	0%
Fut PM	342.2	-98.9	243.3	29%	-173.9	168.3	51%	-219.6	122.6	64%	-216.4	125.8	63%	-248.5	93.7	73%	-101.8	240.4	30%	-121.5	220.7	36%	-230.9	111.3	67%

		Alternative 14						Alternative 15						Alternative 16					
	No Build	3rd NB Lane			3rd NB Lane Reloc Sta			3rd NB Lane +Channel			3rd NB Lane + Channel + Reloc			3rd SB Lane			3rd SB Lane Reloc Sta			3rd SB Lane +Channel			3rd SB Lane + Channel + Reloc		
		Red	Delay		Red	Delay		Red	Delay		Red	Delay		Red	Delay		Red	Delay		Red	Delay		Red	Delay	
Ex AM																									
Ex PM																									
Fut AM	232.6	-66.2	166.4	28%				-170.6	62	73%				-102.5	130.1	44%				-158.8	73.8	68%			
Fut PM	342.2	-82.3	259.9	24%	-115.6	226.6	34%	-128.1	214.1	37%	189.2	259.9	24%	-128.1	214.1	37%	-154.7	187.5	45%	-161.6	180.6	47%	-168	174.2	49%

EXISTING

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	276	19	1108	30	0	50	0	2041	44	153	1783	0
Ideal Flow (vphpl)	1000	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		130	0		0
Storage Lanes	1		1	2		1	0		1	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	0.97	1.00	1.00	1.00	*0.75	0.91	1.00	0.95	1.00
Frt			0.850			0.850		0.997				
Flt Protected	0.950	0.958		0.950						0.950		
Satd. Flow (prot)	949	1618	2653	3384	0	1613	0	4111	0	1637	3386	0
Flt Permitted	0.950	0.958		0.950						0.950		
Satd. Flow (perm)	949	1618	2653	3384	0	1613	0	4111	0	1637	3386	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			978			693	
Travel Time (s)		27.0			6.2			14.8			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	300	21	1204	33	0	54	0	2218	48	166	1938	0
Shared Lane Traffic (%)	47%											
Lane Group Flow (vph)	159	162	1204	33	0	54	0	2266	0	166	1938	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3	5	4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	5	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	9.0	9.0	9.0	9.0		9.0		26.0		9.0	26.0	
Total Split (s)	14.0	14.0	28.0	11.0		22.0		63.0		22.0	57.0	
Total Split (%)	12.7%	12.7%	25.5%	10.0%		20.0%		57.3%		20.0%	51.8%	

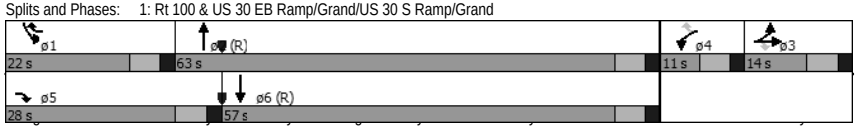
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Existing Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	8.0	8.0	22.0	5.0		16.0		57.0		16.0	51.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lead	Lead		Lead		Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	13.4	13.4	41.4	6.0		19.1		59.5		15.5	52.0	
Actuated g/C Ratio	0.12	0.12	0.38	0.05		0.17		0.54		0.14	0.47	
v/c Ratio	1.38	0.82	1.21	0.18		0.19		1.02		0.72	1.21	
Control Delay	255.2	81.1	134.6	52.1		27.6		50.1		66.4	119.4	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay	255.2	81.1	134.6	52.1		27.6		50.1		66.4	119.4	
LOS	F	F	F	D		C		D		E	F	
Approach Delay		141.5						50.1			115.2	
Approach LOS		F						D			F	
Queue Length 50th (ft)	~186	~148	~634	11		24		~773		117	~870	
Queue Length 95th (ft)	#327	#291	#779	27		51		#889		m165	#1017	
Internal Link Dist (ft)		1307			239			898			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	115	197	998	184		302		2224		252	1600	
Starvation Cap Reductn	0	0	0	0		0		0		0	2	
Spillback Cap Reductn	0	0	0	0		0		0		0	0	
Storage Cap Reductn	0	0	0	0		0		0		0	0	
Reduced v/c Ratio	1.38	0.82	1.21	0.18		0.18		1.02		0.66	1.21	

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 49 (45%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.38		
Intersection Signal Delay: 96.1	Intersection LOS: F	
Intersection Capacity Utilization 107.9%	ICU Level of Service G	
Analysis Period (min) 15		

* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	152	0	205	0	1894	0	0	1784	83
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	14
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												90
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	165	0	223	0	2059	0	0	1939	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	165	0	223	0	2059	0	0	1939	90
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				7.0		7.0		20.0			20.0	20.0
Minimum Split (s)				13.0		13.0		26.0			26.0	26.0
Total Split (s)				18.0		18.0		92.0			92.0	92.0
Total Split (%)				16.4%		16.4%		83.6%			83.6%	83.6%
Maximum Green (s)				12.0		12.0		86.0			86.0	86.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

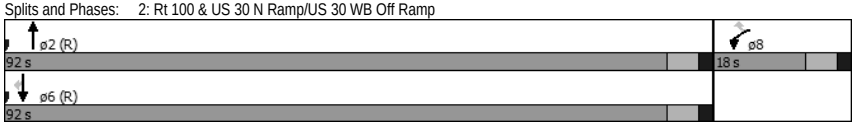
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				12.6		12.6		87.4			87.4	87.4
Actuated g/C Ratio				0.11		0.11		0.79			0.79	0.79
v/c Ratio				0.44		0.69		0.42			0.73	0.07
Control Delay				49.3		58.6		1.5			19.6	1.4
Queue Delay				0.0		0.0		0.0			8.5	0.0
Total Delay				49.3		58.6		1.5			28.1	1.4
LOS				D		E		A			C	A
Approach Delay								1.5			26.9	
Approach LOS								A			C	
Queue Length 50th (ft)				56		86		55			753	5
Queue Length 95th (ft)				90		133		m54			829	m15
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				386		334		4873			2664	1277
Starvation Cap Reductn				0		0		0			705	0
Spillback Cap Reductn				0		0		226			323	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.43		0.67		0.44			0.99	0.07

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 35 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 17.6 Intersection LOS: B
Intersection Capacity Utilization 64.1% ICU Level of Service C
Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



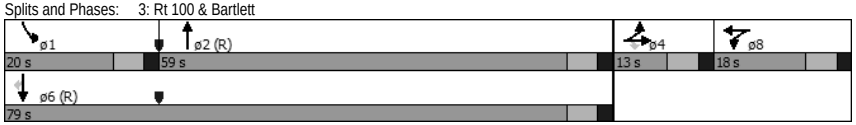
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	5	40	48	7	40	0	1659	70	37	1779	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.944			0.994				0.850
Flt Protected	0.950	0.976			0.975					0.950		
Satd. Flow (prot)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Flt Permitted	0.950	0.976			0.975					0.950		
Satd. Flow (perm)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			149					10				89
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	5	43	52	8	43	0	1803	76	40	1934	18
Shared Lane Traffic (%)	34%											
Lane Group Flow (vph)	10	10	43	0	103	0	0	1879	0	40	1934	18
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		20.0	26.0	26.0
Total Split (s)	13.0	13.0	13.0	18.0	18.0			59.0		20.0	79.0	79.0
Total Split (%)	11.8%	11.8%	11.8%	16.4%	16.4%			53.6%		18.2%	71.8%	71.8%
Maximum Green (s)	7.0	7.0	7.0	12.0	12.0			53.0		14.0	73.0	73.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
3: Rt 100 & Bartlett Existing Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	7.2	7.2	7.2		11.5			69.2		9.3	78.6	78.6
Actuated g/C Ratio	0.07	0.07	0.07		0.10			0.63		0.08	0.71	0.71
v/c Ratio	0.10	0.09	0.18		0.53			0.49		0.29	0.56	0.02
Control Delay	50.0	50.0	1.6		56.3			14.2		60.6	3.8	0.1
Queue Delay	0.0	0.0	0.1		0.0			0.1		0.0	0.1	0.0
Total Delay	50.0	50.0	1.7		56.3			14.3		60.6	4.0	0.1
LOS	D	D	A		E			B		E	A	A
Approach Delay		17.0			56.3			14.3			5.1	
Approach LOS		B			E			B			A	
Queue Length 50th (ft)	7	7	0		69			185		27	165	0
Queue Length 95th (ft)	26	26	0		125			253		m42	186	m0
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	115	118	250		222			3800		221	3441	1168
Starvation Cap Reductn	0	0	0		0			641		0	0	0
Spillback Cap Reductn	0	0	14		0			0		0	495	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.09	0.08	0.18		0.46			0.59		0.18	0.66	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 37 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 10.9		Intersection LOS: B	
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Rt 100 & Bartlett



Lanes, Volumes, Timings Existing Weekday AM
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	18	87	91	21	10	265	1752	66	1	1645	66
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.951			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3236	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.734			0.744			0.950			0.950		
Satd. Flow (perm)	1328	1809	1624	1333	3236	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			149		11			11				149
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	26	20	95	99	23	11	288	1904	72	1	1788	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	20	95	99	34	0	288	1976	0	1	1788	72
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0		22.0	78.0		10.0	66.0	66.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%		20.0%	70.9%		9.1%	60.0%	60.0%
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0		16.0	72.0		4.0	60.0	60.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

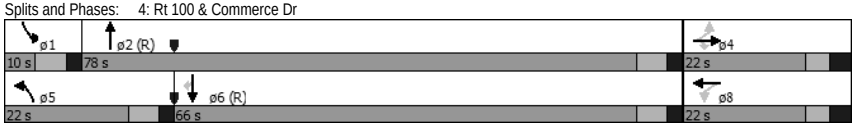
McMahon Associates, Inc.
4: Rt 100 & Commerce Dr

Pottstown Pike Congestion Mitigation Study
Existing Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	13.8	13.8	13.8	13.8	13.8		15.2	84.2		5.0	66.0	66.0
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13		0.14	0.77		0.05	0.60	0.60
v/c Ratio	0.16	0.09	0.28	0.59	0.08		0.63	0.52		0.01	0.62	0.07
Control Delay	43.5	41.6	3.6	59.4	30.9		45.3	14.4		52.0	11.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	43.5	41.6	3.6	59.4	30.9		45.3	14.4		52.0	11.1	0.2
LOS	D	D	A	E	C		D	B		D	B	A
Approach Delay		16.3			52.1			18.3			10.7	
Approach LOS		B			D			B			B	
Queue Length 50th (ft)	17	13	0	66	7		96	435		0	152	0
Queue Length 95th (ft)	43	35	12	121	22		135	553		m1	174	m0
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	205	279	376	206	509		512	3833		76	2890	1029
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.13	0.07	0.25	0.48	0.07		0.56	0.52		0.01	0.62	0.07

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 98 (89%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 80		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.63		
Intersection Signal Delay: 16.0	Intersection LOS: B	
Intersection Capacity Utilization 66.0%	ICU Level of Service C	
Analysis Period (min) 15		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



Lanes, Volumes, Timings
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Existing Weekday AM
Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑	↱		↑↑	↱
Volume (vph)	0	0	108	0	0	8	0	2077	307	0	2921	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		200	0		300
Storage Lanes	0		1	0		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.865			0.865			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	0	1611	0	0	1611	0	3592	1591	0	3539	1583
Flt Permitted												
Satd. Flow (perm)	0	0	1611	0	0	1611	0	3592	1591	0	3539	1583
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		103			249			1573			978	
Travel Time (s)		2.3			5.7			23.8			14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Adj. Flow (vph)	0	0	117	0	0	9	0	2258	334	0	3175	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	117	0	0	9	0	2258	334	0	3175	29
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	108	0	0	8	0	2077	307	0	2921	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	200	-	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-1	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	1	2	2	2	2
Mvmt Flow	0	0	117	0	0	9	0	2258	334	0	3175	29

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	4304	5433	1588	3846	5433	1129	3175	0	0	2258	0	0
Stage 1	3175	3175	-	2258	2258	-	-	-	-	-	-	-
Stage 2	1129	2258	-	1588	3175	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	1	0	~ 97	1	0	198	96	-	-	224	-	-
Stage 1	10	25	-	42	76	-	-	-	-	-	-	-
Stage 2	217	76	-	113	25	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	1	0	~ 97	-	0	198	96	-	-	224	-	-
Mov Cap-2 Maneuver	1	0	-	-	0	-	-	-	-	-	-	-
Stage 1	10	25	-	42	76	-	-	-	-	-	-	-
Stage 2	207	76	-	-	25	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	239.2	24	0	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	96	-	-	97	198	224	-	-
HCM Lane V/C Ratio	-	-	-	1.21	0.044	-	-	-
HCM Control Delay (s)	0	-	-	239.2	24	0	-	-
HCM Lane LOS	A	-	-	F	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	8	0.1	0	-	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

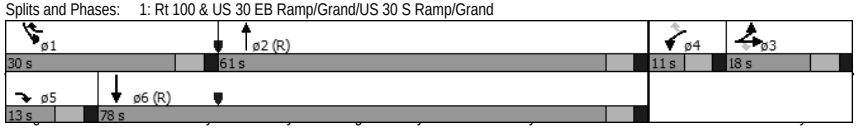
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	335	72	644	99	0	213	0	2364	29	371	2586	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		130	0		0
Storage Lanes	1		1	2		1	0		1	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	0.97	1.00	1.00	1.00	*0.73	0.91	1.00	0.95	1.00
Frt			0.850			0.850		0.998				
Flt Protected	0.950	0.968		0.950						0.950		
Satd. Flow (prot)	1707	1642	2653	3384	0	1613	0	4005	0	1637	3386	0
Flt Permitted	0.950	0.968		0.950						0.950		
Satd. Flow (perm)	1707	1642	2653	3384	0	1613	0	4005	0	1637	3386	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			995			693	
Travel Time (s)		27.0			6.2			15.1			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	364	78	700	108	0	232	0	2570	32	403	2811	0
Shared Lane Traffic (%)	40%											
Lane Group Flow (vph)	218	224	700	108	0	232	0	2602	0	403	2811	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3	5	4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	5	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	11.0	11.0	9.0	11.0		10.0		26.0		10.0	26.0	
Total Split (s)	18.0	18.0	13.0	11.0		30.0		61.0		30.0	78.0	
Total Split (%)	15.0%	15.0%	10.8%	9.2%		25.0%		50.8%		25.0%	65.0%	

McMahon Associates, Inc., Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Existing Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	12.0	12.0	7.0	5.0		24.0		55.0		24.0	72.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lead	Lead		Lead		Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	13.0	13.0	26.0	6.0		31.0		56.0		25.0	73.0	
Actuated g/C Ratio	0.11	0.11	0.22	0.05		0.26		0.47		0.21	0.61	
v/c Ratio	1.18	1.27	1.22	0.64		0.56		1.39		1.18	1.37	
Control Delay	171.0	199.9	154.3	73.4		36.7		208.5		121.1	190.7	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.1	
Total Delay	171.0	199.9	154.3	73.4		36.7		208.5		121.1	190.8	
LOS	F	F	F	E		D		F		F	F	
Approach Delay		166.5						208.5			182.1	
Approach LOS		F						F			F	
Queue Length 50th (ft)	~212	~229	~377	43		113		~1227		~379	~1512	
Queue Length 95th (ft)	#378	#396	#509	#80		174		#1340		m#306	m#1192	
Internal Link Dist (ft)		1307			239			915			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	184	177	574	169		416		1869		341	2059	
Starvation Cap Reductn	0	0	0	0		0		0		0	82	
Spillback Cap Reductn	0	0	0	0		0		0		0	0	
Storage Cap Reductn	0	0	0	0		0		0		0	0	
Reduced v/c Ratio	1.18	1.27	1.22	0.64		0.56		1.39		1.18	1.42	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 42 (35%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.39		
Intersection Signal Delay: 182.8	Intersection LOS: F	
Intersection Capacity Utilization 114.2%	ICU Level of Service H	
Analysis Period (min) 15		
* User Entered Value		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	240	0	431	0	2335	0	0	2717	338
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	12
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6131	0	0	3352	1485
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6131	0	0	3352	1485
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												312
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	261	0	468	0	2538	0	0	2953	367
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	261	0	468	0	2538	0	0	2953	367
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0		20.0			20.0	20.0
Minimum Split (s)				11.0		11.0		26.0			26.0	26.0
Total Split (s)				25.0		25.0		95.0			95.0	95.0
Total Split (%)				20.8%		20.8%		79.2%			79.2%	79.2%
Maximum Green (s)				19.0		19.0		89.0			89.0	89.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

McMahon Associates, Inc., Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Existing Weekday PM

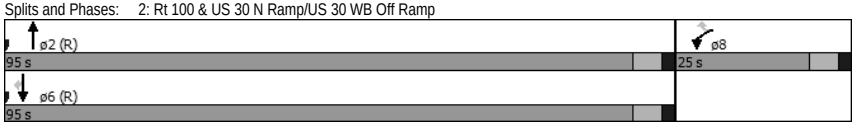
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				20.0		20.0		90.0			90.0	90.0
Actuated g/C Ratio				0.17		0.17		0.75			0.75	0.75
v/c Ratio				0.48		0.99		0.55			1.17	0.31
Control Delay				48.6		90.1		1.5			106.5	1.6
Queue Delay				66.1		1.5		0.5			0.6	2.0
Total Delay				114.8		91.7		2.0			107.0	3.5
LOS				F		F		A			F	A
Approach Delay								2.0			95.6	
Approach LOS								A			F	
Queue Length 50th (ft)				95		207		22			~1484	26
Queue Length 95th (ft)				138		#330		m22			m#1568	m22
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				544		471		4598			2514	1191
Starvation Cap Reductn				0		0		1409			538	655
Spillback Cap Reductn				363		3		121			367	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				1.44		1.00		0.80			1.49	0.68

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 55 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.17
Intersection Signal Delay: 60.0 Intersection LOS: E
Intersection Capacity Utilization 94.0% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



Lanes, Volumes, Timings Existing Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\Existing\Weekday PM - Balanced.syn Synchro 8

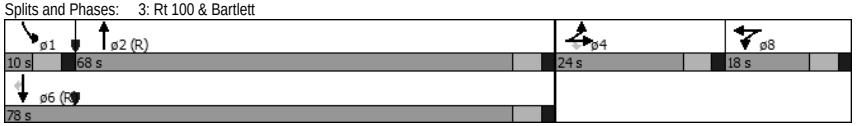
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	4	368	15	10	19	0	2739	27	37	2506	170
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.941			0.999				0.850
Flt Protected	0.950	0.954			0.984					0.950		
Satd. Flow (prot)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Flt Permitted	0.950	0.954			0.984					0.950		
Satd. Flow (perm)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			141					2				145
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	4	400	16	11	21	0	2977	29	40	2724	185
Shared Lane Traffic (%)	49%											
Lane Group Flow (vph)	109	109	400	0	48	0	0	3006	0	40	2724	185
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		10.0	26.0	26.0
Total Split (s)	24.0	24.0	24.0	18.0	18.0			68.0		10.0	78.0	78.0
Total Split (%)	20.0%	20.0%	20.0%	15.0%	15.0%			56.7%		8.3%	65.0%	65.0%
Maximum Green (s)	18.0	18.0	18.0	12.0	12.0			62.0		4.0	72.0	72.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

McMahon Associates, Inc., Pottstown Pike Congestion Mitigation Study
3: Rt 100 & Bartlett Existing Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	0.2	0.2			0.2		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	19.0	19.0	19.0		7.4			72.8		5.0	80.8	80.8
Actuated g/C Ratio	0.16	0.16	0.16		0.06			0.61		0.04	0.67	0.67
v/c Ratio	0.44	0.43	1.10		0.42			0.82		0.60	0.84	0.16
Control Delay	51.8	51.8	109.3		64.7			8.9		70.4	24.5	3.4
Queue Delay	0.0	0.0	0.5		0.0			0.0		0.0	17.3	0.0
Total Delay	51.8	51.8	109.8		64.7			8.9		70.4	41.8	3.4
LOS	D	D	F		E			A		E	D	A
Approach Delay		89.3			64.7			8.9			39.8	
Approach LOS		F			E			A			D	
Queue Length 50th (ft)	81	81	~254		37			215		29	817	25
Queue Length 95th (ft)	143	143	#454		76			m217		m31	m846	m32
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	250	251	362		204			3682		67	3245	1125
Starvation Cap Reductn	0	0	0		0			0		0	0	0
Spillback Cap Reductn	0	0	17		0			0		0	597	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.44	0.43	1.16		0.24			0.82		0.60	1.03	0.16

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.10			
Intersection Signal Delay: 30.6		Intersection LOS: C	
Intersection Capacity Utilization 91.8%		ICU Level of Service F	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Rt 100 & Bartlett



Lanes, Volumes, Timings Existing Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\Existing\Weekday PM - Balanced.syn Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	154	168	408	154	59	5	451	2439	92	11	2151	513
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.989			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3365	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.710			0.496			0.950			0.950		
Satd. Flow (perm)	1284	1809	1624	888	3365	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			222		5			8				257
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	167	183	443	167	64	5	490	2651	100	12	2338	558
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	183	443	167	69	0	490	2751	0	12	2338	558
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	33.0	33.0	33.0	33.0	33.0		26.0	77.0		10.0	61.0	61.0
Total Split (%)	27.5%	27.5%	27.5%	27.5%	27.5%		21.7%	64.2%		8.3%	50.8%	50.8%
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0		20.0	71.0		4.0	55.0	55.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

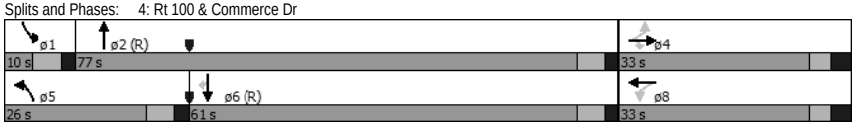
McMahon Associates, Inc.,
4: Rt 100 & Commerce Dr

Pottstown Pike Congestion Mitigation Study
Existing Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	25.2	25.2	25.2	25.2	25.2		20.6	80.8		5.0	59.2	59.2
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21		0.17	0.67		0.04	0.49	0.49
v/c Ratio	0.62	0.48	0.86	0.90	0.10		0.86	0.82		0.17	0.98	0.60
Control Delay	53.1	45.5	39.1	89.6	34.3		54.1	22.0		50.6	31.3	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	53.1	45.5	39.1	89.6	34.3		54.1	22.0		50.6	31.3	12.2
LOS	D	D	D	F	C		D	C		D	C	B
Approach Delay		43.5			73.5			26.9			27.7	
Approach LOS		D			E			C			C	
Queue Length 50th (ft)	115	122	169	123	20		180	821		9	~704	119
Queue Length 95th (ft)	190	194	#335	#244	41		m#253	884		m9	m482	m107
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	299	422	549	207	789		580	3373		70	2376	927
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.56	0.43	0.81	0.81	0.09		0.84	0.82		0.17	0.98	0.60

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 110 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 140		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.98		
Intersection Signal Delay: 30.6	Intersection LOS: C	
Intersection Capacity Utilization 92.5%	ICU Level of Service F	
Analysis Period (min) 15		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



Lanes, Volumes, Timings
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Existing Weekday PM
Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑	↱		↑↑	↱
Volume (vph)	0	0	67	0	0	16	0	2377	136	0	3329	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		200
Storage Lanes	0		1	0		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.865			0.865			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	0	1611	0	0	1611	0	3557	1591	0	3574	1583
Flt Permitted												
Satd. Flow (perm)	0	0	1611	0	0	1611	0	3557	1591	0	3574	1583
Link Speed (mph)		30			30			45			30	
Link Distance (ft)		186			194			1556			995	
Travel Time (s)		4.2			4.4			23.6			22.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	0	73	0	0	17	0	2584	148	0	3618	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	73	0	0	17	0	2584	148	0	3618	80
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	67	0	0	16	0	2377	136	0	3329	74
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	300	-	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-1	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	1	2
Mvmt Flow	0	0	73	0	0	17	0	2584	148	0	3618	80

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	4910	6202	1809	4393	6202	1292	3618	0	0	2584	0	0
Stage 1	3618	3618	-	2584	2584	-	-	-	-	-	-	-
Stage 2	1292	2584	-	1809	3618	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	~ 68	0	0	154	63	-	-	166	-	-
Stage 1	5	14	-	26	51	-	-	-	-	-	-	-
Stage 2	172	51	-	82	14	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	0	0	~ 68	-	0	154	63	-	-	166	-	-
Mov Cap-2 Maneuver	0	0	-	-	0	-	-	-	-	-	-	-
Stage 1	5	14	-	26	51	-	-	-	-	-	-	-
Stage 2	153	51	-	-	14	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	234.4	31.3	0	0
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	63	-	-	68	154	166	-	-
HCM Lane V/C Ratio	-	-	-	1.071	0.113	-	-	-
HCM Control Delay (s)	0	-	-	234.4	31.3	0	-	-
HCM Lane LOS	A	-	-	F	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	5.5	0.4	0	-	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

FUTURE NO BUILD

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	352	39	1405	36	0	59	0	2605	58	261	2310	0
Ideal Flow (vphpl)	1000	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		130	0		0
Storage Lanes	1		1	2		1	0		1	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	0.97	1.00	1.00	1.00	*0.75	0.91	1.00	0.95	1.00
Frt			0.850			0.850		0.997				
Flt Protected	0.950	0.961		0.950						0.950		
Satd. Flow (prot)	949	1625	2653	3384	0	1613	0	4111	0	1637	3386	0
Flt Permitted	0.950	0.961		0.950						0.950		
Satd. Flow (perm)	949	1625	2653	3384	0	1613	0	4111	0	1637	3386	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			978			693	
Travel Time (s)		27.0			6.2			14.8			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	383	42	1527	39	0	64	0	2832	63	284	2511	0
Shared Lane Traffic (%)	45%											
Lane Group Flow (vph)	211	214	1527	39	0	64	0	2895	0	284	2511	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3	5	4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	5	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	9.0	9.0	9.0	9.0		9.0		26.0		9.0	26.0	
Total Split (s)	14.0	14.0	28.0	11.0		22.0		63.0		22.0	57.0	
Total Split (%)	12.7%	12.7%	25.5%	10.0%		20.0%		57.3%		20.0%	51.8%	

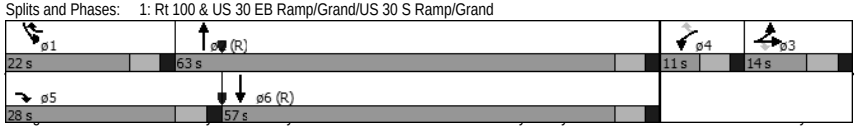
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand 2028 Future No Build Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	8.0	8.0	22.0	5.0		16.0		57.0		16.0	51.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lead	Lead		Lead		Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	13.4	13.4	41.4	6.0		20.6		58.0		17.0	52.0	
Actuated g/C Ratio	0.12	0.12	0.38	0.05		0.19		0.53		0.15	0.47	
v/c Ratio	1.83	1.09	1.53	0.21		0.21		1.34		1.13	1.57	
Control Delay	436.6	136.0	271.7	52.7		28.0		180.3		118.2	281.3	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay	436.6	136.0	271.7	52.7		28.0		180.3		118.2	281.3	
LOS	F	F	F	D		C		F		F	F	
Approach Delay		274.6						180.3			264.7	
Approach LOS		F						F			F	
Queue Length 50th (ft)	~267	~228	~904	13		29		~1185		~240	~1332	
Queue Length 95th (ft)	#425	#388	#1054	31		58		#1294		m#257	m#1391	
Internal Link Dist (ft)		1307			239			898			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	115	197	998	184		302		2167		252	1600	
Starvation Cap Reductn	0	0	0	0		0		0		0	3	
Spillback Cap Reductn	0	0	0	0		0		0		0	0	
Storage Cap Reductn	0	0	0	0		0		0		0	0	
Reduced v/c Ratio	1.83	1.09	1.53	0.21		0.21		1.34		1.13	1.57	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 49 (45%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.83
Intersection Signal Delay: 232.6 Intersection LOS: F
Intersection Capacity Utilization 134.3% ICU Level of Service H
Analysis Period (min) 15
* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	193	0	264	0	2422	2	0	2378	112
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	14
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												122
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	210	0	287	0	2633	2	0	2585	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	210	0	287	0	2635	0	0	2585	122
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				7.0		7.0		20.0			20.0	20.0
Minimum Split (s)				13.0		13.0		26.0			26.0	26.0
Total Split (s)				18.0		18.0		92.0			92.0	92.0
Total Split (%)				16.4%		16.4%		83.6%			83.6%	83.6%
Maximum Green (s)				12.0		12.0		86.0			86.0	86.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

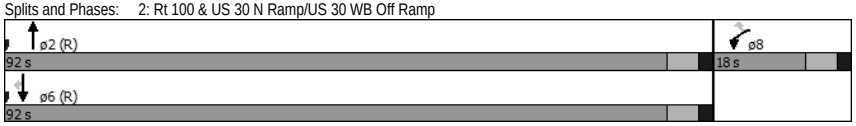
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp 2028 Future No Build Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				13.0		13.0		87.0			87.0	87.0
Actuated g/C Ratio				0.12		0.12		0.79			0.79	0.79
v/c Ratio				0.54		0.86		0.54			0.98	0.10
Control Delay				51.5		72.2		1.7			34.8	0.9
Queue Delay				0.0		45.2		0.2			42.5	0.0
Total Delay				51.5		117.3		1.9			77.4	0.9
LOS				D		F		A			E	A
Approach Delay								1.9			73.9	
Approach LOS								A			E	
Queue Length 50th (ft)				73		114		71			1016	7
Queue Length 95th (ft)				111		#195		m53			#1140	m8
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				386		334		4849			2651	1278
Starvation Cap Reductn				0		0		1092			674	0
Spillback Cap Reductn				0		68		633			733	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.54		1.08		0.70			1.35	0.10

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 35 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 42.8 Intersection LOS: D
Intersection Capacity Utilization 82.7% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



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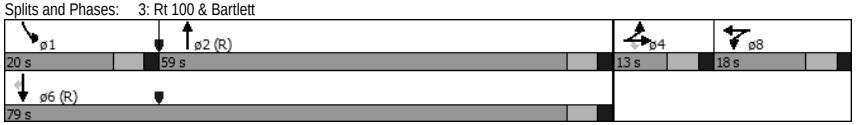
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	5	65	48	7	40	0	2128	89	47	2354	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.944			0.994				0.850
Flt Protected	0.950	0.976			0.975					0.950		
Satd. Flow (prot)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Flt Permitted	0.950	0.976			0.975					0.950		
Satd. Flow (perm)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			149					10				89
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	5	71	52	8	43	0	2313	97	51	2559	24
Shared Lane Traffic (%)	34%											
Lane Group Flow (vph)	10	10	71	0	103	0	0	2410	0	51	2559	24
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left				6x40 Left			
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		20.0	26.0	26.0
Total Split (s)	13.0	13.0	13.0	18.0	18.0			59.0		20.0	79.0	79.0
Total Split (%)	11.8%	11.8%	11.8%	16.4%	16.4%			53.6%		18.2%	71.8%	71.8%
Maximum Green (s)	7.0	7.0	7.0	12.0	12.0			53.0		14.0	73.0	73.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
3: Rt 100 & Bartlett 2028 Future No Build Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	7.2	7.2	7.2		11.5			66.0		9.9	78.6	78.6
Actuated g/C Ratio	0.07	0.07	0.07		0.10			0.60		0.09	0.71	0.71
v/c Ratio	0.10	0.09	0.30		0.53			0.67		0.35	0.74	0.02
Control Delay	50.0	50.0	3.1		56.3			17.8		56.0	7.7	0.0
Queue Delay	0.0	0.0	0.2		0.0			0.2		0.0	1.1	0.0
Total Delay	50.0	50.0	3.3		56.3			18.0		56.0	8.7	0.0
LOS	D	D	A		E			B		E	A	A
Approach Delay		13.5			56.3			18.0			9.6	
Approach LOS		B			E			B			A	
Queue Length 50th (ft)	7	7	0		69			296		30	575	0
Queue Length 95th (ft)	26	26	0		125			318		m38	673	m0
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	115	118	250		222			3622		221	3441	1168
Starvation Cap Reductn	0	0	0		0			351		0	0	0
Spillback Cap Reductn	0	0	17		0			0		0	573	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.09	0.08	0.30		0.46			0.74		0.23	0.89	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 37 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 70.5%		ICU Level of Service C	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Rt 100 & Bartlett



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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	23	156	115	27	13	354	2228	84	1	2138	101
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.951			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3236	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.728			0.741			0.950			0.950		
Satd. Flow (perm)	1317	1809	1624	1327	3236	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			159		14			11				149
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	108	25	170	125	29	14	385	2422	91	1	2324	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	25	170	125	43	0	385	2513	0	1	2324	110
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0		22.0	78.0		10.0	66.0	66.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%		20.0%	70.9%		9.1%	60.0%	60.0%
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0		16.0	72.0		4.0	60.0	60.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

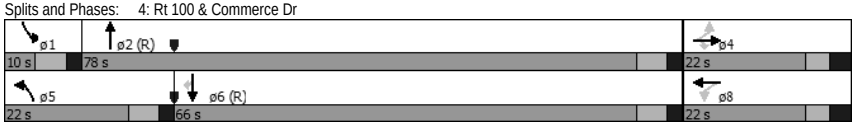
McMahon Associates, Inc.
4: Rt 100 & Commerce Dr

Pottstown Pike Congestion Mitigation Study
2028 Future No Build Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	14.9	14.9	14.9	14.9	14.9		16.5	83.1		5.0	63.6	63.6
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14		0.15	0.76		0.05	0.58	0.58
v/c Ratio	0.61	0.10	0.47	0.69	0.10		0.77	0.66		0.01	0.84	0.11
Control Delay	59.0	41.4	12.7	65.2	30.4		47.0	20.3		56.0	15.8	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	59.0	41.4	12.7	65.2	30.4		47.0	20.3		56.0	15.8	0.7
LOS	E	D	B	E	C		D	C		E	B	A
Approach Delay		31.6			56.3			23.8			15.1	
Approach LOS		C			E			C			B	
Queue Length 50th (ft)	71	15	7	84	9		128	645		0	245	1
Queue Length 95th (ft)	130	41	68	#150	26		#172	719		m2	273	m4
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	203	279	385	205	511		512	3782		76	2783	996
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.53	0.09	0.44	0.61	0.08		0.75	0.66		0.01	0.84	0.11

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 98 (89%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.84		
Intersection Signal Delay: 21.5	Intersection LOS: C	
Intersection Capacity Utilization 80.2%	ICU Level of Service D	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



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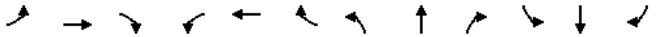
2028 Future No Build Weekday AM
Synchro 8



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑	↱		↑↑	↱
Volume (vph)	0	0	108	0	0	8	0	2646	434	0	3759	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		200	0		300
Storage Lanes	0		1	0		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.865			0.865			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	0	1611	0	0	1611	0	3592	1591	0	3539	1583
Flt Permitted												
Satd. Flow (perm)	0	0	1611	0	0	1611	0	3592	1591	0	3539	1583
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		103			249			1573			978	
Travel Time (s)		2.3			5.7			23.8			14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Adj. Flow (vph)	0	0	117	0	0	9	0	2876	472	0	4086	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	117	0	0	9	0	2876	472	0	4086	37
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
5: Rt 100 & Whiteland Woods Blvd/Mountainview Dr 2028 Future No Build Weekday AM

Intersection	
Int Delay, s/veh	13.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	108	0	0	8	0	2646	434	0	3759	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	200	-	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-1	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	1	2	2	2	2
Mvmt Flow	0	0	117	0	0	9	0	2876	472	0	4086	37

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	5524	6962	2043	4919	6962	1438	4086	0	0	2876	0	0
Stage 1	4086	4086	-	2876	2876	-	-	-	-	-	-	-
Stage 2	1438	2876	-	2043	4086	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	~ 47	0	0	122	40	-	-	127	-	-
Stage 1	2	8	-	16	36	-	-	-	-	-	-	-
Stage 2	140	36	-	58	8	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	0	0	~ 47	-	0	122	40	-	-	127	-	-
Mov Cap-2 Maneuver	0	0	-	-	0	-	-	-	-	-	-	-
Stage 1	2	8	-	16	36	-	-	-	-	-	-	-
Stage 2	130	36	-	-	8	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 865.4	36.8	0	0
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	40	-	-	47	122	127	-	-
HCM Lane V/C Ratio	-	-	-	2.498	0.071	-	-	-
HCM Control Delay (s)	0	-	-	$ 865.4	36.8	0	-	-
HCM Lane LOS	A	-	-	F	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	12.4	0.2	0	-	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\1 - No Build\Weekday AM.syn 2028 Future No Build Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\1 - No Build\Weekday AM.syn Synchro 8

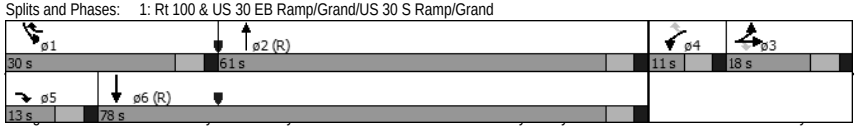
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	431	92	817	187	0	323	0	3054	38	515	3305	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		130	0		0
Storage Lanes	1		1	2		1	0		1	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	0.97	1.00	1.00	1.00	*0.73	0.91	1.00	0.95	1.00
Frt			0.850			0.850		0.998				
Flt Protected	0.950	0.968		0.950						0.950		
Satd. Flow (prot)	1707	1642	2653	3384	0	1613	0	4005	0	1637	3386	0
Flt Permitted	0.950	0.968		0.950						0.950		
Satd. Flow (perm)	1707	1642	2653	3384	0	1613	0	4005	0	1637	3386	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			995			693	
Travel Time (s)		27.0			6.2			15.1			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	468	100	888	203	0	351	0	3320	41	560	3592	0
Shared Lane Traffic (%)	40%											
Lane Group Flow (vph)	281	287	888	203	0	351	0	3361	0	560	3592	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3	5	4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	5	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	11.0	11.0	9.0	11.0		10.0		26.0		10.0	26.0	
Total Split (s)	18.0	18.0	13.0	11.0		30.0		61.0		30.0	78.0	
Total Split (%)	15.0%	15.0%	10.8%	9.2%		25.0%		50.8%		25.0%	65.0%	

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand 2028 Future No Build Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	12.0	12.0	7.0	5.0		24.0		55.0		24.0	72.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lead	Lead		Lead		Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	13.0	13.0	26.0	6.0		31.0		56.0		25.0	73.0	
Actuated g/C Ratio	0.11	0.11	0.22	0.05		0.26		0.47		0.21	0.61	
v/c Ratio	1.53	1.62	1.55	1.20		0.84		1.80		1.64	1.74	
Control Delay	299.3	338.6	288.1	181.5		56.3		386.1		319.0	358.7	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.2		0.0	0.1	
Total Delay	299.3	338.6	288.1	181.5		56.3		386.3		319.0	358.8	
LOS	F	F	F	F		E		F		F	F	
Approach Delay		300.2						386.3			353.4	
Approach LOS		F						F			F	
Queue Length 50th (ft)	~320	~335	~550	~98		187		~1785		~638	~2184	
Queue Length 95th (ft)	#503	#521	#689	#177		#335		#1884		m#364	m#1221	
Internal Link Dist (ft)		1307			239			915			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	184	177	574	169		416		1869		341	2059	
Starvation Cap Reductn	0	0	0	0		0		0		0	88	
Spillback Cap Reductn	0	0	0	0		0		100		0	0	
Storage Cap Reductn	0	0	0	0		0		0		0	0	
Reduced v/c Ratio	1.53	1.62	1.55	1.20		0.84		1.90		1.64	1.82	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 42 (35%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.80		
Intersection Signal Delay: 342.2	Intersection LOS: F	
Intersection Capacity Utilization 143.9%	ICU Level of Service H	
Analysis Period (min) 15		
* User Entered Value		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	304	0	560	0	3100	25	0	3515	432
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	12
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850		0.999				0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												309
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	330	0	609	0	3370	27	0	3821	470
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	330	0	609	0	3397	0	0	3821	470
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0		20.0			20.0	20.0
Minimum Split (s)				11.0		11.0		26.0			26.0	26.0
Total Split (s)				25.0		25.0		95.0			95.0	95.0
Total Split (%)				20.8%		20.8%		79.2%			79.2%	79.2%
Maximum Green (s)				19.0		19.0		89.0			89.0	89.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

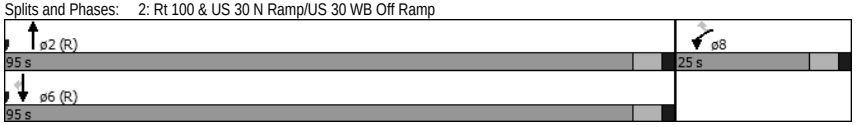
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				20.0		20.0		90.0			90.0	90.0
Actuated g/C Ratio				0.17		0.17		0.75			0.75	0.75
v/c Ratio				0.61		1.29		0.74			1.52	0.39
Control Delay				51.7		187.4		5.6			256.7	1.5
Queue Delay				65.5		12.0		30.7			0.6	5.4
Total Delay				117.2		199.4		36.3			257.3	6.9
LOS				F		F		D			F	A
Approach Delay								36.3			229.9	
Approach LOS								D			F	
Queue Length 50th (ft)				123		~342		143			~2243	35
Queue Length 95th (ft)				173		#469		m30			m#1995	m25
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				544		471		4593			2514	1191
Starvation Cap Reductn				0		0		1398			503	646
Spillback Cap Reductn				363		293		183			562	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				1.82		3.42		1.06			1.96	0.86

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 55 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.52
Intersection Signal Delay: 147.2 Intersection LOS: F
Intersection Capacity Utilization 119.2% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	4	381	15	10	19	0	3626	34	47	3238	216
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.941			0.999				0.850
Flt Protected	0.950	0.954			0.984					0.950		
Satd. Flow (prot)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Flt Permitted	0.950	0.954			0.984					0.950		
Satd. Flow (perm)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			139					2				142
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	4	414	16	11	21	0	3941	37	51	3520	235
Shared Lane Traffic (%)	49%											
Lane Group Flow (vph)	109	109	414	0	48	0	0	3978	0	51	3520	235
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		10.0	26.0	26.0
Total Split (s)	24.0	24.0	24.0	18.0	18.0			68.0		10.0	78.0	78.0
Total Split (%)	20.0%	20.0%	20.0%	15.0%	15.0%			56.7%		8.3%	65.0%	65.0%
Maximum Green (s)	18.0	18.0	18.0	12.0	12.0			62.0		4.0	72.0	72.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

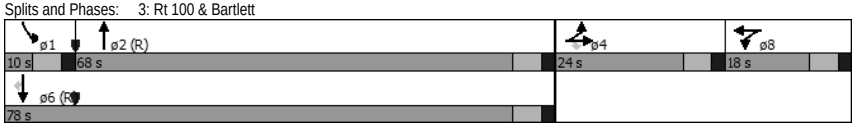
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	0.2	0.2			0.2		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	19.0	19.0	19.0		7.4			72.8		5.0	80.8	80.8
Actuated g/C Ratio	0.16	0.16	0.16		0.06			0.61		0.04	0.67	0.67
v/c Ratio	0.44	0.43	1.15		0.42			1.08		0.76	1.08	0.21
Control Delay	51.8	51.8	124.0		64.7			55.7		66.0	65.5	3.8
Queue Delay	0.0	0.0	0.5		0.0			0.8		0.0	7.0	0.0
Total Delay	51.8	51.8	124.6		64.7			56.5		66.0	72.5	3.8
LOS	D	D	F		E			E		E	E	A
Approach Delay		99.5			64.7			56.5			68.2	
Approach LOS		F			E			E			E	
Queue Length 50th (ft)	81	81	~280		37			~384		37	~1177	39
Queue Length 95th (ft)	143	143	#482		76			m#1055		m28	m830	m29
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	250	251	361		204			3682		67	3245	1124
Starvation Cap Reductn	0	0	0		0			6		0	0	0
Spillback Cap Reductn	0	0	18		0			0		0	653	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.44	0.43	1.21		0.24			1.08		0.76	1.36	0.21

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.15
Intersection Signal Delay: 65.0 Intersection LOS: E
Intersection Capacity Utilization 107.6% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Rt 100 & Bartlett



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	213	541	195	75	6	640	3177	117	14	2764	716
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.988			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3362	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.696			0.425			0.950			0.950		
Satd. Flow (perm)	1259	1809	1624	761	3362	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221		7			8				278
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	251	232	588	212	82	7	696	3453	127	15	3004	778
Shared Lane Traffic (%)												
Lane Group Flow (vph)	251	232	588	212	89	0	696	3580	0	15	3004	778
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	33.0	33.0	33.0	33.0	33.0		26.0	77.0		10.0	61.0	61.0
Total Split (%)	27.5%	27.5%	27.5%	27.5%	27.5%		21.7%	64.2%		8.3%	50.8%	50.8%
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0		20.0	71.0		4.0	55.0	55.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

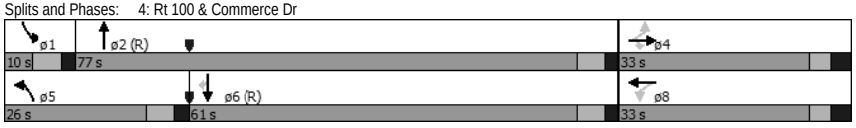
McMahon Associates, Inc.
4: Rt 100 & Commerce Dr

Pottstown Pike Congestion Mitigation Study
2028 Future No Build Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	28.0	28.0	28.0	28.0	28.0		21.0	78.0		5.0	56.0	56.0
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23		0.18	0.65		0.04	0.47	0.47
v/c Ratio	0.86	0.55	1.07	1.20	0.11		1.20	1.10		0.21	1.34	0.86
Control Delay	71.2	46.2	87.4	171.5	33.8		131.7	72.4		55.5	181.2	23.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.1
Total Delay	71.2	46.2	87.4	171.5	33.8		131.7	72.4		55.5	181.2	23.6
LOS	E	D	F	F	C		F	E		E	F	C
Approach Delay		74.7			130.8			82.1			148.4	
Approach LOS		E			F			F			F	
Queue Length 50th (ft)	187	159	~366	~199	26		~332	~1139		11	~1104	255
Queue Length 95th (ft)	#335	243	#590	#355	49		m#302	m#1123		m16	m#1064	m261
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	293	422	548	177	789		580	3256		70	2247	902
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	4
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.86	0.55	1.07	1.20	0.11		1.20	1.10		0.21	1.34	0.87

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 110 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.34		
Intersection Signal Delay: 109.4	Intersection LOS: F	
Intersection Capacity Utilization 115.6%	ICU Level of Service H	
Analysis Period (min) 15		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



Lanes, Volumes, Timings
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2028 Future No Build Weekday PM
Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑	↱		↑↑	↱
Volume (vph)	0	0	73	0	0	41	0	3062	172	0	4335	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		200
Storage Lanes	0		1	0		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.865			0.865			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	0	1611	0	0	1611	0	3557	1591	0	3574	1583
Flt Permitted												
Satd. Flow (perm)	0	0	1611	0	0	1611	0	3557	1591	0	3574	1583
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		186			194			1556			995	
Travel Time (s)		4.2			4.4			23.6			15.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	0	79	0	0	45	0	3328	187	0	4712	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	79	0	0	45	0	3328	187	0	4712	102
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	11

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	73	0	0	41	0	3062	172	0	4335	94
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	300	-	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-1	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	1	2
Mvmt Flow	0	0	79	0	0	45	0	3328	187	0	4712	102

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	6376	8040	2356	5684	8040	1664	4712	0	0	3328	0	0
Stage 1	4712	4712	-	3328	3328	-	-	-	-	-	-	-
Stage 2	1664	3328	-	2356	4712	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	~ 28	0	0	86	22	-	-	83	-	-
Stage 1	1	3	-	8	20	-	-	-	-	-	-	-
Stage 2	101	20	-	36	3	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	0	0	~ 28	-	0	86	22	-	-	83	-	-
Mov Cap-2 Maneuver	0	0	-	-	0	-	-	-	-	-	-	-
Stage 1	1	3	-	8	20	-	-	-	-	-	-	-
Stage 2	49	20	-	-	3	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 1124.3	85.1	0	0
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	22	-	-	28	86	83	-	-
HCM Lane V/C Ratio	-	-	-	2.834	0.518	-	-	-
HCM Control Delay (s)	0	-	-	$ 1124.3	85.1	0	-	-
HCM Lane LOS	A	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	9.5	2.2	0	-	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

ALTERNATIVE 1
Third Travel Lane

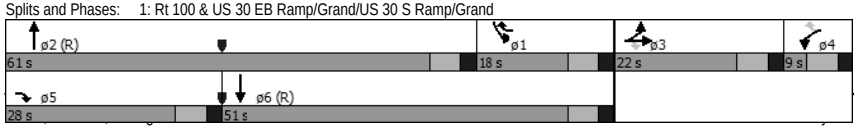
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	352	39	1405	36	0	59	0	2605	58	261	2310	0
Ideal Flow (vphpl)	1000	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		130	0		0
Storage Lanes	1		1	2		1	0		1	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	0.97	1.00	1.00	1.00	*0.75	0.91	1.00	0.91	1.00
Frt			0.850			0.850		0.997				
Flt Protected	0.950	0.961		0.950						0.950		
Satd. Flow (prot)	949	1625	2653	3384	0	1613	0	4111	0	1637	4865	0
Flt Permitted	0.950	0.961		0.950						0.950		
Satd. Flow (perm)	949	1625	2653	3384	0	1613	0	4111	0	1637	4865	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			2629			693	
Travel Time (s)		27.0			6.2			39.8			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	383	42	1527	39	0	64	0	2832	63	284	2511	0
Shared Lane Traffic (%)	45%											
Lane Group Flow (vph)	211	214	1527	39	0	64	0	2895	0	284	2511	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3	5	4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	5	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	9.0	9.0	9.0	9.0		9.0		26.0		9.0	26.0	
Total Split (s)	22.0	22.0	28.0	9.0		18.0		61.0		18.0	51.0	
Total Split (%)	20.0%	20.0%	25.5%	8.2%		16.4%		55.5%		16.4%	46.4%	

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 1 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	16.0	16.0	22.0	3.0		12.0		55.0		12.0	45.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lead	Lag		Lag		Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	17.0	17.0	45.6	4.0		15.4		59.6		13.0	46.0	
Actuated g/C Ratio	0.15	0.15	0.41	0.04		0.14		0.54		0.12	0.42	
v/c Ratio	1.45	0.85	1.39	0.32		0.28		1.30		1.47	1.23	
Control Delay	269.8	75.2	207.7	58.7		30.4		163.9		267.5	133.0	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay	269.8	75.2	207.7	58.7		30.4		163.9		267.5	133.0	
LOS	F	E	F	E		C		F		F	F	
Approach Delay		199.9						163.9			146.7	
Approach LOS		F						F			F	
Queue Length 50th (ft)	~213	156	~874	13		28		~1210		~283	~828	
Queue Length 95th (ft)	#371	#296	#1023	32		57		#1318		#457	#919	
Internal Link Dist (ft)		1307			239			2549			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	146	251	1099	123		225		2227		193	2034	
Starvation Cap Reductn	0	0	0	0		0		0		0	0	
Spillback Cap Reductn	0	0	0	0		0		0		0	0	
Storage Cap Reductn	0	0	0	0		0		0		0	0	
Reduced v/c Ratio	1.45	0.85	1.39	0.32		0.28		1.30		1.47	1.23	

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 55 (50%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.47		
Intersection Signal Delay: 165.1	Intersection LOS: F	
Intersection Capacity Utilization 114.0%	ICU Level of Service H	
Analysis Period (min) 15		
* User Entered Value		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\10 - Additional Through Lanes ONLY\Weekday AM - Balanced.syn Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	152	0	205	0	1894	0	0	1784	83
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	14
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	1.00	1.00	0.91	1.00
Frt						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6131	0	0	4817	1584
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6131	0	0	4817	1584
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												90
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	165	0	223	0	2059	0	0	1939	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	165	0	223	0	2059	0	0	1939	90
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				7.0		7.0		20.0			20.0	20.0
Minimum Split (s)				13.0		13.0		26.0			26.0	26.0
Total Split (s)				20.0		20.0		90.0			90.0	90.0
Total Split (%)				18.2%		18.2%		81.8%			81.8%	81.8%
Maximum Green (s)				14.0		14.0		84.0			84.0	84.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt 1 Weekday AM

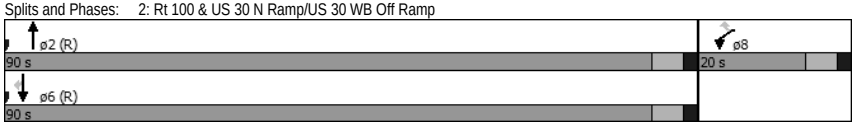
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				13.8		13.8		86.2			86.2	86.2
Actuated g/C Ratio				0.13		0.13		0.78			0.78	0.78
v/c Ratio				0.40		0.63		0.43			0.51	0.07
Control Delay				47.0		53.8		2.0			9.8	1.4
Queue Delay				0.0		0.0		0.0			0.3	0.0
Total Delay				47.0		53.8		2.0			10.1	1.4
LOS				D		D		A			B	A
Approach Delay								2.0			9.7	
Approach LOS								A			A	
Queue Length 50th (ft)				55		85		44			469	5
Queue Length 95th (ft)				89		130		m35			541	m15
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				445		385		4803			3774	1260
Starvation Cap Reductn				0		0		0			1051	0
Spillback Cap Reductn				0		0		0			0	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.37		0.58		0.43			0.71	0.07

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 35 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 9.7 Intersection LOS: A
Intersection Capacity Utilization 48.5% ICU Level of Service A
Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



Lanes, Volumes, Timings Alt 1 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\10 - Additional Through Lanes ONLY\Weekday AM - Balanced.syn Synchro 8

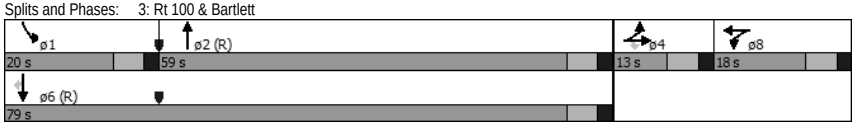
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	5	40	48	7	40	0	1659	70	37	1779	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.944			0.994				0.850
Flt Protected	0.950	0.976			0.975					0.950		
Satd. Flow (prot)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Flt Permitted	0.950	0.976			0.975					0.950		
Satd. Flow (perm)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			149					10				89
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	5	43	52	8	43	0	1803	76	40	1934	18
Shared Lane Traffic (%)	34%											
Lane Group Flow (vph)	10	10	43	0	103	0	0	1879	0	40	1934	18
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		20.0	26.0	26.0
Total Split (s)	13.0	13.0	13.0	18.0	18.0			59.0		20.0	79.0	79.0
Total Split (%)	11.8%	11.8%	11.8%	16.4%	16.4%			53.6%		18.2%	71.8%	71.8%
Maximum Green (s)	7.0	7.0	7.0	12.0	12.0			53.0		14.0	73.0	73.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
3: Rt 100 & Bartlett Alt 1 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	7.2	7.2	7.2		11.5			69.2		9.3	78.6	78.6
Actuated g/C Ratio	0.07	0.07	0.07		0.10			0.63		0.08	0.71	0.71
v/c Ratio	0.10	0.09	0.18		0.53			0.49		0.29	0.56	0.02
Control Delay	50.0	50.0	1.6		56.3			6.0		60.6	3.8	0.1
Queue Delay	0.0	0.0	0.1		0.0			0.1		0.0	0.1	0.0
Total Delay	50.0	50.0	1.7		56.3			6.1		60.6	3.9	0.1
LOS	D	D	A		E			A		E	A	A
Approach Delay		17.0			56.3			6.1			5.0	
Approach LOS		B			E			A			A	
Queue Length 50th (ft)	7	7	0		69			94		27	165	0
Queue Length 95th (ft)	26	26	0		125			104		m42	186	m0
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	115	118	250		222			3800		221	3441	1168
Starvation Cap Reductn	0	0	0		0			604		0	0	0
Spillback Cap Reductn	0	0	11		0			0		0	364	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.09	0.08	0.18		0.46			0.59		0.18	0.63	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 37 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 7.0		Intersection LOS: A	
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Rt 100 & Bartlett



Lanes, Volumes, Timings Alt 1 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\10 - Additional Through Lanes ONLY\Weekday AM - Balanced.syn Synchro 8

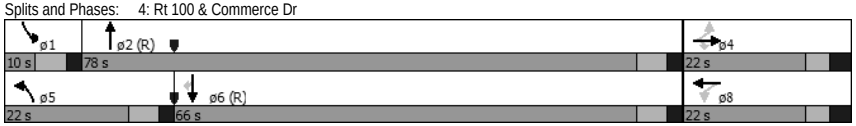
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	18	87	91	21	10	265	1752	66	1	1645	66
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.951			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3236	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.734			0.744			0.950			0.950		
Satd. Flow (perm)	1328	1809	1624	1333	3236	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			149		11			11				149
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	26	20	95	99	23	11	288	1904	72	1	1788	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	20	95	99	34	0	288	1976	0	1	1788	72
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0		22.0	78.0		10.0	66.0	66.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%		20.0%	70.9%		9.1%	60.0%	60.0%
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0		16.0	72.0		4.0	60.0	60.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
4: Rt 100 & Commerce Dr Alt 1 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	13.8	13.8	13.8	13.8	13.8		15.2	84.2		5.0	66.0	66.0
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13		0.14	0.77		0.05	0.60	0.60
v/c Ratio	0.16	0.09	0.28	0.59	0.08		0.63	0.52		0.01	0.62	0.07
Control Delay	43.5	41.6	3.6	59.4	30.9		43.1	15.1		52.0	11.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	43.5	41.6	3.6	59.4	30.9		43.1	15.1		52.0	11.1	0.2
LOS	D	D	A	E	C		D	B		D	B	A
Approach Delay		16.3			52.1			18.6			10.7	
Approach LOS		B			D			B			B	
Queue Length 50th (ft)	17	13	0	66	7		93	431		0	152	0
Queue Length 95th (ft)	43	35	12	121	22		135	554		m1	174	m0
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	205	279	376	206	509		512	3833		76	2890	1029
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.13	0.07	0.25	0.48	0.07		0.56	0.52		0.01	0.62	0.07

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 98 (89%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 80		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.63		
Intersection Signal Delay: 16.2		Intersection LOS: B
Intersection Capacity Utilization 66.0%		ICU Level of Service C
Analysis Period (min) 15		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



Lanes, Volumes, Timings Alt 1 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\10 - Additional Through Lanes ONLY\Weekday AM - Balanced.syn Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	431	92	817	187	0	323	0	3054	38	515	3305	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		130	0		0
Storage Lanes	1		1	2		1	0		1	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	0.97	1.00	1.00	1.00	*0.73	0.91	1.00	0.91	1.00
Frt			0.850			0.850		0.998				
Flt Protected	0.950	0.968		0.950						0.950		
Satd. Flow (prot)	1707	1642	2653	3384	0	1613	0	4005	0	1637	4865	0
Flt Permitted	0.950	0.968		0.950						0.950		
Satd. Flow (perm)	1707	1642	2653	3384	0	1613	0	4005	0	1637	4865	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			2629			693	
Travel Time (s)		27.0			6.2			39.8			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	468	100	888	203	0	351	0	3320	41	560	3592	0
Shared Lane Traffic (%)	40%											
Lane Group Flow (vph)	281	287	888	203	0	351	0	3361	0	560	3592	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3	5	4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	5	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	11.0	11.0	9.0	11.0		10.0		26.0		10.0	26.0	
Total Split (s)	17.0	17.0	13.0	11.0		27.0		65.0		27.0	79.0	
Total Split (%)	14.2%	14.2%	10.8%	9.2%		22.5%		54.2%		22.5%	65.8%	

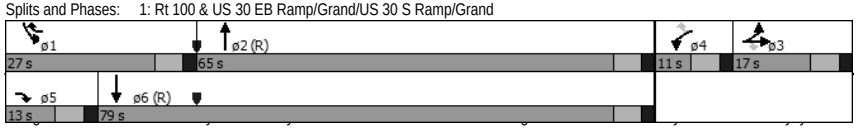
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 1 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	11.0	11.0	7.0	5.0		21.0		59.0		21.0	73.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lead	Lead		Lead		Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	12.0	12.0	25.0	6.0		28.0		60.0		22.0	74.0	
Actuated g/C Ratio	0.10	0.10	0.21	0.05		0.23		0.50		0.18	0.62	
v/c Ratio	1.65	1.75	1.61	1.20		0.93		1.68		1.87	1.20	
Control Delay	352.6	393.7	314.7	181.5		73.0		332.8		428.5	112.7	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay	352.6	393.7	314.7	181.5		73.0		332.8		428.5	112.7	
LOS	F	F	F	F		E		F		F	F	
Approach Delay		337.6						332.8			155.3	
Approach LOS		F						F			F	
Queue Length 50th (ft)	~331	~347	~560	~98		200		~1736		~679	~1227	
Queue Length 95th (ft)	#514	#532	#699	#177		#391		#1835		m#823	#1305	
Internal Link Dist (ft)		1307			239			2549			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	170	164	552	169		376		2002		300	3000	
Starvation Cap Reductn	0	0	0	0		0		0		0	0	
Spillback Cap Reductn	0	0	0	0		0		0		0	0	
Storage Cap Reductn	0	0	0	0		0		0		0	0	
Reduced v/c Ratio	1.65	1.75	1.61	1.20		0.93		1.68		1.87	1.20	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 43 (36%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.87		
Intersection Signal Delay: 243.3	Intersection LOS: F	
Intersection Capacity Utilization 127.6%	ICU Level of Service H	
Analysis Period (min) 15		

* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	240	0	431	0	2335	0	0	2717	338
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	12
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	1.00	1.00	0.91	1.00
Frt						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6131	0	0	4817	1485
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6131	0	0	4817	1485
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												305
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	261	0	468	0	2538	0	0	2953	367
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	261	0	468	0	2538	0	0	2953	367
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0		20.0			20.0	20.0
Minimum Split (s)				11.0		11.0		26.0			26.0	26.0
Total Split (s)				39.0		39.0		81.0			81.0	81.0
Total Split (%)				32.5%		32.5%		67.5%			67.5%	67.5%
Maximum Green (s)				33.0		33.0		75.0			75.0	75.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

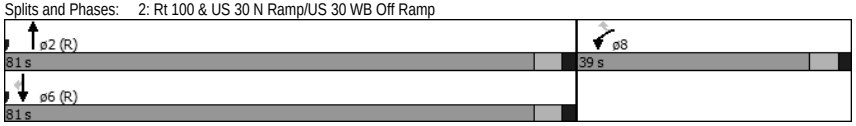
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt 1 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				26.7		26.7		83.3			83.3	83.3
Actuated g/C Ratio				0.22		0.22		0.69			0.69	0.69
v/c Ratio				0.36		0.74		0.60			0.88	0.33
Control Delay				39.9		50.6		5.6			20.7	1.7
Queue Delay				0.1		5.3		0.4			46.1	2.0
Total Delay				39.9		55.9		6.0			66.8	3.7
LOS				D		E		A			E	A
Approach Delay								6.0			59.8	
Approach LOS								A			E	
Queue Length 50th (ft)				88		192		101			826	23
Queue Length 95th (ft)				118		239		m69			#945	m31
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				925		801		4254			3342	1123
Starvation Cap Reductn				0		0		1039			876	594
Spillback Cap Reductn				84		265		229			448	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.31		0.87		0.79			1.20	0.69

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 55 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 38.0 Intersection LOS: D
Intersection Capacity Utilization 70.1% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



Lanes, Volumes, Timings Alt 1 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\10 - Additional Through Lanes ONLY\Weekday PM - Balanced.syn Synchro 8

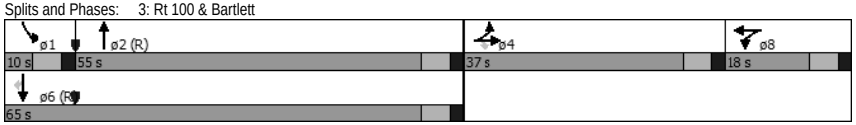
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	4	368	15	10	19	0	2739	27	37	2506	170
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.941			0.999				0.850
Flt Protected	0.950	0.954			0.984					0.950		
Satd. Flow (prot)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Flt Permitted	0.950	0.954			0.984					0.950		
Satd. Flow (perm)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			167					2				113
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	4	400	16	11	21	0	2977	29	40	2724	185
Shared Lane Traffic (%)	49%											
Lane Group Flow (vph)	109	109	400	0	48	0	0	3006	0	40	2724	185
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		10.0	26.0	26.0
Total Split (s)	37.0	37.0	37.0	18.0	18.0			55.0		10.0	65.0	65.0
Total Split (%)	30.8%	30.8%	30.8%	15.0%	15.0%			45.8%		8.3%	54.2%	54.2%
Maximum Green (s)	31.0	31.0	31.0	12.0	12.0			49.0		4.0	59.0	59.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
3: Rt 100 & Bartlett Alt 1 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	0.2	0.2			0.2		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	25.4	25.4	25.4		7.4			66.4		5.0	74.4	74.4
Actuated g/C Ratio	0.21	0.21	0.21		0.06			0.55		0.04	0.62	0.62
v/c Ratio	0.33	0.32	0.87		0.42			0.90		0.60	0.91	0.18
Control Delay	40.8	40.7	45.7		64.7			24.1		67.0	28.8	5.6
Queue Delay	0.0	0.0	0.6		0.0			0.0		0.0	45.5	0.0
Total Delay	40.8	40.7	46.3		64.7			24.1		67.0	74.4	5.6
LOS	D	D	D		E			C		E	E	A
Approach Delay		44.3			64.7			24.1			69.9	
Approach LOS		D			E			C			E	
Queue Length 50th (ft)	74	74	181		37			214		29	825	38
Queue Length 95th (ft)	124	124	295		76			#831		m32	m#902	m55
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	422	424	533		204			3356		67	2987	1034
Starvation Cap Reductn	0	0	0		0			0		0	0	0
Spillback Cap Reductn	0	0	18		0			0		0	538	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.26	0.26	0.78		0.24			0.90		0.60	1.11	0.18

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 46.7		Intersection LOS: D	
Intersection Capacity Utilization 91.8%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Rt 100 & Bartlett



Lanes, Volumes, Timings Alt 1 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\10 - Additional Through Lanes ONLY\Weekday PM - Balanced.syn Synchro 8

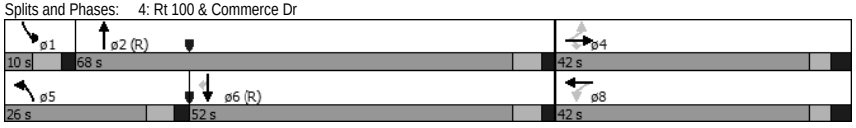
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	154	168	408	154	59	5	451	2439	92	11	2151	513
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.989			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3365	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.710			0.504			0.950			0.950		
Satd. Flow (perm)	1284	1809	1624	903	3365	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			255		5			7				225
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	167	183	443	167	64	5	490	2651	100	12	2338	558
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	183	443	167	69	0	490	2751	0	12	2338	558
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	42.0	42.0	42.0	42.0	42.0		26.0	68.0		10.0	52.0	52.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%		21.7%	56.7%		8.3%	43.3%	43.3%
Maximum Green (s)	36.0	36.0	36.0	36.0	36.0		20.0	62.0		4.0	46.0	46.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
4: Rt 100 & Commerce Dr Alt 1 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	26.2	26.2	26.2	26.2	26.2		20.6	79.8		5.0	58.2	58.2
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22		0.17	0.66		0.04	0.48	0.48
v/c Ratio	0.60	0.46	0.80	0.85	0.09		0.86	0.83		0.17	1.00	0.62
Control Delay	49.6	43.0	28.9	77.9	32.0		50.7	22.2		49.8	39.8	18.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	49.6	43.0	28.9	77.9	32.0		50.7	22.2		49.8	39.8	18.4
LOS	D	D	C	E	C		D	C		D	D	B
Approach Delay		36.5			64.5			26.5			35.7	
Approach LOS		D			E			C			D	
Queue Length 50th (ft)	117	124	143	125	21		169	828		9	~527	169
Queue Length 95th (ft)	170	173	244	190	36		m193	#967		m9	m#754	m171
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	395	557	677	278	1041		580	3330		70	2335	899
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.42	0.33	0.65	0.60	0.07		0.84	0.83		0.17	1.00	0.62

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 110 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 140		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.00		
Intersection Signal Delay: 32.6		Intersection LOS: C
Intersection Capacity Utilization 92.5%		ICU Level of Service F
Analysis Period (min) 15		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



Lanes, Volumes, Timings Alt 1 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\10 - Additional Through Lanes ONLY\Weekday PM - Balanced.syn Synchro 8

ALTERNATIVE 2

Third Travel Lane + New Station Access

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	352	39	1405	15	0	80	0	2605	57	198	2360	0
Ideal Flow (vphpl)	1000	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		1	2		1	0		0	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	0.97	1.00	1.00	1.00	*0.91	0.91	1.00	0.91	1.00
Frt			0.850			0.850		0.997				
Flt Protected	0.950	0.961		0.950						0.950		
Satd. Flow (prot)	949	1625	2653	3384	0	1613	0	4988	0	1637	4865	0
Flt Permitted	0.950	0.961		0.950						0.950		
Satd. Flow (perm)	949	1625	2653	3384	0	1613	0	4988	0	1637	4865	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			978			693	
Travel Time (s)		27.0			6.2			14.8			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	383	42	1527	16	0	87	0	2832	62	215	2565	0
Shared Lane Traffic (%)	45%											
Lane Group Flow (vph)	211	214	1527	16	0	87	0	2894	0	215	2565	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3	5	4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	5	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	9.0	9.0	9.0	9.0		9.0		26.0		9.0	26.0	
Total Split (s)	15.0	15.0	33.0	11.0		15.0		69.0		15.0	51.0	
Total Split (%)	13.6%	13.6%	30.0%	10.0%		13.6%		62.7%		13.6%	46.4%	

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt. 2 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	9.0	9.0	27.0	5.0		9.0		63.0		9.0	45.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag	Lag		Lag		Lead		Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	10.0	10.0	43.0	6.0		12.4		70.6		10.0	52.6	
Actuated g/C Ratio	0.09	0.09	0.39	0.05		0.11		0.64		0.09	0.48	
v/c Ratio	2.45	1.46	1.47	0.09		0.48		0.90		1.45	1.10	
Control Delay	710.5	275.4	246.4	50.5		45.0		10.8		250.6	78.3	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay	710.5	275.4	246.4	50.5		45.0		10.8		250.6	78.3	
LOS	F	F	F	D		D		B		F	E	
Approach Delay		299.8						10.8			91.6	
Approach LOS		F						B			F	
Queue Length 50th (ft)	~260	~216	~843	5		60		41		~208	~645	
Queue Length 95th (ft)	#418	#376	#993	17		83		#858		m#229	m#883	
Internal Link Dist (ft)		1307			239			898			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	86	147	1037	184		181		3201		148	2326	
Starvation Cap Reductn	0	0	0	0		0		0		0	0	
Spillback Cap Reductn	0	0	0	0		0		0		0	0	
Storage Cap Reductn	0	0	0	0		0		0		0	0	
Reduced v/c Ratio	2.45	1.46	1.47	0.09		0.48		0.90		1.45	1.10	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 36 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 2.45	
Intersection Signal Delay: 113.3	Intersection LOS: F
Intersection Capacity Utilization 115.0%	ICU Level of Service H
Analysis Period (min) 15	

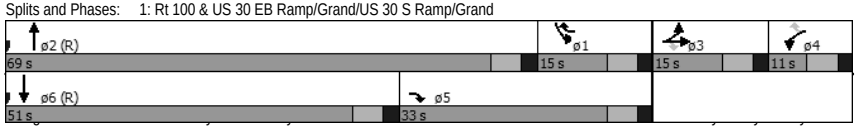
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	193	0	264	0	2425	4	0	2365	112
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	14
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												122
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	210	0	287	0	2636	4	0	2571	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	210	0	287	0	2640	0	0	2571	122
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				7.0		7.0		20.0			20.0	20.0
Minimum Split (s)				13.0		13.0		26.0			26.0	26.0
Total Split (s)				18.0		18.0		92.0			92.0	92.0
Total Split (%)				16.4%		16.4%		83.6%			83.6%	83.6%
Maximum Green (s)				12.0		12.0		86.0			86.0	86.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

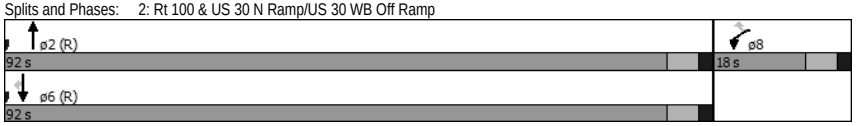
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt. 2 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				13.0		13.0		87.0			87.0	87.0
Actuated g/C Ratio				0.12		0.12		0.79			0.79	0.79
v/c Ratio				0.54		0.86		0.54			0.97	0.10
Control Delay				51.5		72.2		1.8			34.0	0.9
Queue Delay				0.0		1.3		0.2			43.0	0.0
Total Delay				51.5		73.5		1.9			77.0	0.9
LOS				D		E		A			E	A
Approach Delay								1.9			73.6	
Approach LOS								A			E	
Queue Length 50th (ft)				73		114		68			1011	7
Queue Length 95th (ft)				111		#195		m70			#1131	m8
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				386		334		4849			2651	1278
Starvation Cap Reductn				0		0		964			674	0
Spillback Cap Reductn				0		7		261			0	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.54		0.88		0.68			1.30	0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 35 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 40.3		Intersection LOS: D	
Intersection Capacity Utilization 82.3%		ICU Level of Service E	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



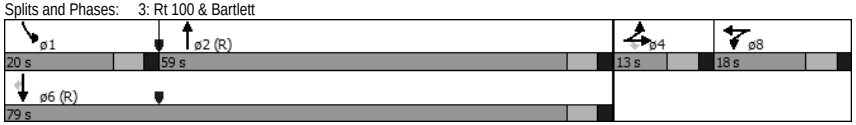
Lanes, Volumes, Timings Alt. 2 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\3 - Future with Station Access with 3 Lanes\Weekday AM.syn Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	5	65	48	7	40	0	2131	89	47	2341	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.944			0.994				0.850
Flt Protected	0.950	0.976			0.975					0.950		
Satd. Flow (prot)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Flt Permitted	0.950	0.976			0.975					0.950		
Satd. Flow (perm)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			149					10				89
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	5	71	52	8	43	0	2316	97	51	2545	24
Shared Lane Traffic (%)	34%											
Lane Group Flow (vph)	10	10	71	0	103	0	0	2413	0	51	2545	24
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left			Left	6x40 Left				6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		20.0	26.0	26.0
Total Split (s)	13.0	13.0	13.0	18.0	18.0			59.0		20.0	79.0	79.0
Total Split (%)	11.8%	11.8%	11.8%	16.4%	16.4%			53.6%		18.2%	71.8%	71.8%
Maximum Green (s)	7.0	7.0	7.0	12.0	12.0			53.0		14.0	73.0	73.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	7.2	7.2	7.2		11.5			66.0		9.9	78.6	78.6
Actuated g/C Ratio	0.07	0.07	0.07		0.10			0.60		0.09	0.71	0.71
v/c Ratio	0.10	0.09	0.30		0.53			0.67		0.35	0.74	0.02
Control Delay	50.0	50.0	3.1		56.3			13.8		56.1	7.6	0.0
Queue Delay	0.0	0.0	0.2		0.0			0.2		0.0	1.0	0.0
Total Delay	50.0	50.0	3.3		56.3			14.0		56.1	8.6	0.0
LOS	D	D	A		E			B		E	A	A
Approach Delay		13.5			56.3			14.0			9.4	
Approach LOS		B			E			B			A	
Queue Length 50th (ft)	7	7	0		69			128		30	568	0
Queue Length 95th (ft)	26	26	0		125			325		m38	642	m0
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	115	118	250		222			3622		221	3441	1168
Starvation Cap Reductn	0	0	0		0			351		0	0	0
Spillback Cap Reductn	0	0	17		0			0		0	573	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.09	0.08	0.30		0.46			0.74		0.23	0.89	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 37 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 12.5		Intersection LOS: B	
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Rt 100 & Bartlett

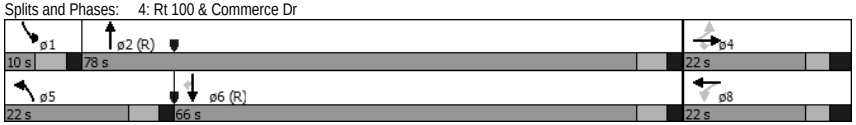


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	23	156	115	27	13	354	2231	84	1	2125	101
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.951			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3236	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.728			0.741			0.950			0.950		
Satd. Flow (perm)	1317	1809	1624	1327	3236	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			159		14			11				149
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	108	25	170	125	29	14	385	2425	91	1	2310	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	25	170	125	43	0	385	2516	0	1	2310	110
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0		22.0	78.0		10.0	66.0	66.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%		20.0%	70.9%		9.1%	60.0%	60.0%
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0		16.0	72.0		4.0	60.0	60.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	14.9	14.9	14.9	14.9	14.9		16.5	83.1		5.0	63.6	63.6
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14		0.15	0.76		0.05	0.58	0.58
v/c Ratio	0.61	0.10	0.47	0.69	0.10		0.77	0.67		0.01	0.83	0.11
Control Delay	59.0	41.4	12.7	65.2	30.4		43.6	21.5		56.0	15.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	59.0	41.4	12.7	65.2	30.4		43.6	21.5		56.0	15.6	0.8
LOS	E	D	B	E	C		D	C		E	B	A
Approach Delay		31.6			56.3			24.4			14.9	
Approach LOS		C			E			C			B	
Queue Length 50th (ft)	71	15	7	84	9		134	646		0	243	1
Queue Length 95th (ft)	130	41	68	#150	26		#173	720		m2	269	m4
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	203	279	385	205	511		512	3782		76	2783	996
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.53	0.09	0.44	0.61	0.08		0.75	0.67		0.01	0.83	0.11

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 98 (89%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.83		
Intersection Signal Delay: 21.7	Intersection LOS: C	
Intersection Capacity Utilization 79.9%	ICU Level of Service D	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



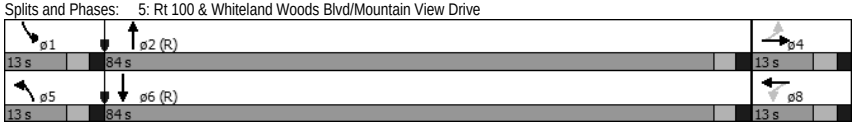
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	26	108	14	22	12	0	2641	426	50	3708	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		200	0		300
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.891			0.947			0.979			0.999	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1572	0	1676	1671	0	1774	4780	0	1676	4813	0
Flt Permitted				0.488						0.950		
Satd. Flow (perm)	0	1572	0	861	1671	0	1774	4780	0	1676	4813	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		101			13			73			3	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		103			249			1573			978	
Travel Time (s)		2.3			5.7			23.8			14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Adj. Flow (vph)	0	28	117	15	24	13	0	2871	463	54	4030	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	145	0	15	37	0	0	3334	0	54	4067	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	13.0	13.0		13.0	13.0		13.0	84.0		13.0	84.0	
Total Split (%)	11.8%	11.8%		11.8%	11.8%		11.8%	76.4%		11.8%	76.4%	
Maximum Green (s)	8.0	8.0		8.0	8.0		8.0	79.0		8.0	79.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)		8.2		8.2	8.2			83.5		8.4	93.8	
Actuated g/C Ratio		0.07		0.07	0.07			0.76		0.08	0.85	
v/c Ratio		0.69		0.23	0.27			0.91		0.42	0.99	
Control Delay		35.2		56.6	39.9			16.8		47.4	12.4	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.2	
Total Delay		35.2		56.6	39.9			16.8		47.4	12.5	
LOS		D		E	D			B		D	B	
Approach Delay		35.2			44.7			16.8			13.0	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)		30		10	16			656		37	472	
Queue Length 95th (ft)		#108		32	50			769		m31	m299	
Internal Link Dist (ft)		23			169			1493			898	
Turn Bay Length (ft)												
Base Capacity (vph)		221		70	148			3646		137	4104	
Starvation Cap Reductn		0		0	0			0		0	4	
Spillback Cap Reductn		0		0	0			0		0	0	
Storage Cap Reductn		0		0	0			0		0	0	
Reduced v/c Ratio		0.66		0.21	0.25			0.91		0.39	0.99	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 10 (9%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 15.3 Intersection LOS: B
Intersection Capacity Utilization 95.4% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountain View Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	431	92	817	56	0	323	0	3054	38	459	3354	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		1	2		1	0		0	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	0.97	1.00	1.00	1.00	*0.91	0.91	1.00	0.91	1.00
Frt			0.850			0.850		0.998				
Flt Protected	0.950	0.968		0.950						0.950		
Satd. Flow (prot)	1707	1642	2653	3384	0	1613	0	4993	0	1637	4865	0
Flt Permitted	0.950	0.968		0.950						0.950		
Satd. Flow (perm)	1707	1642	2653	3384	0	1613	0	4993	0	1637	4865	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			995			693	
Travel Time (s)		27.0			6.2			15.1			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	468	100	888	61	0	351	0	3320	41	499	3646	0
Shared Lane Traffic (%)	40%											
Lane Group Flow (vph)	281	287	888	61	0	351	0	3361	0	499	3646	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3	5	4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	5	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	11.0	11.0	9.0	11.0		10.0		26.0		10.0	26.0	
Total Split (s)	18.0	18.0	13.0	11.0		24.0		67.0		24.0	78.0	
Total Split (%)	15.0%	15.0%	10.8%	9.2%		20.0%		55.8%		20.0%	65.0%	

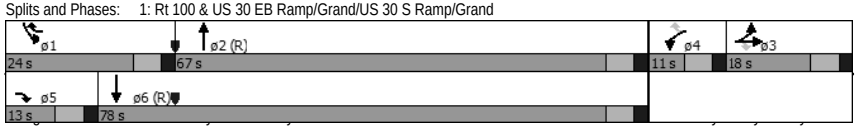
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 2 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	12.0	12.0	7.0	5.0		18.0		61.0		18.0	72.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lead	Lead		Lead		Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	13.0	13.0	26.0	6.0		23.8		64.2		19.0	75.2	
Actuated g/C Ratio	0.11	0.11	0.22	0.05		0.20		0.54		0.16	0.63	
v/c Ratio	1.53	1.62	1.55	0.36		1.10		1.26		1.93	1.20	
Control Delay	299.3	338.6	288.1	61.4		119.9		139.5		447.4	110.2	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.2	
Total Delay	299.3	338.6	288.1	61.4		119.9		139.5		447.4	110.4	
LOS	F	F	F	E		F		F		F	F	
Approach Delay		300.2						139.5			151.0	
Approach LOS		F						F			F	
Queue Length 50th (ft)	~320	~335	~550	24		~220		~1216		~615	~1278	
Queue Length 95th (ft)	#503	#521	#689	47		#444		#1299		m#369	m404	
Internal Link Dist (ft)		1307			239			915			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	184	177	574	169		320		2671		259	3048	
Starvation Cap Reductn	0	0	0	0		0		0		0	313	
Spillback Cap Reductn	0	0	0	0		0		0		0	126	
Storage Cap Reductn	0	0	0	0		0		0		0	0	
Reduced v/c Ratio	1.53	1.62	1.55	0.36		1.10		1.26		1.93	1.33	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 64 (53%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.93
Intersection Signal Delay: 168.3 Intersection LOS: F
Intersection Capacity Utilization 124.3% ICU Level of Service H
Analysis Period (min) 15
* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	304	0	560	0	3105	30	0	3508	432
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	12
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850		0.999				0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												309
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	330	0	609	0	3375	33	0	3813	470
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	330	0	609	0	3408	0	0	3813	470
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0		20.0			20.0	20.0
Minimum Split (s)				11.0		11.0		26.0			26.0	26.0
Total Split (s)				25.0		25.0		95.0			95.0	95.0
Total Split (%)				20.8%		20.8%		79.2%			79.2%	79.2%
Maximum Green (s)				19.0		19.0		89.0			89.0	89.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

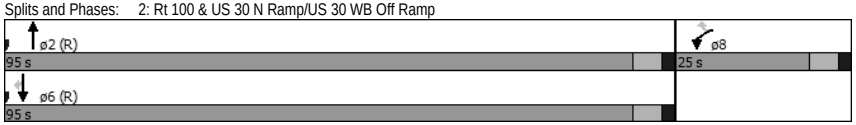
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt 2 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				20.0		20.0		90.0			90.0	90.0
Actuated g/C Ratio				0.17		0.17		0.75			0.75	0.75
v/c Ratio				0.61		1.29		0.74			1.52	0.39
Control Delay				51.7		187.4		3.2			255.6	1.6
Queue Delay				0.0		3.1		43.3			0.5	5.3
Total Delay				51.7		190.5		46.5			256.1	7.0
LOS				D		F		D			F	A
Approach Delay								46.5			228.8	
Approach LOS								D			F	
Queue Length 50th (ft)				123		~342		125			~2235	35
Queue Length 95th (ft)				173		#469		m92			m#1996	m25
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				544		471		4593			2514	1191
Starvation Cap Reductn				0		0		829			503	645
Spillback Cap Reductn				0		129		1474			463	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.61		1.78		1.09			1.90	0.86

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 55 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.52			
Intersection Signal Delay: 147.3		Intersection LOS: F	
Intersection Capacity Utilization 119.0%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



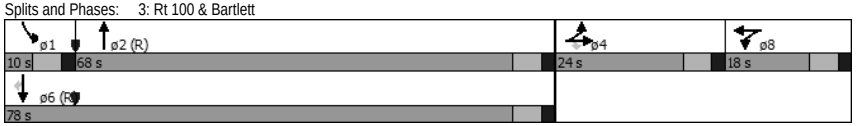
Lanes, Volumes, Timings Alt 2 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\3 - Future with Station Access with 3 Lanes\Weekday PM.syn Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	4	381	15	10	19	0	3631	34	47	3231	216
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.941			0.999				0.850
Flt Protected	0.950	0.954			0.984					0.950		
Satd. Flow (prot)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Flt Permitted	0.950	0.954			0.984					0.950		
Satd. Flow (perm)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			139					2				143
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	4	414	16	11	21	0	3947	37	51	3512	235
Shared Lane Traffic (%)	49%											
Lane Group Flow (vph)	109	109	414	0	48	0	0	3984	0	51	3512	235
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		10.0	26.0	26.0
Total Split (s)	24.0	24.0	24.0	18.0	18.0			68.0		10.0	78.0	78.0
Total Split (%)	20.0%	20.0%	20.0%	15.0%	15.0%			56.7%		8.3%	65.0%	65.0%
Maximum Green (s)	18.0	18.0	18.0	12.0	12.0			62.0		4.0	72.0	72.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	0.2	0.2			0.2		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	19.0	19.0	19.0		7.4			72.8		5.0	80.8	80.8
Actuated g/C Ratio	0.16	0.16	0.16		0.06			0.61		0.04	0.67	0.67
v/c Ratio	0.44	0.43	1.15		0.42			1.08		0.76	1.08	0.21
Control Delay	51.8	51.8	124.0		64.7			63.7		66.0	64.4	3.7
Queue Delay	0.0	0.0	0.5		0.0			0.9		0.0	8.1	0.0
Total Delay	51.8	51.8	124.6		64.7			64.6		66.0	72.5	3.7
LOS	D	D	F		E			E		E	E	A
Approach Delay		99.5			64.7			64.6			68.1	
Approach LOS		F			E			E			E	
Queue Length 50th (ft)	81	81	~280		37			~734		37	~1172	39
Queue Length 95th (ft)	143	143	#482		76			m#756		m28	m830	m29
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	250	251	361		204			3682		67	3245	1124
Starvation Cap Reductn	0	0	0		0			7		0	0	0
Spillback Cap Reductn	0	0	18		0			0		0	653	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.44	0.43	1.21		0.24			1.08		0.76	1.35	0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 68.8		Intersection LOS: E	
Intersection Capacity Utilization 107.5%		ICU Level of Service G	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Rt 100 & Bartlett

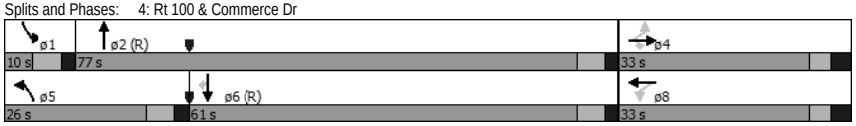


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	213	541	195	75	6	640	3182	117	14	2757	716
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.988			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3362	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.696			0.425			0.950			0.950		
Satd. Flow (perm)	1259	1809	1624	761	3362	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221		7			8				279
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	251	232	588	212	82	7	696	3459	127	15	2997	778
Shared Lane Traffic (%)												
Lane Group Flow (vph)	251	232	588	212	89	0	696	3586	0	15	2997	778
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	33.0	33.0	33.0	33.0	33.0		26.0	77.0		10.0	61.0	61.0
Total Split (%)	27.5%	27.5%	27.5%	27.5%	27.5%		21.7%	64.2%		8.3%	50.8%	50.8%
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0		20.0	71.0		4.0	55.0	55.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	28.0	28.0	28.0	28.0	28.0		21.0	78.0		5.0	56.0	56.0
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23		0.18	0.65		0.04	0.47	0.47
v/c Ratio	0.86	0.55	1.07	1.20	0.11		1.20	1.10		0.21	1.33	0.86
Control Delay	71.2	46.2	87.4	171.5	33.8		131.5	74.3		55.5	179.8	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.1
Total Delay	71.2	46.2	87.4	171.5	33.8		131.5	74.3		55.5	179.8	23.6
LOS	E	D	F	F	C		F	E		E	F	C
Approach Delay		74.7			130.8			83.6			147.2	
Approach LOS		E			F			F			F	
Queue Length 50th (ft)	187	159	~366	~199	26		~332	~1142		11	~1100	255
Queue Length 95th (ft)	#335	243	#590	#355	49		m#301	m#1123		m17	m#1060	m260
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	293	422	548	177	789		580	3256		70	2247	902
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	4
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.86	0.55	1.07	1.20	0.11		1.20	1.10		0.21	1.33	0.87

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 110 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.33		
Intersection Signal Delay: 109.6	Intersection LOS: F	
Intersection Capacity Utilization 115.5%	ICU Level of Service H	
Analysis Period (min) 15		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	13	85	97	34	41	0	3062	192	49	4144	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		200
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.883			0.918			0.991			0.997	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1645	0	1770	1710	0	1872	5065	0	1770	5119	0
Flt Permitted				0.564						0.950		
Satd. Flow (perm)	0	1645	0	1051	1710	0	1872	5065	0	1770	5119	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			42			22			7	
Link Speed (mph)		30			30			45			30	
Link Distance (ft)		186			194			1556			995	
Travel Time (s)		4.2			4.4			23.6			22.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	14	92	105	37	45	0	3328	209	53	4504	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	106	0	105	82	0	0	3537	0	53	4606	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	19.0	19.0		19.0	19.0		9.0	92.0		9.0	92.0	
Total Split (%)	15.8%	15.8%		15.8%	15.8%		7.5%	76.7%		7.5%	76.7%	
Maximum Green (s)	14.0	14.0		14.0	14.0		4.0	87.0		4.0	87.0	

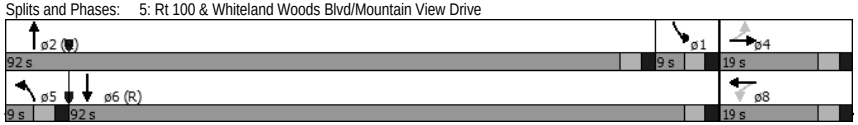
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)		14.4		14.4	14.4			90.4		5.0	97.6	
Actuated g/C Ratio		0.12		0.12	0.12			0.75		0.04	0.81	
v/c Ratio		0.44		0.84	0.34			0.93		0.73	1.11	
Control Delay		32.6		97.9	30.1			18.4		55.3	58.1	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		32.6		97.9	30.1			18.4		55.3	58.2	
LOS		C		F	C			B		E	E	
Approach Delay		32.6			68.1			18.4			58.1	
Approach LOS		C			E			B			E	
Queue Length 50th (ft)		39		80	28			771		41	~1489	
Queue Length 95th (ft)		96		#179	78			872		m34	m154	
Internal Link Dist (ft)		106			114			1476			915	
Turn Bay Length (ft)												
Base Capacity (vph)		250		131	250			3822		73	4166	
Starvation Cap Reductn		0		0	0			0		0	46	
Spillback Cap Reductn		0		0	0			0		0	0	
Storage Cap Reductn		0		0	0			0		0	0	
Reduced v/c Ratio		0.42		0.80	0.33			0.93		0.73	1.12	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 53 (44%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 41.5 Intersection LOS: D
Intersection Capacity Utilization 100.9% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountain View Drive



ALTERNATIVE 3

Third Travel Lane + New Station Access + Walkertown Road Closure

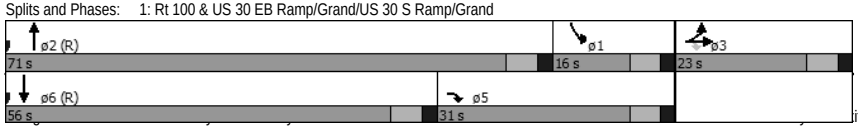
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	352	7	1412	0	0	0	0	2685	57	149	2409	0
Ideal Flow (vphpl)	1000	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		1	0		0	0		0	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	1.00	1.00	1.00	1.00	*0.91	0.91	1.00	0.91	1.00
Frt			0.850					0.997				
Flt Protected	0.950	0.954								0.950		
Satd. Flow (prot)	949	1609	2653	0	0	0	0	4988	0	1637	4865	0
Flt Permitted	0.950	0.954								0.950		
Satd. Flow (perm)	949	1609	2653	0	0	0	0	4988	0	1637	4865	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			978			693	
Travel Time (s)		27.0			6.2			14.8			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	383	8	1535	0	0	0	0	2918	62	162	2618	0
Shared Lane Traffic (%)	49%											
Lane Group Flow (vph)	195	196	1535	0	0	0	0	2980	0	162	2618	0
Number of Detectors	1	1	1					2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left					Thru		Left	Thru	
Leading Detector (ft)	35	35	35					100		20	100	
Trailing Detector (ft)	-5	-5	-5					0		0	0	
Detector 1 Position(ft)	-5	-5	-5					0		0	0	
Detector 1 Size(ft)	40	40	40					6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom					NA		Prot	NA	
Protected Phases	3	3	5					2		1	6	
Permitted Phases			3									
Detector Phase	3	3	5					2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0					20.0		3.0	20.0	
Minimum Split (s)	9.0	9.0	9.0					26.0		9.0	26.0	
Total Split (s)	23.0	23.0	31.0					71.0		16.0	56.0	
Total Split (%)	20.9%	20.9%	28.2%					64.5%		14.5%	50.9%	

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 3 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	17.0	17.0	25.0					65.0		10.0	50.0	
Yellow Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0					-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0					5.0		5.0	5.0	
Lead/Lag			Lag					Lead		Lag	Lead	
Lead-Lag Optimize?			Yes					Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Recall Mode	None	None	None					C-Max		None	C-Max	
Act Effct Green (s)	18.0	18.0	49.0					66.0		11.0	51.0	
Actuated g/C Ratio	0.16	0.16	0.45					0.60		0.10	0.46	
v/c Ratio	1.26	0.75	1.30					1.00		0.99	1.16	
Control Delay	197.1	62.2	169.9					19.0		86.8	104.7	
Queue Delay	0.0	0.0	0.0					0.0		0.0	0.0	
Total Delay	197.1	62.2	169.9					19.0		86.8	104.7	
LOS	F	E	F					B		F	F	
Approach Delay		161.7						19.0			103.7	
Approach LOS		F						B			F	
Queue Length 50th (ft)	~182	140	~790					471		114	~802	
Queue Length 95th (ft)	#333	#253	#939					m#595		m#133	m#852	
Internal Link Dist (ft)		1307			239			898			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	155	263	1181					2992		163	2255	
Starvation Cap Reductn	0	0	0					0		0	0	
Spillback Cap Reductn	0	0	0					0		0	0	
Storage Cap Reductn	0	0	0					0		0	0	
Reduced v/c Ratio	1.26	0.75	1.30					1.00		0.99	1.16	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 26 (24%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.30			
Intersection Signal Delay: 85.4		Intersection LOS: F	
Intersection Capacity Utilization 109.6%		ICU Level of Service H	
Analysis Period (min) 15			
* User Entered Value			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	193	0	264	0	2425	4	0	2365	112
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	14
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												122
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	210	0	287	0	2636	4	0	2571	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	210	0	287	0	2640	0	0	2571	122
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				7.0		7.0		20.0			20.0	20.0
Minimum Split (s)				13.0		13.0		26.0			26.0	26.0
Total Split (s)				18.0		18.0		92.0			92.0	92.0
Total Split (%)				16.4%		16.4%		83.6%			83.6%	83.6%
Maximum Green (s)				12.0		12.0		86.0			86.0	86.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

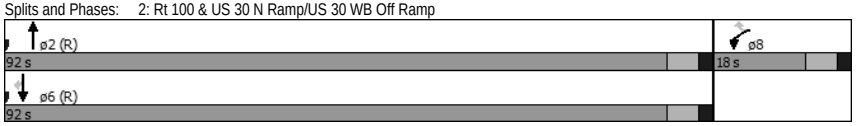
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt 3 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				13.0		13.0		87.0			87.0	87.0
Actuated g/C Ratio				0.12		0.12		0.79			0.79	0.79
v/c Ratio				0.54		0.86		0.54			0.97	0.10
Control Delay				51.5		72.2		2.4			34.0	0.9
Queue Delay				0.0		0.0		0.3			43.0	0.0
Total Delay				51.5		72.2		2.7			77.0	0.9
LOS				D		E		A			E	A
Approach Delay								2.7			73.6	
Approach LOS								A			E	
Queue Length 50th (ft)				73		114		68			1011	7
Queue Length 95th (ft)				111		#195		m67			#1131	m8
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				386		334		4849			2651	1278
Starvation Cap Reductn				0		0		1310			674	0
Spillback Cap Reductn				0		0		252			0	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.54		0.86		0.75			1.30	0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 35 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 40.6		Intersection LOS: D	
Intersection Capacity Utilization 82.3%		ICU Level of Service E	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



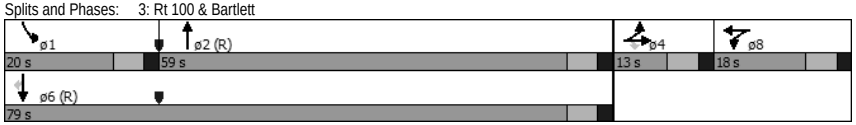
Lanes, Volumes, Timings Alt 3 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\5 - Future with Station Access with 3 Lanes and No Walkertown Exit\Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	5	65	48	7	40	0	2131	89	47	2341	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.944			0.994				0.850
Flt Protected	0.950	0.976			0.975					0.950		
Satd. Flow (prot)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Flt Permitted	0.950	0.976			0.975					0.950		
Satd. Flow (perm)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			149					10				89
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	5	71	52	8	43	0	2316	97	51	2545	24
Shared Lane Traffic (%)	34%											
Lane Group Flow (vph)	10	10	71	0	103	0	0	2413	0	51	2545	24
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left			Left	6x40 Left				6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		20.0	26.0	26.0
Total Split (s)	13.0	13.0	13.0	18.0	18.0			59.0		20.0	79.0	79.0
Total Split (%)	11.8%	11.8%	11.8%	16.4%	16.4%			53.6%		18.2%	71.8%	71.8%
Maximum Green (s)	7.0	7.0	7.0	12.0	12.0			53.0		14.0	73.0	73.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	7.2	7.2	7.2		11.5			66.0		9.9	78.6	78.6
Actuated g/C Ratio	0.07	0.07	0.07		0.10			0.60		0.09	0.71	0.71
v/c Ratio	0.10	0.09	0.30		0.53			0.67		0.35	0.74	0.02
Control Delay	50.0	50.0	3.1		56.3			10.9		56.1	7.6	0.0
Queue Delay	0.0	0.0	0.2		0.0			0.2		0.0	1.0	0.0
Total Delay	50.0	50.0	3.3		56.3			11.1		56.1	8.6	0.0
LOS	D	D	A		E			B		E	A	A
Approach Delay		13.5			56.3			11.1			9.4	
Approach LOS		B			E			B			A	
Queue Length 50th (ft)	7	7	0		69			154		30	568	0
Queue Length 95th (ft)	26	26	0		125			288		m38	642	m0
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	115	118	250		222			3622		221	3441	1168
Starvation Cap Reductn	0	0	0		0			351		0	0	0
Spillback Cap Reductn	0	0	17		0			0		0	573	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.09	0.08	0.30		0.46			0.74		0.23	0.89	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 37 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Rt 100 & Bartlett



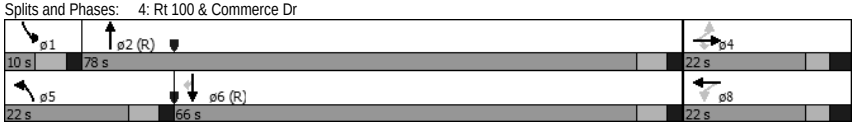
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	23	156	115	27	13	354	2231	84	1	2125	101
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.951			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3236	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.728			0.741			0.950			0.950		
Satd. Flow (perm)	1317	1809	1624	1327	3236	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			159		14			11				149
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	108	25	170	125	29	14	385	2425	91	1	2310	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	25	170	125	43	0	385	2516	0	1	2310	110
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0		22.0	78.0		10.0	66.0	66.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%		20.0%	70.9%		9.1%	60.0%	60.0%
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0		16.0	72.0		4.0	60.0	60.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
4: Rt 100 & Commerce Dr Alt 3 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	14.9	14.9	14.9	14.9	14.9		16.5	83.1		5.0	63.6	63.6
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14		0.15	0.76		0.05	0.58	0.58
v/c Ratio	0.61	0.10	0.47	0.69	0.10		0.77	0.67		0.01	0.83	0.11
Control Delay	59.0	41.4	12.7	65.2	30.4		44.9	20.9		56.0	15.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	59.0	41.4	12.7	65.2	30.4		44.9	20.9		56.0	15.6	0.8
LOS	E	D	B	E	C		D	C		E	B	A
Approach Delay		31.6			56.3			24.1			14.9	
Approach LOS		C			E			C			B	
Queue Length 50th (ft)	71	15	7	84	9		130	646		0	243	1
Queue Length 95th (ft)	130	41	68	#150	26		#173	720		m2	269	m4
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	203	279	385	205	511		512	3782		76	2783	996
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.53	0.09	0.44	0.61	0.08		0.75	0.67		0.01	0.83	0.11

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 98 (89%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.83		
Intersection Signal Delay: 21.6	Intersection LOS: C	
Intersection Capacity Utilization 79.9%	ICU Level of Service D	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



Lanes, Volumes, Timings Alt 3 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\5 - Future with Station Access with 3 Lanes and No Walkertown Entrance\Weekday AM

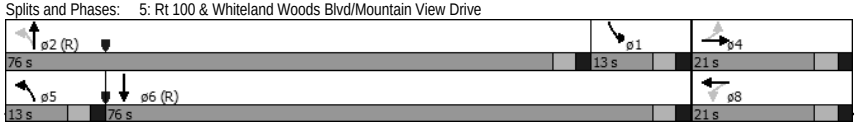
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	26	108	29	22	92	0	2641	426	106	3694	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		200	0		300
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.891			0.879			0.979			0.999	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1572	0	1676	1551	0	1774	4780	0	1676	4813	0
Flt Permitted				0.377						0.950		
Satd. Flow (perm)	0	1572	0	665	1551	0	1774	4780	0	1676	4813	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		117			100			58			2	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		103			249			1573			978	
Travel Time (s)		2.3			5.7			23.8			14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Adj. Flow (vph)	0	28	117	32	24	100	0	2871	463	115	4015	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	145	0	32	124	0	0	3334	0	115	4052	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA		pm+pt	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2					
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	21.0	21.0		21.0	21.0		13.0	76.0		13.0	76.0	
Total Split (%)	19.1%	19.1%		19.1%	19.1%		11.8%	69.1%		11.8%	69.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		8.0	71.0		8.0	71.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)		10.6		10.6	10.6			78.4		9.0	91.4	
Actuated g/C Ratio		0.10		0.10	0.10			0.71		0.08	0.83	
v/c Ratio		0.57		0.51	0.52			0.97		0.84	1.01	
Control Delay		21.6		72.5	21.3			26.0		51.6	16.4	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		21.6		72.5	21.3			26.0		51.6	16.4	
LOS		C		E	C			C		D	B	
Approach Delay		21.6			31.8			26.0			17.4	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)		19		22	16			696		83	~482	
Queue Length 95th (ft)		77		54	70			#1010		m67	m261	
Internal Link Dist (ft)		23			169			1493			898	
Turn Bay Length (ft)												
Base Capacity (vph)		341		102	324			3425		137	4001	
Starvation Cap Reductn		0		0	0			0		0	0	
Spillback Cap Reductn		0		0	0			0		0	0	
Storage Cap Reductn		0		0	0			0		0	0	
Reduced v/c Ratio		0.43		0.31	0.38			0.97		0.84	1.01	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 23 (21%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 21.4		Intersection LOS: C	
Intersection Capacity Utilization 108.5%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountain View Drive



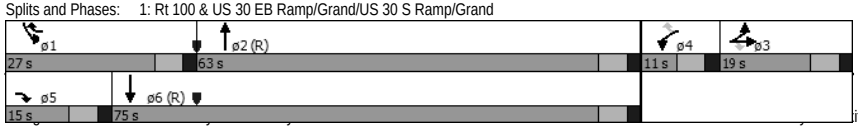
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	431	89	820	0	0	0	0	3054	38	411	3402	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		1	2		1	0		0	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	0.97	1.00	1.00	1.00	*0.91	0.91	1.00	0.91	1.00
Frt			0.850					0.998				
Flt Protected	0.950	0.968								0.950		
Satd. Flow (prot)	1707	1642	2653	3562	0	1897	0	4993	0	1637	4865	0
Flt Permitted	0.950	0.968								0.950		
Satd. Flow (perm)	1707	1642	2653	3562	0	1897	0	4993	0	1637	4865	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			995			693	
Travel Time (s)		27.0			6.2			15.1			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	468	97	891	0	0	0	0	3320	41	447	3698	0
Shared Lane Traffic (%)	40%											
Lane Group Flow (vph)	281	284	891	0	0	0	0	3361	0	447	3698	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3	5	4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	5	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	11.0	11.0	9.0	11.0		10.0		26.0		10.0	26.0	
Total Split (s)	19.0	19.0	15.0	11.0		27.0		63.0		27.0	75.0	
Total Split (%)	15.8%	15.8%	12.5%	9.2%		22.5%		52.5%		22.5%	62.5%	

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 3 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	13.0	13.0	9.0	5.0		21.0		57.0		21.0	69.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lead	Lead		Lead		Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	14.0	14.0	29.0					69.0		22.0	81.0	
Actuated g/C Ratio	0.12	0.12	0.24					0.58		0.18	0.68	
v/c Ratio	1.41	1.49	1.39					1.17		1.49	1.13	
Control Delay	251.5	282.0	220.6					108.4		260.3	72.8	
Queue Delay	0.0	0.0	0.0					0.0		0.0	0.5	
Total Delay	251.5	282.0	220.6					108.4		260.3	73.3	
LOS	F	F	F					F		F	E	
Approach Delay		238.6						108.4			93.5	
Approach LOS		F						F			F	
Queue Length 50th (ft)	~307	~318	~522					~1129		~480	~1239	
Queue Length 95th (ft)	#491	#502	#662					m#968		m#268	m297	
Internal Link Dist (ft)		1307			239			915			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	199	191	641					2870		300	3283	
Starvation Cap Reductn	0	0	0					0		0	494	
Spillback Cap Reductn	0	0	0					0		0	718	
Storage Cap Reductn	0	0	0					0		0	0	
Reduced v/c Ratio	1.41	1.49	1.39					1.17		1.49	1.44	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 100 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.49		
Intersection Signal Delay: 122.6	Intersection LOS: F	
Intersection Capacity Utilization 114.8%	ICU Level of Service H	
Analysis Period (min) 15		
* User Entered Value		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	304	0	560	0	3105	30	0	3508	432
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	12
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850		0.999				0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												309
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	330	0	609	0	3375	33	0	3813	470
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	330	0	609	0	3408	0	0	3813	470
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0		20.0			20.0	20.0
Minimum Split (s)				11.0		11.0		26.0			26.0	26.0
Total Split (s)				25.0		25.0		95.0			95.0	95.0
Total Split (%)				20.8%		20.8%		79.2%			79.2%	79.2%
Maximum Green (s)				19.0		19.0		89.0			89.0	89.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt 3 Weekday PM

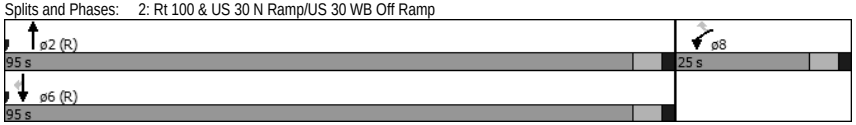
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				20.0		20.0		90.0			90.0	90.0
Actuated g/C Ratio				0.17		0.17		0.75			0.75	0.75
v/c Ratio				0.61		1.29		0.74			1.52	0.39
Control Delay				51.7		187.4		10.9			255.6	1.6
Queue Delay				0.0		16.2		0.9			0.5	5.3
Total Delay				51.7		203.6		11.8			256.1	7.0
LOS				D		F		B			F	A
Approach Delay								11.8			228.8	
Approach LOS								B			F	
Queue Length 50th (ft)				123		~342		348			~2235	35
Queue Length 95th (ft)				173		#469		m291			m#1996	m25
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				544		471		4593			2514	1191
Starvation Cap Reductn				0		0		473			503	645
Spillback Cap Reductn				0		330		807			365	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.61		4.32		0.90			1.90	0.86

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 55 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.52
Intersection Signal Delay: 134.5 Intersection LOS: F
Intersection Capacity Utilization 119.0% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



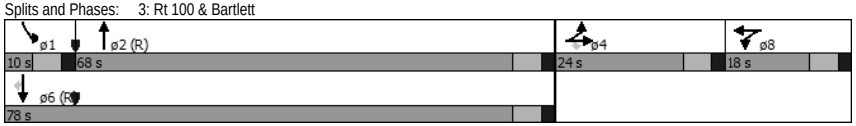
Lanes, Volumes, Timings Alt 3 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\5 - Future with Station Access with 3 Lanes and No Walkertown Exit\Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	4	381	15	10	19	0	3631	34	47	3231	216
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.941			0.999				0.850
Flt Protected	0.950	0.954			0.984					0.950		
Satd. Flow (prot)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Flt Permitted	0.950	0.954			0.984					0.950		
Satd. Flow (perm)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			139					2				143
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	4	414	16	11	21	0	3947	37	51	3512	235
Shared Lane Traffic (%)	49%											
Lane Group Flow (vph)	109	109	414	0	48	0	0	3984	0	51	3512	235
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		10.0	26.0	26.0
Total Split (s)	24.0	24.0	24.0	18.0	18.0			68.0		10.0	78.0	78.0
Total Split (%)	20.0%	20.0%	20.0%	15.0%	15.0%			56.7%		8.3%	65.0%	65.0%
Maximum Green (s)	18.0	18.0	18.0	12.0	12.0			62.0		4.0	72.0	72.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	0.2	0.2			0.2		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	19.0	19.0	19.0		7.4			72.8		5.0	80.8	80.8
Actuated g/C Ratio	0.16	0.16	0.16		0.06			0.61		0.04	0.67	0.67
v/c Ratio	0.44	0.43	1.15		0.42			1.08		0.76	1.08	0.21
Control Delay	51.8	51.8	124.0		64.7			69.0		66.0	64.4	3.7
Queue Delay	0.0	0.0	0.5		0.0			0.9		0.0	8.1	0.0
Total Delay	51.8	51.8	124.6		64.7			69.9		66.0	72.5	3.7
LOS	D	D	F		E			E		E	E	A
Approach Delay		99.5			64.7			69.9			68.1	
Approach LOS		F			E			E			E	
Queue Length 50th (ft)	81	81	~280		37			~1042		37	~1172	39
Queue Length 95th (ft)	143	143	#482		76			m#1060		m28	m830	m29
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	250	251	361		204			3682		67	3245	1124
Starvation Cap Reductn	0	0	0		0			7		0	0	0
Spillback Cap Reductn	0	0	18		0			0		0	653	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.44	0.43	1.21		0.24			1.08		0.76	1.35	0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 71.3		Intersection LOS: E	
Intersection Capacity Utilization 107.5%		ICU Level of Service G	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Rt 100 & Bartlett



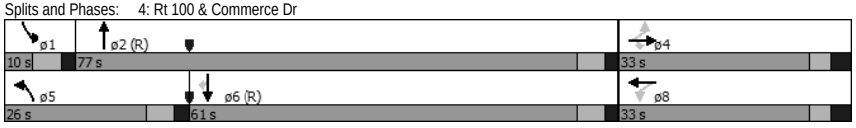
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	213	541	195	75	6	640	3182	117	14	2757	716
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.988			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3362	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.696			0.425			0.950			0.950		
Satd. Flow (perm)	1259	1809	1624	761	3362	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221		7			8				279
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	251	232	588	212	82	7	696	3459	127	15	2997	778
Shared Lane Traffic (%)												
Lane Group Flow (vph)	251	232	588	212	89	0	696	3586	0	15	2997	778
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	33.0	33.0	33.0	33.0	33.0		26.0	77.0		10.0	61.0	61.0
Total Split (%)	27.5%	27.5%	27.5%	27.5%	27.5%		21.7%	64.2%		8.3%	50.8%	50.8%
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0		20.0	71.0		4.0	55.0	55.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
4: Rt 100 & Commerce Dr Alt 3 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	28.0	28.0	28.0	28.0	28.0		21.0	78.0		5.0	56.0	56.0
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23		0.18	0.65		0.04	0.47	0.47
v/c Ratio	0.86	0.55	1.07	1.20	0.11		1.20	1.10		0.21	1.33	0.86
Control Delay	71.2	46.2	87.4	171.5	33.8		129.8	75.0		55.5	179.8	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.1
Total Delay	71.2	46.2	87.4	171.5	33.8		129.8	75.0		55.5	179.8	23.6
LOS	E	D	F	F	C		F	E		E	F	C
Approach Delay		74.7			130.8			83.9			147.2	
Approach LOS		E			F			F			F	
Queue Length 50th (ft)	187	159	~366	~199	26		~332	~1142		11	~1100	255
Queue Length 95th (ft)	#335	243	#590	#355	49		m#301	m#1123		m17	m#1060	m260
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	293	422	548	177	789		580	3256		70	2247	902
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	4
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.86	0.55	1.07	1.20	0.11		1.20	1.10		0.21	1.33	0.87

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 110 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.33		
Intersection Signal Delay: 109.8	Intersection LOS: F	
Intersection Capacity Utilization 115.5%	ICU Level of Service H	
Analysis Period (min) 15		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



Lanes, Volumes, Timings Alt 3 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\5 - Future with Station Access with 3 Lanes and No Walkertown Entrance\Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	13	85	153	34	364	0	3062	192	100	4144	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		200
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.883			0.863			0.991			0.997	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1645	0	1770	1608	0	1872	5065	0	1770	5119	0
Flt Permitted				0.627						0.950		
Satd. Flow (perm)	0	1645	0	1168	1608	0	1872	5065	0	1770	5119	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		54			55			16			6	
Link Speed (mph)		30			30			45			30	
Link Distance (ft)		186			194			1556			995	
Travel Time (s)		4.2			4.4			23.6			22.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	14	92	166	37	396	0	3328	209	109	4504	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	106	0	166	433	0	0	3537	0	109	4606	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	27.0	27.0		27.0	27.0		9.0	82.0		11.0	84.0	
Total Split (%)	22.5%	22.5%		22.5%	22.5%		7.5%	68.3%		9.2%	70.0%	
Maximum Green (s)	22.0	22.0		22.0	22.0		4.0	77.0		6.0	79.0	

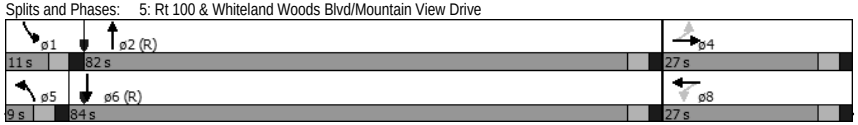
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
5: Rt 100 & Whiteland Woods Blvd/Mountain View Drive Alt 3 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)		23.0		23.0	23.0			78.0		7.0	89.0	
Actuated g/C Ratio		0.19		0.19	0.19			0.65		0.06	0.74	
v/c Ratio		0.30		0.74	1.23			1.07		1.06	1.21	
Control Delay		24.1		66.8	162.2			61.4		100.9	114.9	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.1	
Total Delay		24.1		66.8	162.2			61.4		100.9	115.0	
LOS		C		E	F			E		F	F	
Approach Delay		24.1			135.8			61.4			114.7	
Approach LOS		C			F			E			F	
Queue Length 50th (ft)		34		122	~379			~1115		~93	~1615	
Queue Length 95th (ft)		86		#229	#584			#1193		m75	m#1225	
Internal Link Dist (ft)		106			114			1476			915	
Turn Bay Length (ft)												
Base Capacity (vph)		358		223	352			3297		103	3798	
Starvation Cap Reductn		0		0	0			0		0	283	
Spillback Cap Reductn		0		0	0			0		0	0	
Storage Cap Reductn		0		0	0			0		0	0	
Reduced v/c Ratio		0.30		0.74	1.23			1.07		1.06	1.31	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 94.0		Intersection LOS: F	
Intersection Capacity Utilization 114.0%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountain View Drive



Lanes, Volumes, Timings Alt 3 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\5 - Future with Station Access with 3 Lanes and No Walkertown Exit\Weekday PM

ALTERNATIVE 4

Jug Handle + New Station Access

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	352	156	1412	0	0	0	0	2685	57	0	2260	0
Ideal Flow (vphpl)	1000	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		1	0		0	0		0	0		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	1.00	1.00	1.00	1.00	*0.91	0.91	1.00	0.91	1.00
Frt			0.850					0.997				
Flt Protected	0.950	0.981										
Satd. Flow (prot)	949	1673	2653	0	0	0	0	4988	0	0	4865	0
Flt Permitted	0.950	0.981										
Satd. Flow (perm)	949	1673	2653	0	0	0	0	4988	0	0	4865	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			978			693	
Travel Time (s)		27.0			6.2			14.8			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	383	170	1535	0	0	0	0	2918	62	0	2457	0
Shared Lane Traffic (%)	29%											
Lane Group Flow (vph)	272	281	1535	0	0	0	0	2980	0	0	2457	0
Number of Detectors	1	1	1					2			2	
Detector Template	6x40 Left	6x40 Left	6x40 Left					Thru			Thru	
Leading Detector (ft)	35	35	35					100			100	
Trailing Detector (ft)	-5	-5	-5					0			0	
Detector 1 Position(ft)	-5	-5	-5					0			0	
Detector 1 Size(ft)	40	40	40					6			6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0			0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0			0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0			0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom					NA			NA	
Protected Phases	3	3	5					2			6	
Permitted Phases			3									
Detector Phase	3	3	5					2			6	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0					20.0			20.0	
Minimum Split (s)	9.0	9.0	9.0					26.0			26.0	
Total Split (s)	29.0	29.0	22.0					81.0			59.0	
Total Split (%)	26.4%	26.4%	20.0%					73.6%			53.6%	

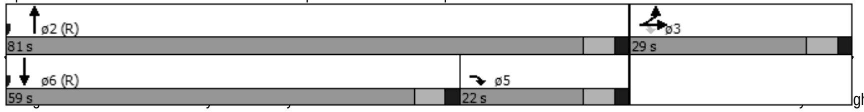
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 4 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	23.0	23.0	16.0					75.0			53.0	
Yellow Time (s)	4.0	4.0	4.0					4.0			4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0			2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0					-1.0			-1.0	
Total Lost Time (s)	5.0	5.0	5.0					5.0			5.0	
Lead/Lag			Lag								Lead	
Lead-Lag Optimize?			Yes								Yes	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Recall Mode	None	None	None					C-Max			C-Max	
Act Effct Green (s)	24.0	24.0	46.0					76.0			54.0	
Actuated g/C Ratio	0.22	0.22	0.42					0.69			0.49	
v/c Ratio	1.31	0.77	1.38					0.86			1.03	
Control Delay	207.4	55.8	207.2					5.6			48.7	
Queue Delay	0.0	0.0	0.0					0.0			1.9	
Total Delay	207.4	55.8	207.2					5.6			50.6	
LOS	F	E	F					A			D	
Approach Delay		186.9						5.6			50.6	
Approach LOS		F						A			D	
Queue Length 50th (ft)	~261	197	~820					229			~677	
Queue Length 95th (ft)	#434	#329	#970					m23			m#724	
Internal Link Dist (ft)		1307			239			898			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	207	365	1109					3446			2388	
Starvation Cap Reductn	0	0	0					9			12	
Spillback Cap Reductn	0	0	0					0			0	
Storage Cap Reductn	0	0	0					0			0	
Reduced v/c Ratio	1.31	0.77	1.38					0.87			1.03	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 26 (24%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.38
Intersection Signal Delay: 70.6 Intersection LOS: E
Intersection Capacity Utilization 106.6% ICU Level of Service G
Analysis Period (min) 15
* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



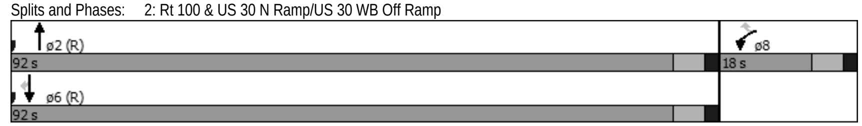
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰		↱↱		↑↑↑↑			↑↑	↱
Volume (vph)	0	0	0	193	0	264	0	2425	4	0	2365	112
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	14
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												122
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	210	0	287	0	2636	4	0	2571	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	210	0	287	0	2640	0	0	2571	122
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				7.0		7.0		20.0			20.0	20.0
Minimum Split (s)				13.0		13.0		26.0			26.0	26.0
Total Split (s)				18.0		18.0		92.0			92.0	92.0
Total Split (%)				16.4%		16.4%		83.6%			83.6%	83.6%
Maximum Green (s)				12.0		12.0		86.0			86.0	86.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				13.0		13.0		87.0			87.0	87.0
Actuated g/C Ratio				0.12		0.12		0.79			0.79	0.79
v/c Ratio				0.54		0.86		0.54			0.97	0.10
Control Delay				51.5		72.2		1.8			34.0	0.9
Queue Delay				0.0		0.0		0.1			43.0	0.0
Total Delay				51.5		72.2		2.0			77.0	0.9
LOS				D		E		A			E	A
Approach Delay								2.0			73.6	
Approach LOS								A			E	
Queue Length 50th (ft)				73		114		54			1011	7
Queue Length 95th (ft)				111		#195		m57			#1131	m8
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				386		334		4849			2651	1278
Starvation Cap Reductn				0		0		905			674	0
Spillback Cap Reductn				0		0		391			212	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.54		0.86		0.67			1.30	0.10

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 35 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 40.3 Intersection LOS: D
Intersection Capacity Utilization 82.3% ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



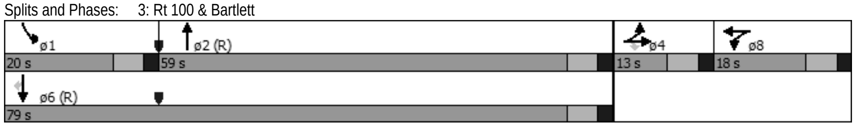
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	5	65	48	7	40	0	2131	89	47	2341	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.944			0.994				0.850
Flt Protected	0.950	0.976			0.975					0.950		
Satd. Flow (prot)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Flt Permitted	0.950	0.976			0.975					0.950		
Satd. Flow (perm)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			149					10				89
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	5	71	52	8	43	0	2316	97	51	2545	24
Shared Lane Traffic (%)	34%											
Lane Group Flow (vph)	10	10	71	0	103	0	0	2413	0	51	2545	24
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		20.0	26.0	26.0
Total Split (s)	13.0	13.0	13.0	18.0	18.0			59.0		20.0	79.0	79.0
Total Split (%)	11.8%	11.8%	11.8%	16.4%	16.4%			53.6%		18.2%	71.8%	71.8%
Maximum Green (s)	7.0	7.0	7.0	12.0	12.0			53.0		14.0	73.0	73.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	7.2	7.2	7.2		11.5			66.0		9.9	78.6	78.6
Actuated g/C Ratio	0.07	0.07	0.07		0.10			0.60		0.09	0.71	0.71
v/c Ratio	0.10	0.09	0.30		0.53			0.67		0.35	0.74	0.02
Control Delay	50.0	50.0	3.1		56.3			12.7		56.1	7.6	0.0
Queue Delay	0.0	0.0	0.2		0.0			0.2		0.0	1.0	0.0
Total Delay	50.0	50.0	3.3		56.3			12.8		56.1	8.6	0.0
LOS	D	D	A		E			B		E	A	A
Approach Delay		13.5			56.3			12.8			9.4	
Approach LOS		B			E			B			A	
Queue Length 50th (ft)	7	7	0		69			165		30	568	0
Queue Length 95th (ft)	26	26	0		125			382		m38	642	m0
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	115	118	250		222			3622		221	3441	1168
Starvation Cap Reductn	0	0	0		0			351		0	0	0
Spillback Cap Reductn	0	0	17		0			0		0	573	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.09	0.08	0.30		0.46			0.74		0.23	0.89	0.02

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 37 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 12.0 Intersection LOS: B
Intersection Capacity Utilization 70.3% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Rt 100 & Bartlett



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	23	156	115	27	13	354	2231	84	1	2125	101
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.951			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3236	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.728			0.741			0.950			0.950		
Satd. Flow (perm)	1317	1809	1624	1327	3236	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			159		14			11				149
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	108	25	170	125	29	14	385	2425	91	1	2310	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	25	170	125	43	0	385	2516	0	1	2310	110
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0		22.0	78.0		10.0	66.0	66.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%		20.0%	70.9%		9.1%	60.0%	60.0%
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0		16.0	72.0		4.0	60.0	60.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

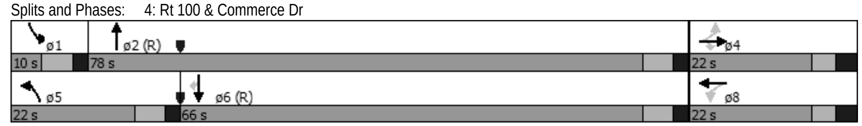
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
4: Rt 100 & Commerce Dr Alt 4 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	14.9	14.9	14.9	14.9	14.9		16.5	83.1		5.0	63.6	63.6
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14		0.15	0.76		0.05	0.58	0.58
v/c Ratio	0.61	0.10	0.47	0.69	0.10		0.77	0.67		0.01	0.83	0.11
Control Delay	59.0	41.4	12.7	65.2	30.4		44.8	20.9		56.0	15.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	59.0	41.4	12.7	65.2	30.4		44.8	20.9		56.0	15.6	0.8
LOS	E	D	B	E	C		D	C		E	B	A
Approach Delay		31.6			56.3			24.1			14.9	
Approach LOS		C			E			C			B	
Queue Length 50th (ft)	71	15	7	84	9		130	646		0	243	1
Queue Length 95th (ft)	130	41	68	#150	26		#173	720		m2	269	m4
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	203	279	385	205	511		512	3782		76	2783	996
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.53	0.09	0.44	0.61	0.08		0.75	0.67		0.01	0.83	0.11

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 98 (89%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 21.6 Intersection LOS: C
Intersection Capacity Utilization 79.9% ICU Level of Service D
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Rt 100 & Commerce Dr



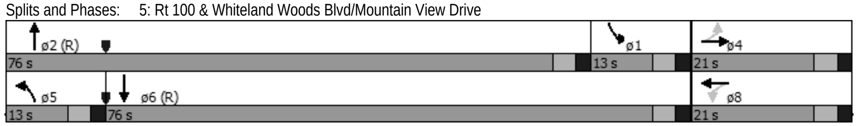
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣		↰	↱		↰	↑↑↱		↰	↑↑↱	
Volume (vph)	0	26	108	29	22	92	0	2641	426	106	3694	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		200	0		300
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.891			0.879			0.979			0.999	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1572	0	1676	1551	0	1774	4780	0	1676	4813	0
Flt Permitted				0.377						0.950		
Satd. Flow (perm)	0	1572	0	665	1551	0	1774	4780	0	1676	4813	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		117			100			58			2	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		103			249			1573			978	
Travel Time (s)		2.3			5.7			23.8			14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Adj. Flow (vph)	0	28	117	32	24	100	0	2871	463	115	4015	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	145	0	32	124	0	0	3334	0	115	4052	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	21.0	21.0		21.0	21.0		13.0	76.0		13.0	76.0	
Total Split (%)	19.1%	19.1%		19.1%	19.1%		11.8%	69.1%		11.8%	69.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		8.0	71.0		8.0	71.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)		10.6		10.6	10.6			78.4		9.0	91.4	
Actuated g/C Ratio		0.10		0.10	0.10			0.71		0.08	0.83	
v/c Ratio		0.57		0.51	0.52			0.97		0.84	1.01	
Control Delay		21.6		72.5	21.3			26.0		51.5	14.9	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		21.6		72.5	21.3			26.0		51.5	14.9	
LOS		C		E	C			C		D	B	
Approach Delay		21.6			31.8			26.0			15.9	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)		19		22	16			696		80	~479	
Queue Length 95th (ft)		77		54	70			#1010		m72	m341	
Internal Link Dist (ft)		23			169			1493			898	
Turn Bay Length (ft)												
Base Capacity (vph)		341		102	324			3425		137	4001	
Starvation Cap Reductn		0		0	0			0		0	0	
Spillback Cap Reductn		0		0	0			0		0	0	
Storage Cap Reductn		0		0	0			0		0	0	
Reduced v/c Ratio		0.43		0.31	0.38			0.97		0.84	1.01	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 23 (21%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 20.6 Intersection LOS: C
Intersection Capacity Utilization 108.5% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountain View Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	431	500	820	0	0	0	0	3054	38	0	3813	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		1	0		0	0		0	0		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	1.00	1.00	1.00	1.00	*0.91	0.91	1.00	0.91	1.00
Frt			0.850					0.998				
Flt Protected	0.950	0.996										
Satd. Flow (prot)	1707	1709	2653	0	0	0	0	4993	0	0	4865	0
Flt Permitted	0.950	0.996										
Satd. Flow (perm)	1707	1709	2653	0	0	0	0	4993	0	0	4865	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			995			693	
Travel Time (s)		27.0			6.2			15.1			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	468	543	891	0	0	0	0	3320	41	0	4145	0
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	421	590	891	0	0	0	0	3361	0	0	4145	0
Number of Detectors	1	1	1					2			2	
Detector Template	6x40 Left	6x40 Left	6x40 Left					Thru			Thru	
Leading Detector (ft)	35	35	35					100			100	
Trailing Detector (ft)	-5	-5	-5					0			0	
Detector 1 Position(ft)	-5	-5	-5					0			0	
Detector 1 Size(ft)	40	40	40					6			6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0			0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0			0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0			0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom					NA			NA	
Protected Phases	3	3	5					2			6	
Permitted Phases			3									
Detector Phase	3	3	5					2			6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	3.0					20.0			20.0	
Minimum Split (s)	11.0	11.0	9.0					26.0			26.0	
Total Split (s)	27.0	27.0	11.0					93.0			82.0	
Total Split (%)	22.5%	22.5%	9.2%					77.5%			68.3%	

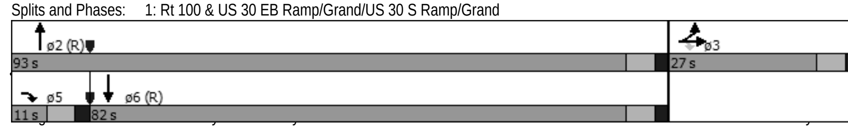
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 4 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	21.0	5.0					87.0			76.0	
Yellow Time (s)	4.0	4.0	4.0					4.0			4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0			2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0					-1.0			-1.0	
Total Lost Time (s)	5.0	5.0	5.0					5.0			5.0	
Lead/Lag			Lead								Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Recall Mode	None	None	None					C-Max			C-Max	
Act Effct Green (s)	22.0	22.0	33.0					88.0			77.0	
Actuated g/C Ratio	0.18	0.18	0.28					0.73			0.64	
v/c Ratio	1.35	1.88	1.22					0.92			1.33	
Control Delay	215.4	438.9	150.1					2.1			166.4	
Queue Delay	0.0	0.0	0.0					0.5			0.4	
Total Delay	215.4	438.9	150.1					2.6			166.8	
LOS	F	F	F					A			F	
Approach Delay		254.2						2.6			166.8	
Approach LOS		F						A			F	
Queue Length 50th (ft)	~448	~734	~481					79			~1527	
Queue Length 95th (ft)	#658	#969	#622					m65			m472	
Internal Link Dist (ft)		1307			239			915			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	312	313	729					3661			3121	
Starvation Cap Reductn	0	0	0					74			299	
Spillback Cap Reductn	0	0	0					0			533	
Storage Cap Reductn	0	0	0					0			0	
Reduced v/c Ratio	1.35	1.88	1.22					0.94			1.60	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 72 (60%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.88
Intersection Signal Delay: 125.8 Intersection LOS: F
Intersection Capacity Utilization 116.4% ICU Level of Service H
Analysis Period (min) 15
* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



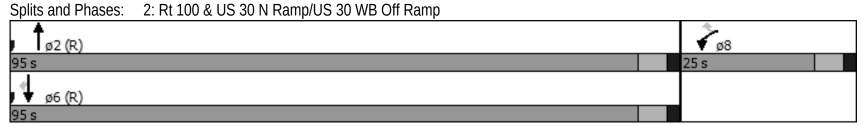
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰		↱↱		↑↑↑↑			↑↑	↱
Volume (vph)	0	0	0	304	0	560	0	3105	30	0	3508	432
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	12
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850		0.999				0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												309
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	330	0	609	0	3375	33	0	3813	470
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	330	0	609	0	3408	0	0	3813	470
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0		20.0			20.0	20.0
Minimum Split (s)				11.0		11.0		26.0			26.0	26.0
Total Split (s)				25.0		25.0		95.0			95.0	95.0
Total Split (%)				20.8%		20.8%		79.2%			79.2%	79.2%
Maximum Green (s)				19.0		19.0		89.0			89.0	89.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				20.0		20.0		90.0			90.0	90.0
Actuated g/C Ratio				0.17		0.17		0.75			0.75	0.75
v/c Ratio				0.61		1.29		0.74			1.52	0.39
Control Delay				51.7		187.4		6.0			255.6	1.6
Queue Delay				0.0		16.2		0.3			0.8	5.3
Total Delay				51.7		203.6		6.4			256.4	7.0
LOS				D		F		A			F	A
Approach Delay								6.4			229.0	
Approach LOS								A			F	
Queue Length 50th (ft)				123		~342		222			~2235	35
Queue Length 95th (ft)				173		#469		m221			m#1996	m25
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				544		471		4593			2514	1191
Starvation Cap Reductn				0		0		473			503	645
Spillback Cap Reductn				0		330		509			691	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.61		4.32		0.83			2.09	0.86

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 55 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.52
Intersection Signal Delay: 132.5 Intersection LOS: F
Intersection Capacity Utilization 119.0% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp

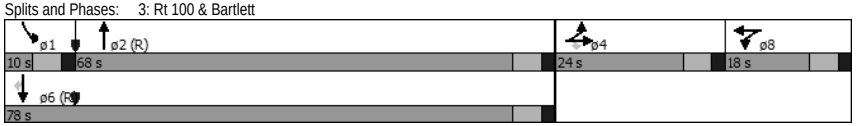


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	4	381	15	10	19	0	3631	34	47	3231	216
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.941			0.999				0.850
Flt Protected	0.950	0.954			0.984					0.950		
Satd. Flow (prot)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Flt Permitted	0.950	0.954			0.984					0.950		
Satd. Flow (perm)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			139					2				143
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	4	414	16	11	21	0	3947	37	51	3512	235
Shared Lane Traffic (%)	49%											
Lane Group Flow (vph)	109	109	414	0	48	0	0	3984	0	51	3512	235
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		10.0	26.0	26.0
Total Split (s)	24.0	24.0	24.0	18.0	18.0			68.0		10.0	78.0	78.0
Total Split (%)	20.0%	20.0%	20.0%	15.0%	15.0%			56.7%		8.3%	65.0%	65.0%
Maximum Green (s)	18.0	18.0	18.0	12.0	12.0			62.0		4.0	72.0	72.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	0.2	0.2			0.2		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	19.0	19.0	19.0		7.4			72.8		5.0	80.8	80.8
Actuated g/C Ratio	0.16	0.16	0.16		0.06			0.61		0.04	0.67	0.67
v/c Ratio	0.44	0.43	1.15		0.42			1.08		0.76	1.08	0.21
Control Delay	51.8	51.8	124.0		64.7			63.7		66.0	64.4	3.7
Queue Delay	0.0	0.0	0.5		0.0			0.9		0.0	8.1	0.0
Total Delay	51.8	51.8	124.6		64.7			64.6		66.0	72.5	3.7
LOS	D	D	F		E			E		E	E	A
Approach Delay		99.5			64.7			64.6			68.1	
Approach LOS		F			E			E			E	
Queue Length 50th (ft)	81	81	~280		37			~1050		37	~1172	39
Queue Length 95th (ft)	143	143	#482		76			m#1069		m28	m830	m29
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	250	251	361		204			3682		67	3245	1124
Starvation Cap Reductn	0	0	0		0			7		0	0	0
Spillback Cap Reductn	0	0	18		0			0		0	653	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.44	0.43	1.21		0.24			1.08		0.76	1.35	0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 68.8		Intersection LOS: E	
Intersection Capacity Utilization 107.5%		ICU Level of Service G	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Rt 100 & Bartlett



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰↰	↑↑↑		↰	↑↑↑	↱
Volume (vph)	231	213	541	195	75	6	640	3182	117	14	2757	716
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.988			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3362	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.696			0.425			0.950			0.950		
Satd. Flow (perm)	1259	1809	1624	761	3362	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221		7			8				279
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	251	232	588	212	82	7	696	3459	127	15	2997	778
Shared Lane Traffic (%)												
Lane Group Flow (vph)	251	232	588	212	89	0	696	3586	0	15	2997	778
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	33.0	33.0	33.0	33.0	33.0		26.0	77.0		10.0	61.0	61.0
Total Split (%)	27.5%	27.5%	27.5%	27.5%	27.5%		21.7%	64.2%		8.3%	50.8%	50.8%
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0		20.0	71.0		4.0	55.0	55.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

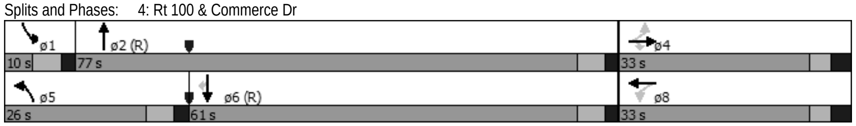
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
4: Rt 100 & Commerce Dr Alt 4 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	28.0	28.0	28.0	28.0	28.0		21.0	78.0		5.0	56.0	56.0
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23		0.18	0.65		0.04	0.47	0.47
v/c Ratio	0.86	0.55	1.07	1.20	0.11		1.20	1.10		0.21	1.33	0.86
Control Delay	71.2	46.2	87.4	171.5	33.8		131.3	74.5		55.5	179.8	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.1
Total Delay	71.2	46.2	87.4	171.5	33.8		131.3	74.5		55.5	179.8	23.6
LOS	E	D	F	F	C		F	E		E	F	C
Approach Delay		74.7			130.8			83.8			147.2	
Approach LOS		E			F			F			F	
Queue Length 50th (ft)	187	159	~366	~199	26		~332	~1142		11	~1100	255
Queue Length 95th (ft)	#335	243	#590	#355	49		m#301	m#1123		m17	m#1060	m260
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	293	422	548	177	789		580	3256		70	2247	902
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	4
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.86	0.55	1.07	1.20	0.11		1.20	1.10		0.21	1.33	0.87

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 110 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.33
Intersection Signal Delay: 109.7 Intersection LOS: F
Intersection Capacity Utilization 115.5% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Rt 100 & Commerce Dr



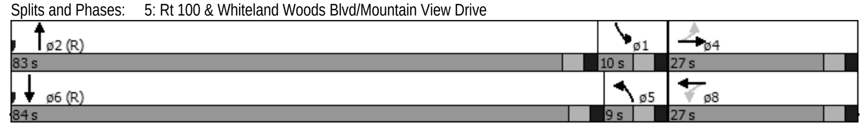
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑↑↱		↰	↑↑↱	
Volume (vph)	0	13	85	153	34	364	0	3062	192	100	4144	94
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		200
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.883			0.863			0.991			0.997	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1558	0	1676	1523	0	1774	4798	0	1676	4850	0
Flt Permitted				0.627						0.950		
Satd. Flow (perm)	0	1558	0	1106	1523	0	1774	4798	0	1676	4850	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53			54			17			6	
Link Speed (mph)		30			30			45			30	
Link Distance (ft)		186			194			1556			995	
Travel Time (s)		4.2			4.4			23.6			22.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	14	92	166	37	396	0	3328	209	109	4504	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	106	0	166	433	0	0	3537	0	109	4606	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	27.0	27.0		27.0	27.0		9.0	83.0		10.0	84.0	
Total Split (%)	22.5%	22.5%		22.5%	22.5%		7.5%	69.2%		8.3%	70.0%	
Maximum Green (s)	22.0	22.0		22.0	22.0		4.0	78.0		5.0	79.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lag	Lead		Lag	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)		23.0		23.0	23.0			79.0		6.0	89.0	
Actuated g/C Ratio		0.19		0.19	0.19			0.66		0.05	0.74	
v/c Ratio		0.31		0.79	1.29			1.12		1.31	1.28	
Control Delay		24.7		72.2	187.1			80.0		191.4	144.1	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		24.7		72.2	187.1			80.0		191.4	144.1	
LOS		C		E	F			E		F	F	
Approach Delay		24.7			155.2			80.0			145.2	
Approach LOS		C			F			E			F	
Queue Length 50th (ft)		35		124	~394			~1156		~108	~1654	
Queue Length 95th (ft)		87		#239	#599			#1233		m#66	m476	
Internal Link Dist (ft)		106			114			1476			915	
Turn Bay Length (ft)												
Base Capacity (vph)		341		211	335			3164		83	3598	
Starvation Cap Reductn		0		0	0			0		0	30	
Spillback Cap Reductn		0		0	0			0		0	0	
Storage Cap Reductn		0		0	0			0		0	0	
Reduced v/c Ratio		0.31		0.79	1.29			1.12		1.31	1.29	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 55 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.31
Intersection Signal Delay: 118.7 Intersection LOS: F
Intersection Capacity Utilization 120.0% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountain View Drive



ALTERNATIVE 5

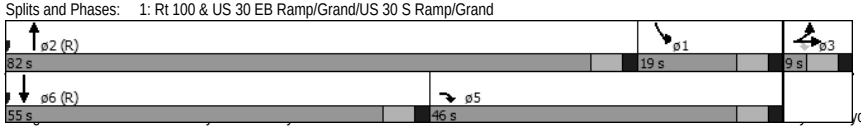
Flyover Ramp + New Station Access

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	1419	0	0	0	0	2685	57	149	2409	0
Ideal Flow (vphpl)	1000	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	*0.91	0.91	1.00	0.91	1.00
Frt			0.850					0.997				
Flt Protected										0.950		
Satd. Flow (prot)	0	1809	2653	0	0	0	0	4988	0	1637	4865	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	1809	2653	0	0	0	0	4988	0	1637	4865	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			978			693	
Travel Time (s)		27.0			6.2			14.8			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	0	0	1542	0	0	0	0	2918	62	162	2618	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	1542	0	0	0	0	2980	0	162	2618	0
Number of Detectors	1	1	1					2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left					Thru		Left	Thru	
Leading Detector (ft)	35	35	35					100		20	100	
Trailing Detector (ft)	-5	-5	-5					0		0	0	
Detector 1 Position(ft)	-5	-5	-5					0		0	0	
Detector 1 Size(ft)	40	40	40					6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type			custom					NA		Prot	NA	
Protected Phases	3	3	5					2		1	6	
Permitted Phases			3									
Detector Phase	3	3	5					2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0					20.0		3.0	20.0	
Minimum Split (s)	9.0	9.0	9.0					26.0		9.0	26.0	
Total Split (s)	9.0	9.0	46.0					82.0		19.0	55.0	
Total Split (%)	8.2%	8.2%	41.8%					74.5%		17.3%	50.0%	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	3.0	3.0	40.0					76.0		13.0	49.0	
Yellow Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0	-1.0					-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0	5.0					5.0		5.0	5.0	
Lead/Lag			Lag					Lead		Lag	Lead	
Lead-Lag Optimize?			Yes					Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Recall Mode	None	None	None					C-Max		None	C-Max	
Act Effct Green (s)			41.0					86.0		14.0	59.0	
Actuated g/C Ratio			0.37					0.78		0.13	0.54	
v/c Ratio			1.56					0.76		0.78	1.00	
Control Delay			285.3					0.8		51.2	38.1	
Queue Delay			0.0					0.4		0.0	0.0	
Total Delay			285.3					1.3		51.2	38.1	
LOS			F					A		D	D	
Approach Delay								1.3			38.9	
Approach LOS								A			D	
Queue Length 50th (ft)			~876					6		110	~609	
Queue Length 95th (ft)			#1026					m8		m119	m#753	
Internal Link Dist (ft)		1307			239			898			613	
Turn Bay Length (ft)			200									
Base Capacity (vph)			988					3899		208	2609	
Starvation Cap Reductn			0					394		0	0	
Spillback Cap Reductn			0					0		0	0	
Storage Cap Reductn			0					0		0	0	
Reduced v/c Ratio			1.56					0.85		0.78	1.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 31 (28%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.56			
Intersection Signal Delay: 75.5		Intersection LOS: E	
Intersection Capacity Utilization 109.9%		ICU Level of Service H	
Analysis Period (min) 15			
* User Entered Value			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	193	0	616	0	2425	4	0	2365	112
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	14
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												122
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	210	0	670	0	2636	4	0	2571	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	210	0	670	0	2640	0	0	2571	122
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				7.0		7.0		20.0			20.0	20.0
Minimum Split (s)				13.0		13.0		26.0			26.0	26.0
Total Split (s)				18.0		18.0		92.0			92.0	92.0
Total Split (%)				16.4%		16.4%		83.6%			83.6%	83.6%
Maximum Green (s)				12.0		12.0		86.0			86.0	86.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt 5 Weekday AM

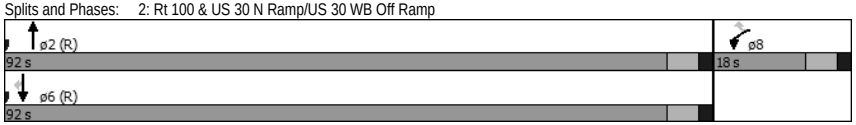
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				13.0		13.0		87.0			87.0	87.0
Actuated g/C Ratio				0.12		0.12		0.79			0.79	0.79
v/c Ratio				0.54		2.01		0.54			0.97	0.10
Control Delay				51.5		490.2		0.4			34.0	0.9
Queue Delay				0.0		1.2		0.1			43.0	0.0
Total Delay				51.5		491.4		0.4			77.0	0.9
LOS				D		F		A			E	A
Approach Delay								0.4			73.6	
Approach LOS								A			E	
Queue Length 50th (ft)				73		~421		0			1011	7
Queue Length 95th (ft)				111		#548		0			#1131	m8
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				386		334		4849			2651	1278
Starvation Cap Reductn				0		0		614			674	0
Spillback Cap Reductn				0		32		374			0	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.54		2.22		0.62			1.30	0.10

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 35 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.01
Intersection Signal Delay: 86.8 Intersection LOS: F
Intersection Capacity Utilization 82.3% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



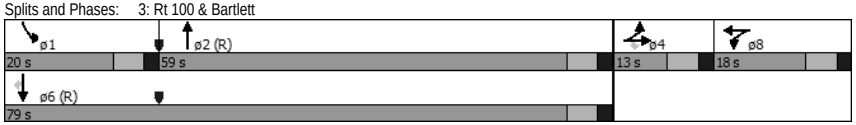
Lanes, Volumes, Timings Alt 5 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\6 - Future with Station Access with 3 Lanes and No Walkertown Exit and Flyover\Weekday

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	5	65	48	7	40	0	2131	89	47	2341	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.944			0.994				0.850
Flt Protected	0.950	0.976			0.975					0.950		
Satd. Flow (prot)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Flt Permitted	0.950	0.976			0.975					0.950		
Satd. Flow (perm)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			149					10				89
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	5	71	52	8	43	0	2316	97	51	2545	24
Shared Lane Traffic (%)	34%											
Lane Group Flow (vph)	10	10	71	0	103	0	0	2413	0	51	2545	24
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		20.0	26.0	26.0
Total Split (s)	13.0	13.0	13.0	18.0	18.0			59.0		20.0	79.0	79.0
Total Split (%)	11.8%	11.8%	11.8%	16.4%	16.4%			53.6%		18.2%	71.8%	71.8%
Maximum Green (s)	7.0	7.0	7.0	12.0	12.0			53.0		14.0	73.0	73.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	7.2	7.2	7.2		11.5			66.0		9.9	78.6	78.6
Actuated g/C Ratio	0.07	0.07	0.07		0.10			0.60		0.09	0.71	0.71
v/c Ratio	0.10	0.09	0.30		0.53			0.67		0.35	0.74	0.02
Control Delay	50.0	50.0	3.1		56.3			14.4		56.1	7.6	0.0
Queue Delay	0.0	0.0	0.2		0.0			0.4		0.0	1.0	0.0
Total Delay	50.0	50.0	3.3		56.3			14.8		56.1	8.6	0.0
LOS	D	D	A		E			B		E	A	A
Approach Delay		13.5			56.3			14.8			9.4	
Approach LOS		B			E			B			A	
Queue Length 50th (ft)	7	7	0		69			287		30	568	0
Queue Length 95th (ft)	26	26	0		125			m306		m38	642	m0
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	115	118	250		222			3622		221	3441	1168
Starvation Cap Reductn	0	0	0		0			564		0	0	0
Spillback Cap Reductn	0	0	17		0			0		0	573	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.09	0.08	0.30		0.46			0.79		0.23	0.89	0.02

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 37 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 80		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.74		
Intersection Signal Delay: 12.9	Intersection LOS: B	
Intersection Capacity Utilization 70.3%	ICU Level of Service C	
Analysis Period (min) 15		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 3: Rt 100 & Bartlett



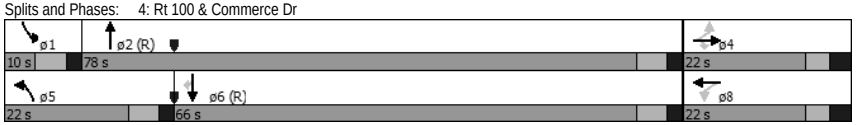
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	23	156	115	27	13	354	2231	84	1	2125	101
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.951			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3236	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.728			0.741			0.950			0.950		
Satd. Flow (perm)	1317	1809	1624	1327	3236	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			159		14			11				149
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	108	25	170	125	29	14	385	2425	91	1	2310	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	25	170	125	43	0	385	2516	0	1	2310	110
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0		22.0	78.0		10.0	66.0	66.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%		20.0%	70.9%		9.1%	60.0%	60.0%
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0		16.0	72.0		4.0	60.0	60.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
4: Rt 100 & Commerce Dr Alt 5 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	14.9	14.9	14.9	14.9	14.9		16.5	83.1		5.0	63.6	63.6
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14		0.15	0.76		0.05	0.58	0.58
v/c Ratio	0.61	0.10	0.47	0.69	0.10		0.77	0.67		0.01	0.83	0.11
Control Delay	59.0	41.4	12.7	65.2	30.4		43.5	21.8		56.0	15.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	59.0	41.4	12.7	65.2	30.4		43.5	21.8		56.0	15.6	0.8
LOS	E	D	B	E	C		D	C		E	B	A
Approach Delay		31.6			56.3			24.6			14.9	
Approach LOS		C			E			C			B	
Queue Length 50th (ft)	71	15	7	84	9		132	645		0	243	1
Queue Length 95th (ft)	130	41	68	#150	26		#173	720		m2	269	m4
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	203	279	385	205	511		512	3782		76	2783	996
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.53	0.09	0.44	0.61	0.08		0.75	0.67		0.01	0.83	0.11

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 98 (89%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.83		
Intersection Signal Delay: 21.9	Intersection LOS: C	
Intersection Capacity Utilization 79.9%	ICU Level of Service D	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



Lanes, Volumes, Timings Alt 5 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\6 - Future with Station Access with 3 Lanes and No Walkertown Extended Flyover\Weekday

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	26	108	29	22	92	0	2641	426	106	3694	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		200	0		300
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.891			0.879			0.979			0.999	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1572	0	1676	1551	0	1774	4780	0	1676	4813	0
Flt Permitted				0.377						0.950		
Satd. Flow (perm)	0	1572	0	665	1551	0	1774	4780	0	1676	4813	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		111			100			58			2	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		103			249			1573			978	
Travel Time (s)		2.3			5.7			23.8			14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Adj. Flow (vph)	0	28	117	32	24	100	0	2871	463	115	4015	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	145	0	32	124	0	0	3334	0	115	4052	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	21.0	21.0		21.0	21.0		13.0	76.0		13.0	76.0	
Total Split (%)	19.1%	19.1%		19.1%	19.1%		11.8%	69.1%		11.8%	69.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		8.0	71.0		8.0	71.0	

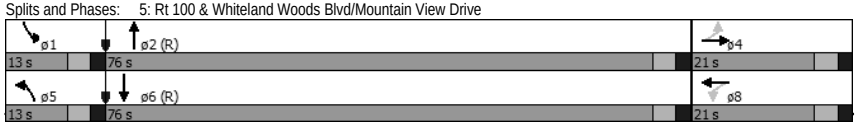
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)		10.6		10.6	10.6			74.9		12.6	91.4	
Actuated g/C Ratio		0.10		0.10	0.10			0.68		0.11	0.83	
v/c Ratio		0.58		0.50	0.52			1.02		0.60	1.01	
Control Delay		23.4		72.2	21.3			39.5		49.0	16.5	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		23.4		72.2	21.3			39.5		49.0	16.5	
LOS		C		E	C			D		D	B	
Approach Delay		23.4			31.7			39.5			17.4	
Approach LOS		C			C			D			B	
Queue Length 50th (ft)		23		22	16			~939		76	~586	
Queue Length 95th (ft)		82		54	70			#1030		m68	m476	
Internal Link Dist (ft)		23			169			1493			898	
Turn Bay Length (ft)												
Base Capacity (vph)		336		102	324			3271		191	4000	
Starvation Cap Reductn		0		0	0			0		0	0	
Spillback Cap Reductn		0		0	0			0		0	0	
Storage Cap Reductn		0		0	0			0		0	0	
Reduced v/c Ratio		0.43		0.31	0.38			1.02		0.60	1.01	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 11 (10%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 27.2 Intersection LOS: C
Intersection Capacity Utilization 108.5% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountain View Drive



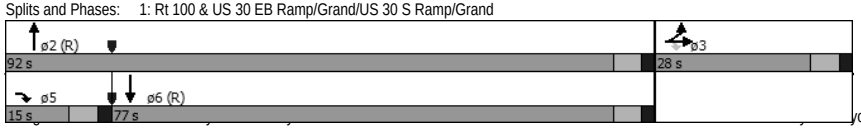
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	411	909	0	0	0	0	3054	38	0	3402	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		1	0		0	0		0	0		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	1.00	1.00	1.00	1.00	*0.91	0.91	1.00	0.91	1.00
Frt			0.850					0.998				
Flt Protected												
Satd. Flow (prot)	1797	1719	2653	0	0	0	0	4993	0	0	4865	0
Flt Permitted												
Satd. Flow (perm)	1797	1719	2653	0	0	0	0	4993	0	0	4865	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			995			693	
Travel Time (s)		27.0			6.2			15.1			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	0	447	988	0	0	0	0	3320	41	0	3698	0
Shared Lane Traffic (%)	0%											
Lane Group Flow (vph)	0	447	988	0	0	0	0	3361	0	0	3698	0
Number of Detectors	1	1	1					2			2	
Detector Template	6x40 Left	6x40 Left	6x40 Left					Thru			Thru	
Leading Detector (ft)	35	35	35					100			100	
Trailing Detector (ft)	-5	-5	-5					0			0	
Detector 1 Position(ft)	-5	-5	-5					0			0	
Detector 1 Size(ft)	40	40	40					6			6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0			0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0			0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0			0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom					NA			NA	
Protected Phases	3	3	5					2			6	
Permitted Phases			3									
Detector Phase	3	3	5					2			6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	3.0					20.0			20.0	
Minimum Split (s)	11.0	11.0	9.0					26.0			26.0	
Total Split (s)	28.0	28.0	15.0					92.0			77.0	
Total Split (%)	23.3%	23.3%	12.5%					76.7%			64.2%	

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 5 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	22.0	22.0	9.0					86.0			71.0	
Yellow Time (s)	4.0	4.0	4.0					4.0			4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0			2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0					-1.0			-1.0	
Total Lost Time (s)	5.0	5.0	5.0					5.0			5.0	
Lead/Lag			Lead								Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Recall Mode	None	None	None					C-Max			C-Max	
Act Effct Green (s)		23.0	38.0					87.0			72.0	
Actuated g/C Ratio		0.19	0.32					0.72			0.60	
v/c Ratio		1.36	1.18					0.93			1.27	
Control Delay		217.9	128.9					3.1			150.9	
Queue Delay		0.0	0.0					0.4			0.3	
Total Delay		217.9	128.9					3.5			151.2	
LOS		F	F					A			F	
Approach Delay		156.7						3.5			151.2	
Approach LOS		F						A			F	
Queue Length 50th (ft)		~478	~519					88			~1321	
Queue Length 95th (ft)		#692	#663					m82			m702	
Internal Link Dist (ft)		1307			239			915			613	
Turn Bay Length (ft)			200									
Base Capacity (vph)		329	840					3619			2919	
Starvation Cap Reductn		0	0					46			432	
Spillback Cap Reductn		0	0					0			402	
Storage Cap Reductn		0	0					0			0	
Reduced v/c Ratio		1.36	1.18					0.94			1.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.36			
Intersection Signal Delay: 93.7		Intersection LOS: F	
Intersection Capacity Utilization 111.3%		ICU Level of Service H	
Analysis Period (min) 15			
* User Entered Value			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	304	0	991	0	3105	30	0	3508	432
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	12
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850		0.999				0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												309
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	330	0	1077	0	3375	33	0	3813	470
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	330	0	1077	0	3408	0	0	3813	470
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0		20.0			20.0	20.0
Minimum Split (s)				11.0		11.0		26.0			26.0	26.0
Total Split (s)				25.0		25.0		95.0			95.0	95.0
Total Split (%)				20.8%		20.8%		79.2%			79.2%	79.2%
Maximum Green (s)				19.0		19.0		89.0			89.0	89.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

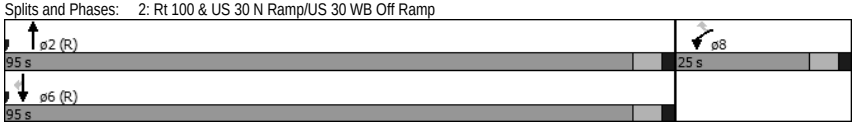
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt 5 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				20.0		20.0		90.0			90.0	90.0
Actuated g/C Ratio				0.17		0.17		0.75			0.75	0.75
v/c Ratio				0.61		2.29		0.74			1.52	0.39
Control Delay				51.7		610.0		16.0			255.6	1.6
Queue Delay				64.2		16.2		0.3			1.0	5.3
Total Delay				115.9		626.3		16.3			256.5	7.0
LOS				F		F		B			F	A
Approach Delay								16.3			229.1	
Approach LOS								B			F	
Queue Length 50th (ft)				123		~770		546			~2235	35
Queue Length 95th (ft)				173		#915		565			m#1996	m25
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				544		471		4593			2514	1191
Starvation Cap Reductn				0		0		477			503	645
Spillback Cap Reductn				348		330		128			792	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				1.68		7.64		0.83			2.21	0.86

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 55 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 2.29			
Intersection Signal Delay: 192.3		Intersection LOS: F	
Intersection Capacity Utilization 119.0%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



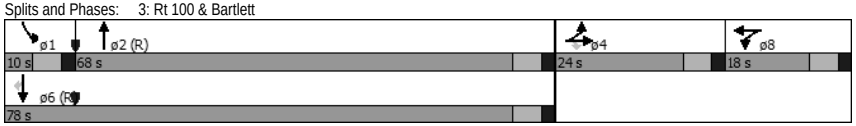
Lanes, Volumes, Timings Alt 5 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\6 - Future with Station Access with 3 Lanes and No Walkertown Exit and Flyover\Weekday

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	4	381	15	10	19	0	3631	34	47	3231	216
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.941			0.999				0.850
Flt Protected	0.950	0.954			0.984					0.950		
Satd. Flow (prot)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Flt Permitted	0.950	0.954			0.984					0.950		
Satd. Flow (perm)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			139					2				143
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	4	414	16	11	21	0	3947	37	51	3512	235
Shared Lane Traffic (%)	49%											
Lane Group Flow (vph)	109	109	414	0	48	0	0	3984	0	51	3512	235
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		10.0	26.0	26.0
Total Split (s)	24.0	24.0	24.0	18.0	18.0			68.0		10.0	78.0	78.0
Total Split (%)	20.0%	20.0%	20.0%	15.0%	15.0%			56.7%		8.3%	65.0%	65.0%
Maximum Green (s)	18.0	18.0	18.0	12.0	12.0			62.0		4.0	72.0	72.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	0.2	0.2			0.2		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	19.0	19.0	19.0		7.4			72.8		5.0	80.8	80.8
Actuated g/C Ratio	0.16	0.16	0.16		0.06			0.61		0.04	0.67	0.67
v/c Ratio	0.44	0.43	1.15		0.42			1.08		0.76	1.08	0.21
Control Delay	51.8	51.8	124.0		64.7			59.5		66.0	64.4	3.7
Queue Delay	0.0	0.0	0.5		0.0			7.9		0.0	8.1	0.0
Total Delay	51.8	51.8	124.6		64.7			67.4		66.0	72.5	3.7
LOS	D	D	F		E			E		E	E	A
Approach Delay		99.5			64.7			67.4			68.1	
Approach LOS		F			E			E			E	
Queue Length 50th (ft)	81	81	~280		37			~1082		37	~1172	39
Queue Length 95th (ft)	143	143	#482		76			m#550		m28	m830	m29
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	250	251	361		204			3682		67	3245	1124
Starvation Cap Reductn	0	0	0		0			267		0	0	0
Spillback Cap Reductn	0	0	18		0			0		0	653	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.44	0.43	1.21		0.24			1.17		0.76	1.35	0.21

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.15		
Intersection Signal Delay: 70.1	Intersection LOS: E	
Intersection Capacity Utilization 107.5%	ICU Level of Service G	
Analysis Period (min) 15		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 3: Rt 100 & Bartlett

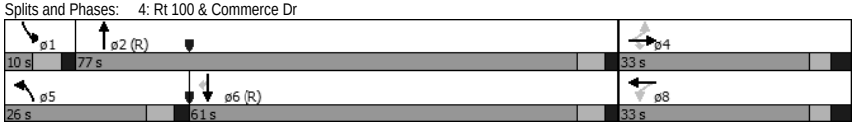


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	213	541	195	75	6	640	3182	117	14	2757	716
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.988			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3362	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.696			0.425			0.950			0.950		
Satd. Flow (perm)	1259	1809	1624	761	3362	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221		7			8				279
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	251	232	588	212	82	7	696	3459	127	15	2997	778
Shared Lane Traffic (%)												
Lane Group Flow (vph)	251	232	588	212	89	0	696	3586	0	15	2997	778
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	33.0	33.0	33.0	33.0	33.0		26.0	77.0		10.0	61.0	61.0
Total Split (%)	27.5%	27.5%	27.5%	27.5%	27.5%		21.7%	64.2%		8.3%	50.8%	50.8%
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0		20.0	71.0		4.0	55.0	55.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	28.0	28.0	28.0	28.0	28.0		21.0	78.0		5.0	56.0	56.0
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23		0.18	0.65		0.04	0.47	0.47
v/c Ratio	0.86	0.55	1.07	1.20	0.11		1.20	1.10		0.21	1.33	0.86
Control Delay	71.2	46.2	87.4	171.5	33.8		130.7	75.0		55.5	179.8	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.1
Total Delay	71.2	46.2	87.4	171.5	33.8		130.7	75.0		55.5	179.8	23.6
LOS	E	D	F	F	C		F	E		E	F	C
Approach Delay		74.7			130.8			84.0			147.2	
Approach LOS		E			F			F			F	
Queue Length 50th (ft)	187	159	~366	~199	26		~332	~1142		11	~1100	255
Queue Length 95th (ft)	#335	243	#590	#355	49		m#301	m#1124		m17	m#1060	m260
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	293	422	548	177	789		580	3256		70	2247	902
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	4
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.86	0.55	1.07	1.20	0.11		1.20	1.10		0.21	1.33	0.87

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 110 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.33		
Intersection Signal Delay: 109.8	Intersection LOS: F	
Intersection Capacity Utilization 115.5%	ICU Level of Service H	
Analysis Period (min) 15		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	13	85	153	34	364	0	3062	192	189	4144	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		200
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.883			0.863			0.991			0.997	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1645	0	1770	1608	0	1872	5065	0	1770	5119	0
Flt Permitted				0.611						0.950		
Satd. Flow (perm)	0	1645	0	1138	1608	0	1872	5065	0	1770	5119	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92			102			17			6	
Link Speed (mph)		30			30			45			30	
Link Distance (ft)		186			194			1556			995	
Travel Time (s)		4.2			4.4			23.6			22.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	14	92	166	37	396	0	3328	209	205	4504	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	106	0	166	433	0	0	3537	0	205	4606	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	24.0	24.0		24.0	24.0		13.0	83.0		13.0	83.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%		10.8%	69.2%		10.8%	69.2%	
Maximum Green (s)	19.0	19.0		19.0	19.0		8.0	78.0		8.0	78.0	

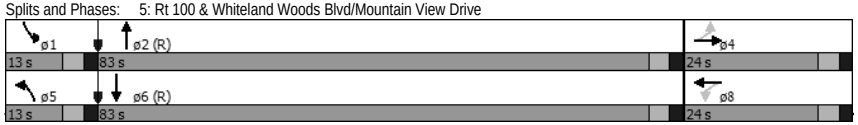
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)		20.0		20.0	20.0			79.0		9.0	92.0	
Actuated g/C Ratio		0.17		0.17	0.17			0.66		0.08	0.77	
v/c Ratio		0.30		0.88	1.23			1.06		1.55	1.17	
Control Delay		14.0		89.5	157.3			55.5		284.7	96.6	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		14.0		89.5	157.3			55.5		284.7	96.6	
LOS		B		F	F			E		F	F	
Approach Delay		14.0			138.5			55.5			104.6	
Approach LOS		B			F			E			F	
Queue Length 50th (ft)		9		127	~345			~1102		~223	~1553	
Queue Length 95th (ft)		60		#257	#550			#1179		m#162	m657	
Internal Link Dist (ft)		106			114			1476			915	
Turn Bay Length (ft)												
Base Capacity (vph)		350		189	353			3340		132	3925	
Starvation Cap Reductn		0		0	0			0		0	46	
Spillback Cap Reductn		0		0	0			0		0	0	
Storage Cap Reductn		0		0	0			0		0	0	
Reduced v/c Ratio		0.30		0.88	1.23			1.06		1.55	1.19	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 98 (82%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.55
Intersection Signal Delay: 86.6 Intersection LOS: F
Intersection Capacity Utilization 119.8% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountain View Drive



ALTERNATIVE 6

Single-Point Urban Interchange (SPUI) + New Station Access

Lane Group	EBL	EBR2	WBL	WBR2	NBL	NBT	NBR2	SBL	SBT	SBR2
Lane Configurations										
Volume (vph)	352	1405	193	264	423	2605	58	261	2310	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		200		300			300		
Storage Lanes	1		1		2			2		
Taper Length (ft)	25		25		50			50		
Lane Util. Factor	0.97	0.88	0.97	0.88	0.97	0.95	0.95	0.97	0.91	0.91
Frt		0.850		0.850		0.997			0.993	
Flt Protected	0.950		0.950		0.950			0.950		
Satd. Flow (prot)	3433	2787	3433	2787	3433	3529	0	3433	5050	0
Flt Permitted	0.950		0.950		0.950			0.950		
Satd. Flow (perm)	3433	2787	3433	2787	3433	3529	0	3433	5050	0
Right Turn on Red		Yes		Yes			Yes			Yes
Satd. Flow (RTOR)		95		153		95			153	
Link Speed (mph)						40			40	
Link Distance (ft)						1185			650	
Travel Time (s)						20.2			11.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	371	1479	203	278	445	2742	61	275	2432	118
Shared Lane Traffic (%)										
Lane Group Flow (vph)	371	1479	203	278	445	2803	0	275	2550	0
Number of Detectors	1	1	1	1	1	1		1	1	
Detector Template		Right								
Leading Detector (ft)	50	20	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	20	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel										
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Prot	Prot	Prot	Prot	Prot	NA		Prot	NA	
Protected Phases	4	5	8	1	5	2		1	6	
Permitted Phases										
Detector Phase	4	5	8	1	5	2		1	6	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Total Split (s)	21.0	63.0	21.0	17.0	63.0	112.0		17.0	66.0	
Total Split (%)	14.0%	42.0%	14.0%	11.3%	42.0%	74.7%		11.3%	44.0%	
Maximum Green (s)	13.0	55.0	13.0	9.0	55.0	104.0		9.0	58.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Lead/Lag		Lag		Lag	Lag	Lead		Lag	Lead	
Lead-Lag Optimize?		Yes		Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	

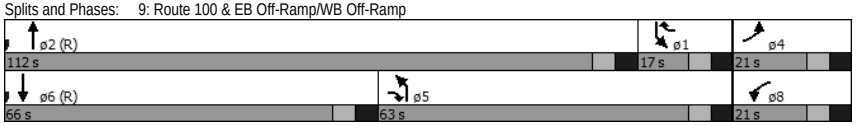
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
9: Route 100 & EB Off-Ramp/WB Off-Ramp Alt 6 Weekday AM

Lane Group	EBL	EBR2	WBL	WBR2	NBL	NBT	NBR2	SBL	SBT	SBR2
Recall Mode	None	None	None	None	None	C-Max		None	C-Max	
Act Effct Green (s)	13.0	55.0	13.0	9.0	55.0	104.0		9.0	58.0	
Actuated g/C Ratio	0.09	0.37	0.09	0.06	0.37	0.69		0.06	0.39	
v/c Ratio	1.25	1.37	0.68	0.89	0.35	1.13		1.34	1.25	
Control Delay	190.2	206.0	78.9	60.8	35.6	88.7		232.9	152.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	190.2	206.0	78.9	60.8	35.6	88.7		232.9	152.0	
LOS	F	F	E	E	D	F		F	F	
Approach Delay						81.4			159.9	
Approach LOS						F			F	
Queue Length 50th (ft)	~232	~1051	101	69	162	~1659		~179	~1103	
Queue Length 95th (ft)	#339	#1204	146	#164	210	#1772		#277	#1187	
Internal Link Dist (ft)						1105			570	
Turn Bay Length (ft)	200	300	200	300	300			300		
Base Capacity (vph)	297	1082	297	311	1258	2475		205	2046	
Starvation Cap Reductn	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	1.25	1.37	0.68	0.89	0.35	1.13		1.34	1.25	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.37
Intersection Signal Delay: 133.8 Intersection LOS: F
Intersection Capacity Utilization Err% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Route 100 & EB Off-Ramp/WB Off-Ramp



Lanes, Volumes, Timings Alt 6 Weekday AM
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Lane Group	EBL	EBR2	WBL	WBR2	NBL	NBT	NBR2	SBL	SBT	SBR2
Lane Configurations										
Volume (vph)	431	909	304	560	364	3377	38	515	3515	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		200		300			300		
Storage Lanes	1		1		2			2		
Taper Length (ft)	50		50		50			50		
Lane Util. Factor	0.97	0.88	0.97	0.88	0.97	0.95	0.95	0.97	0.91	0.91
Frt		0.850		0.850		0.998			0.984	
Flt Protected	0.950		0.950		0.950			0.950		
Satd. Flow (prot)	3433	2787	3433	2787	3433	3532	0	3433	5004	0
Flt Permitted	0.950		0.950		0.950			0.950		
Satd. Flow (perm)	3433	2787	3433	2787	3433	3532	0	3433	5004	0
Right Turn on Red		Yes		Yes			Yes			Yes
Satd. Flow (RTOR)		153		153		95			95	
Link Speed (mph)						40			40	
Link Distance (ft)						1185			650	
Travel Time (s)						20.2			11.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	454	957	320	589	383	3555	40	542	3700	455
Shared Lane Traffic (%)										
Lane Group Flow (vph)	454	957	320	589	383	3595	0	542	4155	0
Number of Detectors	1	1	1	1	1	1		1	1	
Detector Template		Right								
Leading Detector (ft)	50	20	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	20	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel										
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Prot	Prot	Prot	Prot	Prot	NA		Prot	NA	
Protected Phases	4	5	8	1	5	2		1	6	
Permitted Phases										
Detector Phase	4	5	8	1	5	2		1	6	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Total Split (s)	21.0	34.0	21.0	24.0	34.0	105.0		24.0	95.0	
Total Split (%)	14.0%	22.7%	14.0%	16.0%	22.7%	70.0%		16.0%	63.3%	
Maximum Green (s)	13.0	26.0	13.0	16.0	26.0	97.0		16.0	87.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Lead/Lag		Lag		Lead	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?		Yes		Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	

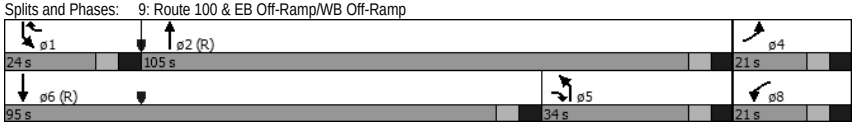
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
9: Route 100 & EB Off-Ramp/WB Off-Ramp Alt 6 Weekday PM

Lane Group	EBL	EBR2	WBL	WBR2	NBL	NBT	NBR2	SBL	SBT	SBR2
Recall Mode	None	None	None	None	None	C-Max		None	C-Max	
Act Effct Green (s)	13.0	26.0	13.0	16.0	26.0	97.0		16.0	87.0	
Actuated g/C Ratio	0.09	0.17	0.09	0.11	0.17	0.65		0.11	0.58	
v/c Ratio	1.53	1.57	1.08	1.36	0.64	1.55		1.48	1.41	
Control Delay	297.1	297.7	136.5	211.6	63.3	274.7		274.3	215.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	297.1	297.7	136.5	211.6	63.3	274.7		274.3	215.3	
LOS	F	F	F	F	E	F		F	F	
Approach Delay						254.3			222.1	
Approach LOS						F			F	
Queue Length 50th (ft)	~319	~682	~178	~350	181	~2601		~375	~1991	
Queue Length 95th (ft)	#432	#831	#281	#488	239	#2682		#495	#2030	
Internal Link Dist (ft)						1105			570	
Turn Bay Length (ft)	200	300	200	300	300			300		
Base Capacity (vph)	297	609	297	433	595	2317		366	2942	
Starvation Cap Reductn	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	1.53	1.57	1.08	1.36	0.64	1.55		1.48	1.41	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.57
Intersection Signal Delay: 240.4 Intersection LOS: F
Intersection Capacity Utilization Err% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Route 100 & EB Off-Ramp/WB Off-Ramp



Lanes, Volumes, Timings Alt 6 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\11 - SPUI with No SEPTA at 100-EB Ramps\Weekday PM.syn Synchro 8

ALTERNATIVE 7

Diverging-Diamond Interchange (DDI) + New Station Access

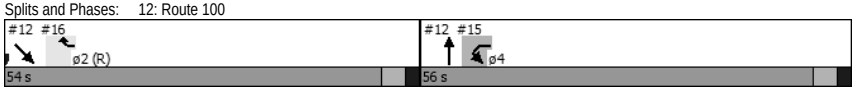
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	0	2534	0	0	0	0	0	2378	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	15	15	15	12	12	12	15	15	15	12	12	12
Lane Util. Factor	1.00	0.91	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	5299	0	0	0	0	0	5299	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5299	0	0	0	0	0	5299	0	0	0	0
Right Turn on Red			Yes			Yes	Yes		Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		225			133			127			264	
Travel Time (s)		3.4			2.0			1.9			4.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%
Adj. Flow (vph)	0	2667	0	0	0	0	0	2503	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2667	0	0	0	0	0	2503	0	0	0	0
Number of Detectors		1						1				
Detector Template												
Leading Detector (ft)		30						6				
Trailing Detector (ft)		0						0				
Detector 1 Position(ft)		0						0				
Detector 1 Size(ft)		30						6				
Detector 1 Type		Cl+Ex						Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)		0.0						0.0				
Detector 1 Queue (s)		0.0						0.0				
Detector 1 Delay (s)		0.0						0.0				
Turn Type		NA						NA				
Protected Phases		4						2				
Permitted Phases												
Detector Phase		4						2				
Switch Phase												
Minimum Initial (s)		10.0						10.0				
Minimum Split (s)		21.0						21.0				
Total Split (s)		56.0						54.0				
Total Split (%)		50.9%						49.1%				
Maximum Green (s)		51.0						49.0				
Yellow Time (s)		3.0						3.0				
All-Red Time (s)		2.0						2.0				
Lost Time Adjust (s)		-1.0						-1.0				
Total Lost Time (s)		4.0						4.0				
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0						3.0				
Recall Mode		None						C-Max				

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
12: Route 100 Alt 7 Weekday AM

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Act Effct Green (s)		52.0						50.0				
Actuated g/C Ratio		0.47						0.45				
v/c Ratio		1.07						1.04				
Control Delay		60.8						59.7				
Queue Delay		0.0						0.0				
Total Delay		60.8						59.7				
LOS		E						E				
Approach Delay		60.8						59.7				
Approach LOS		E						E				
Queue Length 50th (ft)		~769						~700				
Queue Length 95th (ft)		#895						#794				
Internal Link Dist (ft)		145			53			47			184	
Turn Bay Length (ft)												
Base Capacity (vph)		2504						2408				
Starvation Cap Reductn		0						0				
Spillback Cap Reductn		0						0				
Storage Cap Reductn		0						0				
Reduced v/c Ratio		1.07						1.04				

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:SET, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 60.3		Intersection LOS: E	
Intersection Capacity Utilization 106.8%		ICU Level of Service G	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 12: Route 100



Lanes, Volumes, Timings Alt 7 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\8 - DDI with No SEPTA at 100-EB Ramps\Weekday AM NRK 2017-11-09.sy7 Synchro 9

Lane Group	WBL	WBR	SEL	SET	NWT	NWR	ø2
Lane Configurations	↰			↑↑↑			
Volume (vph)	193	0	0	2378	0	0	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00	
Frt							
Flt Protected	0.950						
Satd. Flow (prot)	1676	0	0	4818	0	0	
Flt Permitted	0.950						
Satd. Flow (perm)	1676	0	0	4818	0	0	
Right Turn on Red	No	Yes				Yes	
Satd. Flow (RTOR)							
Link Speed (mph)	35			45	45		
Link Distance (ft)	311			264	295		
Travel Time (s)	6.1			4.0	4.5		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%	
Adj. Flow (vph)	203	0	0	2503	0	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	203	0	0	2503	0	0	
Number of Detectors	1			0			
Detector Template	Left						
Leading Detector (ft)	20			0			
Trailing Detector (ft)	0			0			
Detector 1 Position(ft)	0			0			
Detector 1 Size(ft)	20			6			
Detector 1 Type	Cl+Ex			Cl+Ex			
Detector 1 Channel							
Detector 1 Extend (s)	0.0			0.0			
Detector 1 Queue (s)	0.0			0.0			
Detector 1 Delay (s)	0.0			0.0			
Turn Type	Prot			NA			
Protected Phases	4!			Free!			2
Permitted Phases							
Detector Phase	4						
Switch Phase							
Minimum Initial (s)	10.0						10.0
Minimum Split (s)	21.0						21.0
Total Split (s)	56.0						54.0
Total Split (%)	50.9%						49%
Maximum Green (s)	51.0						49.0
Yellow Time (s)	3.0						3.0
All-Red Time (s)	2.0						2.0
Lost Time Adjust (s)	0.0						
Total Lost Time (s)	5.0						
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0						3.0
Recall Mode	None						C-Max
Act Effct Green (s)	51.0			110.0			

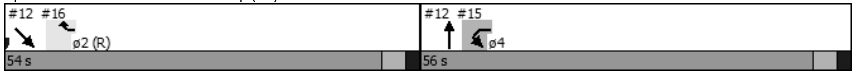
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
15: WB Off-Ramp (SB) & Route 100 Alt 7 Weekday AM

Lane Group	WBL	WBR	SEL	SET	NWT	NWR	ø2
Actuated g/C Ratio	0.46			1.00			
v/c Ratio	0.26			0.52			
Control Delay	19.2			4.5			
Queue Delay	0.0			0.0			
Total Delay	19.2			4.5			
LOS	B			A			
Approach Delay	19.2			4.5			
Approach LOS	B			A			
Queue Length 50th (ft)	85			87			
Queue Length 95th (ft)	136			m60			
Internal Link Dist (ft)	231			184	215		
Turn Bay Length (ft)							
Base Capacity (vph)	777			4818			
Starvation Cap Reductn	0			0			
Spillback Cap Reductn	0			0			
Storage Cap Reductn	0			0			
Reduced v/c Ratio	0.26			0.52			

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:SET, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 5.6 Intersection LOS: A
Intersection Capacity Utilization Err% ICU Level of Service H
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 15: WB Off-Ramp (SB) & Route 100



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø4
Lane Configurations		↱	↑↑↑				
Volume (vph)	0	264	2534	0	0	0	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	1.00	
Frt		0.865					
Flt Protected							
Satd. Flow (prot)	0	1526	4818	0	0	0	
Flt Permitted							
Satd. Flow (perm)	0	1526	4818	0	0	0	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		30					
Link Speed (mph)	35		45			45	
Link Distance (ft)	346		133			330	
Travel Time (s)	6.7		2.0			5.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%	
Adj. Flow (vph)	0	278	2667	0	0	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	278	2667	0	0	0	
Number of Detectors		1	1				
Detector Template		Right					
Leading Detector (ft)		35	5				
Trailing Detector (ft)		-5	0				
Detector 1 Position(ft)		-5	0				
Detector 1 Size(ft)		40	5				
Detector 1 Type		Cl+Ex	Cl+Ex				
Detector 1 Channel							
Detector 1 Extend (s)		0.0	0.0				
Detector 1 Queue (s)		0.0	0.0				
Detector 1 Delay (s)		0.0	0.0				
Turn Type		Prot	NA				
Protected Phases		2!	Free!				4
Permitted Phases							
Detector Phase		2					
Switch Phase							
Minimum Initial (s)		10.0					10.0
Minimum Split (s)		21.0					21.0
Total Split (s)		54.0					56.0
Total Split (%)		49.1%					51%
Maximum Green (s)		49.0					51.0
Yellow Time (s)		3.0					3.0
All-Red Time (s)		2.0					2.0
Lost Time Adjust (s)		-1.0					
Total Lost Time (s)		4.0					
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)		3.0					3.0
Recall Mode		C-Max					None
Act Effct Green (s)		50.0	110.0				

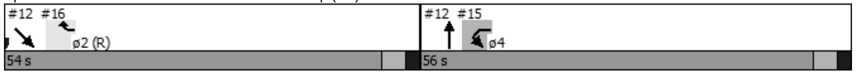
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
16: Route 100 & WB Off-Ramp (NB) Alt 7 Weekday AM

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø4
Actuated g/C Ratio		0.45	1.00				
v/c Ratio		0.39	0.55				
Control Delay		19.6	4.9				
Queue Delay		0.0	0.0				
Total Delay		19.6	4.9				
LOS		B	A				
Approach Delay			4.9				
Approach LOS			A				
Queue Length 50th (ft)		112	115				
Queue Length 95th (ft)		181	m62				
Internal Link Dist (ft)	266		53			250	
Turn Bay Length (ft)							
Base Capacity (vph)		710	4818				
Starvation Cap Reductn		0	0				
Spillback Cap Reductn		0	0				
Storage Cap Reductn		0	0				
Reduced v/c Ratio		0.39	0.55				

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:SET, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 6.3 Intersection LOS: A
Intersection Capacity Utilization 106.8% ICU Level of Service G
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 16: Route 100 & WB Off-Ramp (NB)



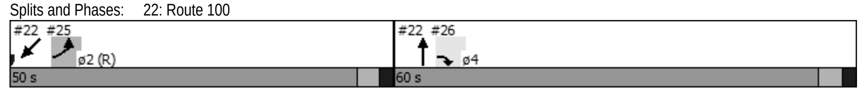
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Volume (vph)	0	2605	0	0	0	0	0	0	0	0	1783	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	15	15	15	12	12	12	12	12	12	15	15	15
Lane Util. Factor	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	5299	0	0	0	0	0	0	0	0	5299	0
Flt Permitted												
Satd. Flow (perm)	0	5299	0	0	0	0	0	0	0	0	5299	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		162			194			111			219	
Travel Time (s)		2.5			2.9			1.7			3.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%
Adj. Flow (vph)	0	2742	0	0	0	0	0	0	0	0	1877	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2742	0	0	0	0	0	0	0	0	1877	0
Number of Detectors		1									1	
Detector Template												
Leading Detector (ft)		6									30	
Trailing Detector (ft)		0									0	
Detector 1 Position(ft)		0									0	
Detector 1 Size(ft)		6									30	
Detector 1 Type		Cl+Ex									Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0									0.0	
Detector 1 Queue (s)		0.0									0.0	
Detector 1 Delay (s)		0.0									0.0	
Turn Type		NA									NA	
Protected Phases		4									2	
Permitted Phases												
Detector Phase		4									2	
Switch Phase												
Minimum Initial (s)		10.0									10.0	
Minimum Split (s)		26.0									31.0	
Total Split (s)		60.0									50.0	
Total Split (%)		54.5%									45.5%	
Maximum Green (s)		55.0									45.0	
Yellow Time (s)		3.0									3.0	
All-Red Time (s)		2.0									2.0	
Lost Time Adjust (s)		-1.0									-1.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		None									C-Max	

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Act Effct Green (s)		56.0									46.0	
Actuated g/C Ratio		0.51									0.42	
v/c Ratio		1.02									0.85	
Control Delay		49.0									32.6	
Queue Delay		0.0									0.0	
Total Delay		49.0									32.6	
LOS		D									C	
Approach Delay		49.0									32.6	
Approach LOS		D									C	
Queue Length 50th (ft)		~718									248	
Queue Length 95th (ft)		#843									287	
Internal Link Dist (ft)		82			114			31			139	
Turn Bay Length (ft)												
Base Capacity (vph)		2697									2215	
Starvation Cap Reductn		0									0	
Spillback Cap Reductn		0									0	
Storage Cap Reductn		0									0	
Reduced v/c Ratio		1.02									0.85	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:SWT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 42.3 Intersection LOS: D
Intersection Capacity Utilization 96.2% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 22: Route 100



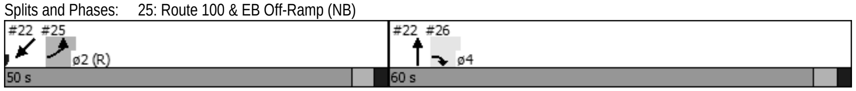
	↗	↘	↖	↑	↓	↙	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø4
Lane Configurations	↰			↑↑↑			
Volume (vph)	352	0	0	2605	0	0	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00	
Frt							
Flt Protected	0.950						
Satd. Flow (prot)	1676	0	0	4818	0	0	
Flt Permitted	0.950						
Satd. Flow (perm)	1676	0	0	4818	0	0	
Right Turn on Red	No	Yes				Yes	
Satd. Flow (RTOR)							
Link Speed (mph)	35			45	45		
Link Distance (ft)	292			194	281		
Travel Time (s)	5.7			2.9	4.3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%	
Adj. Flow (vph)	371	0	0	2742	0	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	371	0	0	2742	0	0	
Number of Detectors	1			0			
Detector Template	Left						
Leading Detector (ft)	20			0			
Trailing Detector (ft)	0			0			
Detector 1 Position(ft)	0			0			
Detector 1 Size(ft)	20			6			
Detector 1 Type	Cl+Ex			Cl+Ex			
Detector 1 Channel							
Detector 1 Extend (s)	0.0			0.0			
Detector 1 Queue (s)	0.0			0.0			
Detector 1 Delay (s)	0.0			0.0			
Turn Type	Prot			NA			
Protected Phases	2!			Free!			4
Permitted Phases							
Detector Phase	2						
Switch Phase							
Minimum Initial (s)	10.0						10.0
Minimum Split (s)	31.0						26.0
Total Split (s)	50.0						60.0
Total Split (%)	45.5%						55%
Maximum Green (s)	45.0						55.0
Yellow Time (s)	3.0						3.0
All-Red Time (s)	2.0						2.0
Lost Time Adjust (s)	0.0						
Total Lost Time (s)	5.0						
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0						3.0
Recall Mode	C-Max						None
Act Effct Green (s)	45.0			110.0			

	↗	↘	↖	↑	↓	↙	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø4
Actuated g/C Ratio	0.41			1.00			
v/c Ratio	0.54			0.57			
Control Delay	28.3			4.4			
Queue Delay	0.0			0.0			
Total Delay	28.3			4.4			
LOS	C			A			
Approach Delay	28.3			4.4			
Approach LOS	C			A			
Queue Length 50th (ft)	195			98			
Queue Length 95th (ft)	290			m66			
Internal Link Dist (ft)	212			114	201		
Turn Bay Length (ft)							
Base Capacity (vph)	685			4818			
Starvation Cap Reductn	0			0			
Spillback Cap Reductn	0			0			
Storage Cap Reductn	0			0			
Reduced v/c Ratio	0.54			0.57			

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:SWT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 7.2 Intersection LOS: A
Intersection Capacity Utilization 145.2% ICU Level of Service H
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 25: Route 100 & EB Off-Ramp (NB)



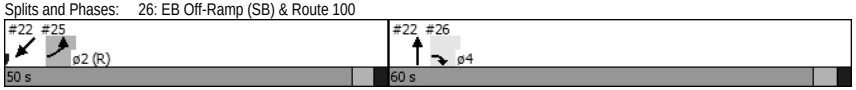
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø2
Lane Configurations							
Volume (vph)	0	1444	0	0	2571	0	
Ideal Flow (vphpl)	1800	1900	1800	1800	1800	1800	
Lane Util. Factor	1.00	0.88	1.00	1.00	0.91	1.00	
Frt		0.850					
Flt Protected							
Satd. Flow (prot)	0	2787	0	0	4818	0	
Flt Permitted							
Satd. Flow (perm)	0	2787	0	0	4818	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		49					
Link Speed (mph)	35			45	45		
Link Distance (ft)	325			568	111		
Travel Time (s)	6.3			8.6	1.7		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	
Adj. Flow (vph)	0	1520	0	0	2706	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	1520	0	0	2706	0	
Number of Detectors		1			1		
Detector Template		Right					
Leading Detector (ft)		20			5		
Trailing Detector (ft)		0			0		
Detector 1 Position(ft)		0			0		
Detector 1 Size(ft)		20			5		
Detector 1 Type		Cl+Ex			Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)		0.0			0.0		
Detector 1 Queue (s)		0.0			0.0		
Detector 1 Delay (s)		0.0			0.0		
Turn Type		Prot			NA		
Protected Phases		4!			Free!		2
Permitted Phases							
Detector Phase		4					
Switch Phase							
Minimum Initial (s)		10.0					10.0
Minimum Split (s)		26.0					31.0
Total Split (s)		60.0					50.0
Total Split (%)		54.5%					45%
Maximum Green (s)		55.0					45.0
Yellow Time (s)		3.0					3.0
All-Red Time (s)		2.0					2.0
Lost Time Adjust (s)		0.0					
Total Lost Time (s)		5.0					
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)		3.0					3.0
Recall Mode		None					C-Max
Act Effct Green (s)		55.0			110.0		

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
26: EB Off-Ramp (SB) & Route 100 Alt 7 Weekday AM

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø2
Actuated g/C Ratio		0.50			1.00		
v/c Ratio		1.07			0.56		
Control Delay		72.9			4.4		
Queue Delay		0.0			0.0		
Total Delay		72.9			4.4		
LOS		E			A		
Approach Delay					4.4		
Approach LOS					A		
Queue Length 50th (ft)		~669			247		
Queue Length 95th (ft)		#821			206		
Internal Link Dist (ft)	245			488	31		
Turn Bay Length (ft)							
Base Capacity (vph)		1418			4818		
Starvation Cap Reductn		0			0		
Spillback Cap Reductn		0			0		
Storage Cap Reductn		0			0		
Reduced v/c Ratio		1.07			0.56		

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:SWT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.07	
Intersection Signal Delay: 29.0	Intersection LOS: C
Intersection Capacity Utilization 110.5%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
! Phase conflict between lane groups.	

Splits and Phases: 26: EB Off-Ramp (SB) & Route 100



Lanes, Volumes, Timings Alt 7 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\8 - DDI with No SEPTA at 100-EB Ramps\Weekday AM NRK 2017-7-20.sy7 Synchro 9

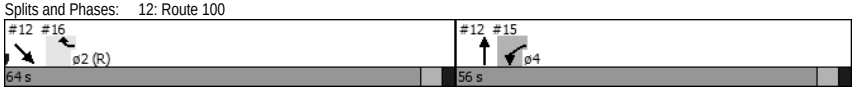
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑						↑↑↑				
Volume (vph)	0	3121	0	0	0	0	0	3515	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	15	15	15	12	12	12	15	15	15	12	12	12
Lane Util. Factor	1.00	0.91	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	5299	0	0	0	0	0	5299	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5299	0	0	0	0	0	5299	0	0	0	0
Right Turn on Red			Yes			Yes	Yes		Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		233			110			119			327	
Travel Time (s)		3.5			1.7			1.8			5.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%
Adj. Flow (vph)	0	3285	0	0	0	0	0	3700	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3285	0	0	0	0	0	3700	0	0	0	0
Number of Detectors		1						1				
Detector Template												
Leading Detector (ft)		30						6				
Trailing Detector (ft)		0						0				
Detector 1 Position(ft)		0						0				
Detector 1 Size(ft)		30						6				
Detector 1 Type		Cl+Ex						Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)		0.0						0.0				
Detector 1 Queue (s)		0.0						0.0				
Detector 1 Delay (s)		0.0						0.0				
Turn Type		NA						NA				
Protected Phases		4						2				
Permitted Phases												
Detector Phase		4						2				
Switch Phase												
Minimum Initial (s)		10.0						10.0				
Minimum Split (s)		21.0						21.0				
Total Split (s)		56.0						64.0				
Total Split (%)		46.7%						53.3%				
Maximum Green (s)		51.0						59.0				
Yellow Time (s)		3.0						3.0				
All-Red Time (s)		2.0						2.0				
Lost Time Adjust (s)		-1.0						-1.0				
Total Lost Time (s)		4.0						4.0				
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0						3.0				
Recall Mode		None						C-Max				

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Act Effct Green (s)		52.0						60.0				
Actuated g/C Ratio		0.43						0.50				
v/c Ratio		1.43						1.40				
Control Delay		226.0						202.0				
Queue Delay		0.0						0.0				
Total Delay		226.0						202.0				
LOS		F						F				
Approach Delay		226.0						202.0				
Approach LOS		F						F				
Queue Length 50th (ft)		~1243						~1397				
Queue Length 95th (ft)		#1314						m#1165				
Internal Link Dist (ft)		153			30			39			247	
Turn Bay Length (ft)												
Base Capacity (vph)		2296						2649				
Starvation Cap Reductn		0						0				
Spillback Cap Reductn		0						0				
Storage Cap Reductn		0						0				
Reduced v/c Ratio		1.43						1.40				

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SET, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.43			
Intersection Signal Delay: 213.3		Intersection LOS: F	
Intersection Capacity Utilization 142.0%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Route 100



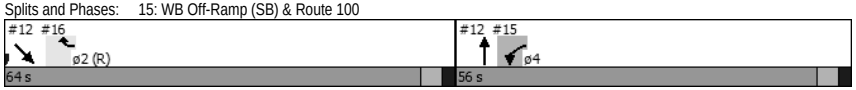
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2
Lane Configurations							
Volume (vph)	304	0	0	0	0	3515	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.91	
Frt							
Flt Protected	0.950						
Satd. Flow (prot)	1676	0	0	0	0	4818	
Flt Permitted	0.950						
Satd. Flow (perm)	1676	0	0	0	0	4818	
Right Turn on Red	No	Yes		Yes			
Satd. Flow (RTOR)							
Link Speed (mph)	35		45			45	
Link Distance (ft)	231		241			327	
Travel Time (s)	4.5		3.7			5.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Heavy Vehicles (%)	2%	0%	0%	0%	0%	2%	
Adj. Flow (vph)	320	0	0	0	0	3700	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	320	0	0	0	0	3700	
Number of Detectors	1					0	
Detector Template	Left						
Leading Detector (ft)	20					0	
Trailing Detector (ft)	0					0	
Detector 1 Position(ft)	0					0	
Detector 1 Size(ft)	20					6	
Detector 1 Type	Cl+Ex					Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0					0.0	
Detector 1 Queue (s)	0.0					0.0	
Detector 1 Delay (s)	0.0					0.0	
Turn Type	Prot					NA	
Protected Phases	4!					Free!	2
Permitted Phases							
Detector Phase	4						
Switch Phase							
Minimum Initial (s)	10.0						10.0
Minimum Split (s)	21.0						21.0
Total Split (s)	56.0						64.0
Total Split (%)	46.7%						53%
Maximum Green (s)	51.0						59.0
Yellow Time (s)	3.0						3.0
All-Red Time (s)	2.0						2.0
Lost Time Adjust (s)	0.0						
Total Lost Time (s)	5.0						
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0						3.0
Recall Mode	None						C-Max
Act Effct Green (s)	51.0					120.0	

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
15: WB Off-Ramp (SB) & Route 100 Alt 7 Weekday PM

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2
Actuated g/C Ratio	0.42					1.00	
v/c Ratio	0.45					0.77	
Control Delay	27.1					16.5	
Queue Delay	0.0					0.0	
Total Delay	27.1					16.5	
LOS	C					B	
Approach Delay	27.1					16.5	
Approach LOS	C					B	
Queue Length 50th (ft)	173					395	
Queue Length 95th (ft)	255					m74	
Internal Link Dist (ft)	151		161			247	
Turn Bay Length (ft)							
Base Capacity (vph)	712					4818	
Starvation Cap Reductn	0					0	
Spillback Cap Reductn	0					0	
Storage Cap Reductn	0					0	
Reduced v/c Ratio	0.45					0.77	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SET, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.43			
Intersection Signal Delay: 17.3		Intersection LOS: B	
Intersection Capacity Utilization 97.0%		ICU Level of Service F	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			
! Phase conflict between lane groups.			

Splits and Phases: 15: WB Off-Ramp (SB) & Route 100



Lanes, Volumes, Timings Alt 7 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\8 - DDI with No SEPTA at 100-EB Ramps\Weekday PM NRK 2017-7-20.sy7 17 Synchro 9

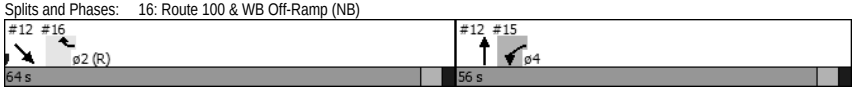
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø4
Lane Configurations							
Volume (vph)	0	560	3121	0	0	0	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	1.00	
Frt		0.865					
Flt Protected							
Satd. Flow (prot)	0	1526	4818	0	0	0	
Flt Permitted							
Satd. Flow (perm)	0	1526	4818	0	0	0	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		12					
Link Speed (mph)	35		45			45	
Link Distance (ft)	370		110			345	
Travel Time (s)	7.2		1.7			5.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%	
Adj. Flow (vph)	0	589	3285	0	0	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	589	3285	0	0	0	
Number of Detectors		1	1				
Detector Template		Right					
Leading Detector (ft)		35	5				
Trailing Detector (ft)		-5	0				
Detector 1 Position(ft)		-5	0				
Detector 1 Size(ft)		40	5				
Detector 1 Type		Cl+Ex	Cl+Ex				
Detector 1 Channel							
Detector 1 Extend (s)		0.0	0.0				
Detector 1 Queue (s)		0.0	0.0				
Detector 1 Delay (s)		0.0	0.0				
Turn Type		Prot	NA				
Protected Phases		2!	Free!				4
Permitted Phases							
Detector Phase		2					
Switch Phase							
Minimum Initial (s)		10.0					10.0
Minimum Split (s)		21.0					21.0
Total Split (s)		64.0					56.0
Total Split (%)		53.3%					47%
Maximum Green (s)		59.0					51.0
Yellow Time (s)		3.0					3.0
All-Red Time (s)		2.0					2.0
Lost Time Adjust (s)		-1.0					
Total Lost Time (s)		4.0					
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)		3.0					3.0
Recall Mode		C-Max					None
Act Effct Green (s)		60.0	120.0				

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
16: Route 100 & WB Off-Ramp (NB) Alt 7 Weekday PM

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø4
Actuated g/C Ratio		0.50	1.00				
v/c Ratio		0.77	0.68				
Control Delay		31.9	15.3				
Queue Delay		0.0	0.0				
Total Delay		31.9	15.3				
LOS		C	B				
Approach Delay			15.3				
Approach LOS			B				
Queue Length 50th (ft)		352	368				
Queue Length 95th (ft)		511	m62				
Internal Link Dist (ft)	290		30			265	
Turn Bay Length (ft)							
Base Capacity (vph)		769	4818				
Starvation Cap Reductn		0	0				
Spillback Cap Reductn		0	0				
Storage Cap Reductn		0	0				
Reduced v/c Ratio		0.77	0.68				

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SET, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.43			
Intersection Signal Delay: 17.8		Intersection LOS: B	
Intersection Capacity Utilization 142.0%		ICU Level of Service H	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			
! Phase conflict between lane groups.			

Splits and Phases: 16: Route 100 & WB Off-Ramp (NB)



Lanes, Volumes, Timings Alt 7 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\8 - DDI with No SEPTA at 100-EB Ramps\Weekday PM NRK 2017-7-20.sy 17

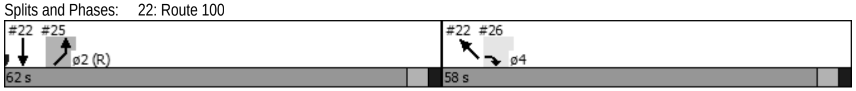
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations					↑↑↑						↑↑↑	
Volume (vph)	0	0	0	0	3609	0	0	0	0	0	3054	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	15	15	15	12	12	12	15	15	15
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	0.91	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	0	0	0	5299	0	0	0	0	0	5299	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	5299	0	0	0	0	0	5299	0
Right Turn on Red			Yes			Yes			Yes	Yes		Yes
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		151			190			295			121	
Travel Time (s)		2.3			2.9			4.5			1.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	2%	0%
Adj. Flow (vph)	0	0	0	0	3799	0	0	0	0	0	3215	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	3799	0	0	0	0	0	3215	0
Number of Detectors					1						1	
Detector Template												
Leading Detector (ft)					30						6	
Trailing Detector (ft)					0						0	
Detector 1 Position(ft)					0						0	
Detector 1 Size(ft)					30						6	
Detector 1 Type					Cl+Ex						Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)					0.0						0.0	
Detector 1 Queue (s)					0.0						0.0	
Detector 1 Delay (s)					0.0						0.0	
Turn Type					NA						NA	
Protected Phases					2						4	
Permitted Phases												
Detector Phase					2						4	
Switch Phase												
Minimum Initial (s)					10.0						10.0	
Minimum Split (s)					31.0						26.0	
Total Split (s)					62.0						58.0	
Total Split (%)					51.7%						48.3%	
Maximum Green (s)					57.0						53.0	
Yellow Time (s)					3.0						3.0	
All-Red Time (s)					2.0						2.0	
Lost Time Adjust (s)					-1.0						-1.0	
Total Lost Time (s)					4.0						4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)					3.0						3.0	
Recall Mode					C-Max						None	

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Act Effct Green (s)					58.0						54.0	
Actuated g/C Ratio					0.48						0.45	
v/c Ratio					1.48						1.35	
Control Delay					247.2						189.4	
Queue Delay					0.0						0.0	
Total Delay					247.2						189.4	
LOS					F						F	
Approach Delay					247.2						189.4	
Approach LOS					F						F	
Queue Length 50th (ft)					~1568						~1194	
Queue Length 95th (ft)					#1732						#1275	
Internal Link Dist (ft)		71			110			215			41	
Turn Bay Length (ft)												
Base Capacity (vph)					2561						2384	
Starvation Cap Reductn					0						0	
Spillback Cap Reductn					0						0	
Storage Cap Reductn					0						0	
Reduced v/c Ratio					1.48						1.35	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.48
Intersection Signal Delay: 220.7 Intersection LOS: F
Intersection Capacity Utilization 142.6% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 22: Route 100



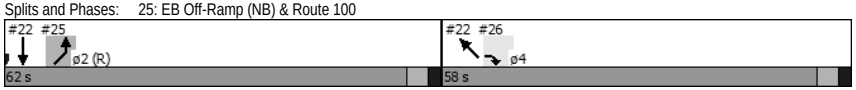
Lane Group	NBL	NBT	SBT	SBR	NEL	NER	ø4
Lane Configurations		↑↑↑			↰		
Volume (vph)	0	3054	0	0	431	0	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Util. Factor	1.00	0.91	1.00	1.00	1.00	1.00	
Frt							
Flt Protected					0.950		
Satd. Flow (prot)	0	4818	0	0	1676	0	
Flt Permitted					0.950		
Satd. Flow (perm)	0	4818	0	0	1676	0	
Right Turn on Red				Yes	No	Yes	
Satd. Flow (RTOR)							
Link Speed (mph)		45	45		35		
Link Distance (ft)		295	268		295		
Travel Time (s)		4.5	4.1		5.7		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	
Adj. Flow (vph)	0	3215	0	0	454	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	3215	0	0	454	0	
Number of Detectors		0			1		
Detector Template					Left		
Leading Detector (ft)		0			20		
Trailing Detector (ft)		0			0		
Detector 1 Position(ft)		0			0		
Detector 1 Size(ft)		6			20		
Detector 1 Type		Cl+Ex			Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)		0.0			0.0		
Detector 1 Queue (s)		0.0			0.0		
Detector 1 Delay (s)		0.0			0.0		
Turn Type		NA			Prot		
Protected Phases		Free!			2!		4
Permitted Phases							
Detector Phase					2		
Switch Phase							
Minimum Initial (s)					10.0		10.0
Minimum Split (s)					31.0		26.0
Total Split (s)					62.0		58.0
Total Split (%)					51.7%		48%
Maximum Green (s)					57.0		53.0
Yellow Time (s)					3.0		3.0
All-Red Time (s)					2.0		2.0
Lost Time Adjust (s)					0.0		
Total Lost Time (s)					5.0		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)					3.0		3.0
Recall Mode					C-Max		None
Act Effct Green (s)		120.0			57.0		

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
25: EB Off-Ramp (NB) & Route 100 Alt 7 Weekday PM

Lane Group	NBL	NBT	SBT	SBR	NEL	NER	ø4
Actuated g/C Ratio		1.00			0.48		
v/c Ratio		0.67			0.57		
Control Delay		13.4			26.2		
Queue Delay		0.0			0.0		
Total Delay		13.4			26.2		
LOS		B			C		
Approach Delay		13.4			26.2		
Approach LOS		B			C		
Queue Length 50th (ft)		356			247		
Queue Length 95th (ft)		m61			352		
Internal Link Dist (ft)		215	188		215		
Turn Bay Length (ft)							
Base Capacity (vph)		4818			796		
Starvation Cap Reductn		0			0		
Spillback Cap Reductn		0			0		
Storage Cap Reductn		0			0		
Reduced v/c Ratio		0.67			0.57		

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.48			
Intersection Signal Delay: 15.0		Intersection LOS: B	
Intersection Capacity Utilization 121.0%		ICU Level of Service H	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			
! Phase conflict between lane groups.			

Splits and Phases: 25: EB Off-Ramp (NB) & Route 100



Lanes, Volumes, Timings Alt 7 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\8 - DDI with No SEPTA at 100-EB Ramps\Weekday PM NRK 2017-7-20.sy7 Synchro 9

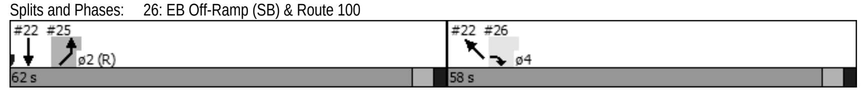
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø2
Lane Configurations							
Volume (vph)	0	817	0	0	3305	0	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Util. Factor	1.00	0.88	1.00	1.00	0.91	1.00	
Frt		0.850					
Flt Protected							
Satd. Flow (prot)	0	2640	0	0	4818	0	
Flt Permitted							
Satd. Flow (perm)	0	2640	0	0	4818	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		16					
Link Speed (mph)	35			45	45		
Link Distance (ft)	364			245	151		
Travel Time (s)	7.1			3.7	2.3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	
Adj. Flow (vph)	0	860	0	0	3479	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	860	0	0	3479	0	
Number of Detectors		1			1		
Detector Template		Right					
Leading Detector (ft)		20			5		
Trailing Detector (ft)		0			0		
Detector 1 Position(ft)		0			0		
Detector 1 Size(ft)		20			5		
Detector 1 Type		Cl+Ex			Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)		0.0			0.0		
Detector 1 Queue (s)		0.0			0.0		
Detector 1 Delay (s)		0.0			0.0		
Turn Type		Prot			NA		
Protected Phases		4!			Free!		2
Permitted Phases							
Detector Phase		4					
Switch Phase							
Minimum Initial (s)		10.0					10.0
Minimum Split (s)		26.0					31.0
Total Split (s)		58.0					62.0
Total Split (%)		48.3%					52%
Maximum Green (s)		53.0					57.0
Yellow Time (s)		3.0					3.0
All-Red Time (s)		2.0					2.0
Lost Time Adjust (s)		0.0					
Total Lost Time (s)		5.0					
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)		3.0					3.0
Recall Mode		None					C-Max
Act Effct Green (s)		53.0			120.0		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø2
Actuated g/C Ratio		0.44			1.00		
v/c Ratio		0.73			0.72		
Control Delay		31.6			14.7		
Queue Delay		0.0			0.0		
Total Delay		31.6			14.7		
LOS		C			B		
Approach Delay					14.7		
Approach LOS					B		
Queue Length 50th (ft)		300			352		
Queue Length 95th (ft)		388			m5		
Internal Link Dist (ft)	284			165	71		
Turn Bay Length (ft)							
Base Capacity (vph)		1174			4818		
Starvation Cap Reductn		0			0		
Spillback Cap Reductn		0			0		
Storage Cap Reductn		0			0		
Reduced v/c Ratio		0.73			0.72		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.48
Intersection Signal Delay: 18.1 Intersection LOS: B
Intersection Capacity Utilization 142.6% ICU Level of Service H
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 26: EB Off-Ramp (SB) & Route 100



ALTERNATIVE 8

Displaced Left Turn Interchange (DLTI) + New Station Access

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø3	ø4	ø8
Lane Configurations									
Volume (vph)	335	0	0	2652	3304	0			
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800			
Lane Width (ft)	12	12	13	13	13	13			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00			
Frt									
Flt Protected	0.950								
Satd. Flow (prot)	1676	0	0	4978	4978	0			
Flt Permitted	0.950								
Satd. Flow (perm)	1676	0	0	4978	4978	0			
Right Turn on Red		No				No			
Satd. Flow (RTOR)									
Link Speed (mph)	30			45	45				
Link Distance (ft)	107			149	302				
Travel Time (s)	2.4			2.3	4.6				
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95			
Adj. Flow (vph)	353	0	0	2792	3478	0			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	353	0	0	2792	3478	0			
Number of Detectors	1			1	1				
Detector Template	Left								
Leading Detector (ft)	20			35	35				
Trailing Detector (ft)	0			-5	-5				
Detector 1 Position(ft)	0			-5	-5				
Detector 1 Size(ft)	20			40	40				
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex				
Detector 1 Channel									
Detector 1 Extend (s)	0.0			0.0	0.0				
Detector 1 Queue (s)	0.0			0.0	0.0				
Detector 1 Delay (s)	0.0			0.0	0.0				
Turn Type	Perm			NA	NA				
Protected Phases				2	6		3	4	8
Permitted Phases	3 4								
Detector Phase	3 4			2	6				
Switch Phase									
Minimum Initial (s)				4.0	4.0		4.0	4.0	4.0
Minimum Split (s)				22.0	10.0		10.0	22.0	22.0
Total Split (s)				87.0	87.0		41.0	22.0	63.0
Total Split (%)				58.0%	58.0%		27%	15%	42%
Maximum Green (s)				81.0	81.0		35.0	16.0	57.0
Yellow Time (s)				4.0	4.0		4.0	4.0	4.0
All-Red Time (s)				2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)				-1.0	-1.0				
Total Lost Time (s)				5.0	5.0				
Lead/Lag							Lead	Lag	
Lead-Lag Optimize?									
Vehicle Extension (s)				3.0	3.0		3.0	3.0	3.0
Recall Mode				C-Max	C-Max		None	None	None
Walk Time (s)				5.0				5.0	5.0

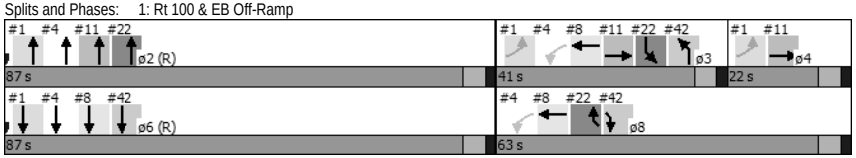
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø3	ø4	ø8
Flash Dont Walk (s)				11.0				11.0	11.0
Pedestrian Calls (#/hr)				0				0	0
Act Effct Green (s)	58.0			82.0	82.0				
Actuated g/C Ratio	0.39			0.55	0.55				
v/c Ratio	0.54			1.03	1.28				
Control Delay	3.9			56.4	141.8				
Queue Delay	0.9			30.3	0.1				
Total Delay	4.8			86.7	141.9				
LOS	A			F	F				
Approach Delay	4.8			86.7	141.9				
Approach LOS	A			F	F				
Queue Length 50th (ft)	6			~1063	~1558				
Queue Length 95th (ft)	8			#1140	m#1237				
Internal Link Dist (ft)	27			69	222				
Turn Bay Length (ft)									
Base Capacity (vph)	648			2721	2721				
Starvation Cap Reductn	110			29	0				
Spillback Cap Reductn	38			410	140				
Storage Cap Reductn	0			0	0				
Reduced v/c Ratio	0.66			1.21	1.35				

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 144 (96%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.35
Intersection Signal Delay: 111.3 Intersection LOS: F
Intersection Capacity Utilization 95.3% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Rt 100 & EB Off-Ramp



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø3	ø4	ø8
Lane Configurations									
Volume (vph)	240	0	3083	0	0	3000			
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800			
Lane Width (ft)	12	12	13	13	13	13			
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	0.91			
Frt									
Flt Protected	0.950								
Satd. Flow (prot)	1676	0	4978	0	0	4978			
Flt Permitted	0.950								
Satd. Flow (perm)	1676	0	4978	0	0	4978			
Right Turn on Red		No		No					
Satd. Flow (RTOR)									
Link Speed (mph)	30		45			45			
Link Distance (ft)	100		302			216			
Travel Time (s)	2.3		4.6			3.3			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95			
Adj. Flow (vph)	253	0	3245	0	0	3158			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	253	0	3245	0	0	3158			
Number of Detectors	1		1			1			
Detector Template	Left								
Leading Detector (ft)	20		35			35			
Trailing Detector (ft)	0		-5			-5			
Detector 1 Position(ft)	0		-5			-5			
Detector 1 Size(ft)	20		40			40			
Detector 1 Type	Cl+Ex		Cl+Ex			Cl+Ex			
Detector 1 Channel									
Detector 1 Extend (s)	0.0		0.0			0.0			
Detector 1 Queue (s)	0.0		0.0			0.0			
Detector 1 Delay (s)	0.0		0.0			0.0			
Turn Type	Perm		NA			NA			
Protected Phases			2			6	3	4	8
Permitted Phases	3 8								
Detector Phase	3 8		2			6			
Switch Phase									
Minimum Initial (s)			4.0			4.0	4.0	4.0	4.0
Minimum Split (s)			22.0			10.0	10.0	22.0	22.0
Total Split (s)			87.0			87.0	41.0	22.0	63.0
Total Split (%)			58.0%			58.0%	27%	15%	42%
Maximum Green (s)			81.0			81.0	35.0	16.0	57.0
Yellow Time (s)			4.0			4.0	4.0	4.0	4.0
All-Red Time (s)			2.0			2.0	2.0	2.0	2.0
Lost Time Adjust (s)			-1.0			-1.0			
Total Lost Time (s)			5.0			5.0			
Lead/Lag							Lead	Lag	
Lead-Lag Optimize?									
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0
Recall Mode			C-Max			C-Max	None	None	None
Walk Time (s)			5.0					5.0	5.0

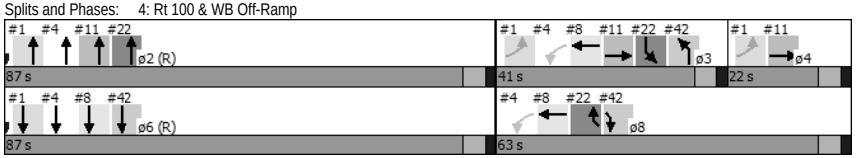
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
4: Rt 100 & WB Off-Ramp Alt 8 Weekday PM

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø3	ø4	ø8
Flash Dont Walk (s)			11.0					11.0	11.0
Pedestrian Calls (#/hr)			0					0	0
Act Effct Green (s)	58.0		82.0			82.0			
Actuated g/C Ratio	0.39		0.55			0.55			
v/c Ratio	0.39		1.19			1.16			
Control Delay	3.0		104.7			101.2			
Queue Delay	0.0		0.1			0.3			
Total Delay	3.0		104.8			101.5			
LOS	A		F			F			
Approach Delay	3.0		104.8			101.5			
Approach LOS	A		F			F			
Queue Length 50th (ft)	4		~1386			~1327			
Queue Length 95th (ft)	5		m#1343			#1401			
Internal Link Dist (ft)	20		222			136			
Turn Bay Length (ft)									
Base Capacity (vph)	648		2721			2721			
Starvation Cap Reductn	0		0			239			
Spillback Cap Reductn	0		151			343			
Storage Cap Reductn	0		0			0			
Reduced v/c Ratio	0.39		1.26			1.33			

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 144 (96%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.35			
Intersection Signal Delay: 99.4		Intersection LOS: F	
Intersection Capacity Utilization 95.3%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Rt 100 & WB Off-Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	304	560	0	0	0	0	515	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						
Flt Protected												
Satd. Flow (prot)	0	0	0	0	1765	1500	0	0	0	0	1765	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	1765	1500	0	0	0	0	1765	0
Right Turn on Red			No	No		Yes			No			No
Satd. Flow (RTOR)						486						
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		100			616			336			288	
Travel Time (s)		2.3			14.0			7.6			6.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	320	589	0	0	0	0	542	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	320	589	0	0	0	0	542	0
Number of Detectors					1	1					1	
Detector Template						Right						
Leading Detector (ft)					35	20					35	
Trailing Detector (ft)					-5	0					-5	
Detector 1 Position(ft)					-5	0					-5	
Detector 1 Size(ft)					40	20					40	
Detector 1 Type					Cl+Ex	Cl+Ex					Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)					0.0	0.0					0.0	
Detector 1 Queue (s)					0.0	0.0					0.0	
Detector 1 Delay (s)					0.0	0.0					0.0	
Turn Type					NA	Free					NA	
Protected Phases					3 8						6	
Permitted Phases						Free						
Detector Phase					3 8						6	
Switch Phase												
Minimum Initial (s)											4.0	
Minimum Split (s)											10.0	
Total Split (s)											87.0	
Total Split (%)											58.0%	
Maximum Green (s)											81.0	
Yellow Time (s)											4.0	
All-Red Time (s)											2.0	
Lost Time Adjust (s)											-1.0	
Total Lost Time (s)											5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)											3.0	
Recall Mode											C-Max	
Walk Time (s)												
Flash Dont Walk (s)												

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
8: SBL & WB Off-Ramp Alt 8 Weekday PM

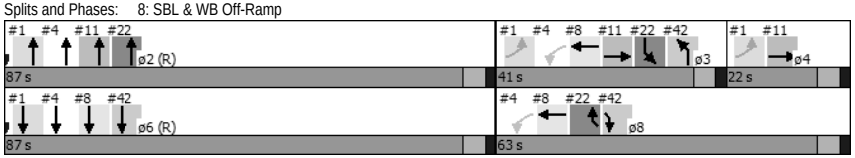
Lane Group	ø2	ø3	ø4	ø8
Lane Configurations				
Volume (vph)				
Ideal Flow (vphpl)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Turn Type				
Protected Phases	2	3	4	8
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	10.0	22.0	22.0
Total Split (s)	87.0	41.0	22.0	63.0
Total Split (%)	58%	27%	15%	42%
Maximum Green (s)	81.0	35.0	16.0	57.0
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag		Lead	Lag	
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	C-Max	None	None	None
Walk Time (s)	5.0		5.0	5.0
Flash Dont Walk (s)	11.0		11.0	11.0

Lanes, Volumes, Timings Alt 8 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\9 - Displaced Left Turn Interchange\Weekday PM NRK 150.syn Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)												
Act Effct Green (s)					58.0	150.0					82.0	
Actuated g/C Ratio					0.39	1.00					0.55	
v/c Ratio					0.47	0.39					0.56	
Control Delay					37.3	0.8					60.1	
Queue Delay					0.0	0.6					59.7	
Total Delay					37.3	1.4					119.8	
LOS					D	A					F	
Approach Delay					14.0						119.8	
Approach LOS					B						F	
Queue Length 50th (ft)					233	0					565	
Queue Length 95th (ft)					327	0					m419	
Internal Link Dist (ft)		20			536			256			208	
Turn Bay Length (ft)												
Base Capacity (vph)					682	1500					964	
Starvation Cap Reductn					0	0					676	
Spillback Cap Reductn					0	520					0	
Storage Cap Reductn					0	0					0	
Reduced v/c Ratio					0.47	0.60					1.88	

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 144 (96%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.35			
Intersection Signal Delay: 53.5		Intersection LOS: D	
Intersection Capacity Utilization 53.8%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 8: SBL & WB Off-Ramp

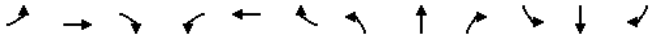


McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
8: SBL & WB Off-Ramp Alt 8 Weekday PM

Lane Group	ø2	ø3	ø4	ø8
Pedestrian Calls (#/hr)	0		0	0
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Queue Length 50th (ft)				
Queue Length 95th (ft)				
Internal Link Dist (ft)				
Turn Bay Length (ft)				
Base Capacity (vph)				
Starvation Cap Reductn				
Spillback Cap Reductn				
Storage Cap Reductn				
Reduced v/c Ratio				

Intersection Summary

Lanes, Volumes, Timings Alt 8 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\9 - Displaced Left Turn Interchange\Weekday PM NRK 150.syn Synchro 8



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱↱					↑				
Volume (vph)	0	431	909	0	0	0	0	364	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									
Flt Protected												
Satd. Flow (prot)	0	1765	2640	0	0	0	0	1765	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1765	2640	0	0	0	0	1765	0	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		680			107			221			319	
Travel Time (s)		15.5			2.4			5.0			7.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	454	957	0	0	0	0	383	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	454	957	0	0	0	0	383	0	0	0	0
Number of Detectors		1	1					1				
Detector Template			Right									
Leading Detector (ft)		35	20					35				
Trailing Detector (ft)		-5	0					-5				
Detector 1 Position(ft)		-5	0					-5				
Detector 1 Size(ft)		40	20					40				
Detector 1 Type		Cl+Ex	Cl+Ex					Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0					0.0				
Detector 1 Queue (s)		0.0	0.0					0.0				
Detector 1 Delay (s)		0.0	0.0					0.0				
Turn Type		NA	Free					NA				
Protected Phases		3 4						2				
Permitted Phases			Free									
Detector Phase		3 4						2				
Switch Phase												
Minimum Initial (s)								4.0				
Minimum Split (s)								22.0				
Total Split (s)								87.0				
Total Split (%)								58.0%				
Maximum Green (s)								81.0				
Yellow Time (s)								4.0				
All-Red Time (s)								2.0				
Lost Time Adjust (s)								-1.0				
Total Lost Time (s)								5.0				
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)								3.0				
Recall Mode								C-Max				
Walk Time (s)								5.0				
Flash Dont Walk (s)								11.0				

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
11: EB Off-Ramp & NBL Alt 8 Weekday PM

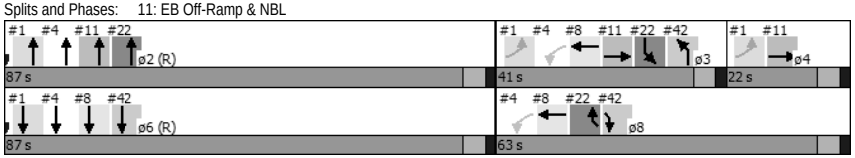
Lane Group	ø3	ø4	ø6	ø8
Lane Configurations				
Volume (vph)				
Ideal Flow (vphpl)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Turn Type				
Protected Phases	3	4	6	8
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	22.0	10.0	22.0
Total Split (s)	41.0	22.0	87.0	63.0
Total Split (%)	27%	15%	58%	42%
Maximum Green (s)	35.0	16.0	81.0	57.0
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lag		
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None
Walk Time (s)		5.0		5.0
Flash Dont Walk (s)		11.0		11.0

Lanes, Volumes, Timings Alt 8 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\9 - Displaced Left Turn Interchange\Weekday PM NRK 150.syn Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)		58.0	150.0					82.0				
Actuated g/C Ratio		0.39	1.00					0.55				
v/c Ratio		0.67	0.36					0.40				
Control Delay		43.8	0.4					56.0				
Queue Delay		0.0	0.2					62.4				
Total Delay		43.8	0.6					118.4				
LOS		D	A					F				
Approach Delay		14.5						118.4				
Approach LOS		B						F				
Queue Length 50th (ft)		365	0					399				
Queue Length 95th (ft)		494	0					m419				
Internal Link Dist (ft)		600			27			141			239	
Turn Bay Length (ft)												
Base Capacity (vph)		682	2640					964				
Starvation Cap Reductn		0	0					724				
Spillback Cap Reductn		0	849					0				
Storage Cap Reductn		0	0					0				
Reduced v/c Ratio		0.67	0.53					1.60				

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 144 (96%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.35			
Intersection Signal Delay: 36.7		Intersection LOS: D	
Intersection Capacity Utilization 55.1%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 11: EB Off-Ramp & NBL



McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
11: EB Off-Ramp & NBL Alt 8 Weekday PM

Lane Group	ø3	ø4	ø6	ø8
Pedestrian Calls (#/hr)		0		0
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Queue Length 50th (ft)				
Queue Length 95th (ft)				
Internal Link Dist (ft)				
Turn Bay Length (ft)				
Base Capacity (vph)				
Starvation Cap Reductn				
Spillback Cap Reductn				
Storage Cap Reductn				
Reduced v/c Ratio				

Intersection Summary

Lanes, Volumes, Timings Alt 8 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\9 - Displaced Left Turn Interchange\Weekday PM NRK 150.syn Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	4	381	15	10	19	0	3626	34	47	3238	216
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.941			0.999				0.850
Flt Protected	0.950	0.954			0.984					0.950		
Satd. Flow (prot)	1585	1591	1492	0	1887	0	0	6065	0	1621	4818	1600
Flt Permitted	0.950	0.954			0.984					0.950		
Satd. Flow (perm)	1585	1591	1492	0	1887	0	0	6065	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			109					2				126
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		587			625			296			678	
Travel Time (s)		13.3			14.2			4.5			10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	4	414	16	11	21	0	3941	37	51	3520	235
Shared Lane Traffic (%)	49%											
Lane Group Flow (vph)	109	109	414	0	48	0	0	3978	0	51	3520	235
Number of Detectors	1	2	1	1	2			2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru			Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100			100		20	100	20
Trailing Detector (ft)	0	0	0	0	0			0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0			0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6			6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	22.0	22.0	22.0	11.0	11.0			26.0		10.0	26.0	26.0
Total Split (s)	37.0	37.0	37.0	11.0	11.0			91.0		11.0	102.0	102.0
Total Split (%)	24.7%	24.7%	24.7%	7.3%	7.3%			60.7%		7.3%	68.0%	68.0%
Maximum Green (s)	31.0	31.0	31.0	5.0	5.0			85.0		5.0	96.0	96.0

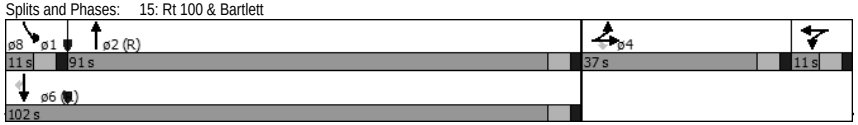
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	0.2	0.2			0.2		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	32.0	32.0	32.0		6.0			87.8		6.4	99.2	99.2
Actuated g/C Ratio	0.21	0.21	0.21		0.04			0.59		0.04	0.66	0.66
v/c Ratio	0.32	0.32	1.02		0.64			1.12		0.74	1.10	0.21
Control Delay	53.0	53.0	93.0		105.6			72.3		122.1	78.4	5.2
Queue Delay	0.0	0.0	23.4		0.0			0.3		0.0	0.5	0.0
Total Delay	53.0	53.0	116.4		105.6			72.6		122.1	78.9	5.2
LOS	D	D	F		F			E		F	E	A
Approach Delay		94.5			105.6			72.6			75.0	
Approach LOS		F			F			E			E	
Queue Length 50th (ft)	95	95	~341		47			~1353		50	~1457	38
Queue Length 95th (ft)	160	160	#559		#114			m943		#133	#1515	74
Internal Link Dist (ft)		507			545			216			598	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	338	339	404		75			3550		69	3186	1101
Starvation Cap Reductn	0	0	0		0			603		0	0	0
Spillback Cap Reductn	0	0	25		0			0		0	702	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.32	0.32	1.09		0.64			1.35		0.74	1.42	0.21

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.12
Intersection Signal Delay: 75.5 Intersection LOS: E
Intersection Capacity Utilization 107.6% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Rt 100 & Bartlett



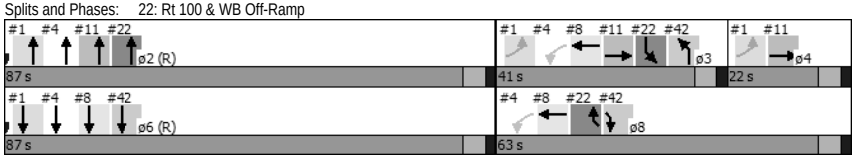
Lane Group	NBT	NBR	SBL	SBT	NWL	NWR	ø4	ø6
Lane Configurations								
Volume (vph)	3083	0	515	3432	0	560		
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800		
Lane Width (ft)	13	13	12	13	12	12		
Storage Length (ft)		0	250		0	0		
Storage Lanes		0	1		0	1		
Taper Length (ft)			50		50			
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00		
Frt						0.865		
Flt Protected			0.950					
Satd. Flow (prot)	4978	0	1676	4978	0	1526		
Flt Permitted			0.950					
Satd. Flow (perm)	4978	0	1676	4978	0	1526		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)								
Link Speed (mph)	45			45	30			
Link Distance (ft)	141			296	109			
Travel Time (s)	2.1			4.5	2.5			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Adj. Flow (vph)	3245	0	542	3613	0	589		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	3245	0	542	3613	0	589		
Number of Detectors	1		1	0		0		
Detector Template			Left					
Leading Detector (ft)	35		35	0		0		
Trailing Detector (ft)	-5		-5	0		0		
Detector 1 Position(ft)	-5		-5	0		0		
Detector 1 Size(ft)	40		40	6		20		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		
Detector 1 Channel								
Detector 1 Extend (s)	0.0		0.0	0.0		0.0		
Detector 1 Queue (s)	0.0		0.0	0.0		0.0		
Detector 1 Delay (s)	0.0		0.0	0.0		0.0		
Turn Type	NA		Prot	NA		Prot		
Protected Phases	2		3	Free		8	4	6
Permitted Phases								
Detector Phase	2		3			8		
Switch Phase								
Minimum Initial (s)	4.0		4.0			4.0	4.0	4.0
Minimum Split (s)	22.0		10.0			22.0	22.0	10.0
Total Split (s)	87.0		41.0			63.0	22.0	87.0
Total Split (%)	58.0%		27.3%			42.0%	15%	58%
Maximum Green (s)	81.0		35.0			57.0	16.0	81.0
Yellow Time (s)	4.0		4.0			4.0	4.0	4.0
All-Red Time (s)	2.0		2.0			2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0			-1.0		
Total Lost Time (s)	5.0		5.0			5.0		
Lead/Lag			Lead				Lag	
Lead-Lag Optimize?								

Lane Group	NBT	NBR	SBL	SBT	NWL	NWR	ø4	ø6
Vehicle Extension (s)	3.0		3.0			3.0	3.0	3.0
Recall Mode	C-Max		None			None	None	C-Max
Walk Time (s)	5.0					5.0	5.0	
Flash Dont Walk (s)	11.0					11.0	11.0	
Pedestrian Calls (#/hr)	0					0	0	
Act Effct Green (s)	82.0		36.0	150.0		58.0		
Actuated g/C Ratio	0.55		0.24	1.00		0.39		
v/c Ratio	1.19		1.35	0.73		1.00		
Control Delay	99.2		200.9	1.8		81.0		
Queue Delay	0.6		8.8	46.5		34.5		
Total Delay	99.8		209.6	48.3		115.5		
LOS	F		F	D		F		
Approach Delay	99.8			69.3				
Approach LOS	F			E				
Queue Length 50th (ft)	~1379		~705	0		573		
Queue Length 95th (ft)	m#88		m#626	m0		#836		
Internal Link Dist (ft)	61			216	29			
Turn Bay Length (ft)			250					
Base Capacity (vph)	2721		402	4978		590		
Starvation Cap Reductn	0		182	0		69		
Spillback Cap Reductn	595		203	1800		0		
Storage Cap Reductn	0		0	0		0		
Reduced v/c Ratio	1.53		2.72	1.14		1.13		

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 144 (96%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.35
Intersection Signal Delay: 85.1 Intersection LOS: F
Intersection Capacity Utilization 107.8% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: Rt 100 & WB Off-Ramp



Lane Group	NBL	NBT	SBT	SBR	SEL	SER	ø2	ø4
Lane Configurations								
Volume (vph)	364	2690	3304	0	0	909		
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800		
Lane Width (ft)	12	13	13	13	12	12		
Storage Length (ft)	250			0	0	0		
Storage Lanes	1			0	0	2		
Taper Length (ft)	50				50			
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	0.88		
Frt						0.850		
Flt Protected	0.950							
Satd. Flow (prot)	1676	4978	4978	0	0	2640		
Flt Permitted	0.950							
Satd. Flow (perm)	1676	4978	4978	0	0	2640		
Right Turn on Red				No		No		
Satd. Flow (RTOR)								
Link Speed (mph)		45	45		30			
Link Distance (ft)		404	148		130			
Travel Time (s)		6.1	2.2		3.0			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Adj. Flow (vph)	383	2832	3478	0	0	957		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	383	2832	3478	0	0	957		
Number of Detectors	1	0	1			0		
Detector Template	Left							
Leading Detector (ft)	35	0	35			0		
Trailing Detector (ft)	-5	0	-5			0		
Detector 1 Position(ft)	-5	0	-5			0		
Detector 1 Size(ft)	40	6	40			20		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		
Detector 1 Channel								
Detector 1 Extend (s)	0.0	0.0	0.0			0.0		
Detector 1 Queue (s)	0.0	0.0	0.0			0.0		
Detector 1 Delay (s)	0.0	0.0	0.0			0.0		
Turn Type	Prot	NA	NA			Prot		
Protected Phases	3	Free	6			8	2	4
Permitted Phases								
Detector Phase	3		6			8		
Switch Phase								
Minimum Initial (s)	4.0		4.0			4.0	4.0	4.0
Minimum Split (s)	10.0		10.0			22.0	22.0	22.0
Total Split (s)	41.0		87.0			63.0	87.0	22.0
Total Split (%)	27.3%		58.0%			42.0%	58%	15%
Maximum Green (s)	35.0		81.0			57.0	81.0	16.0
Yellow Time (s)	4.0		4.0			4.0	4.0	4.0
All-Red Time (s)	2.0		2.0			2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0			-1.0		
Total Lost Time (s)	5.0		5.0			5.0		
Lead/Lag	Lead							Lag
Lead-Lag Optimize?								

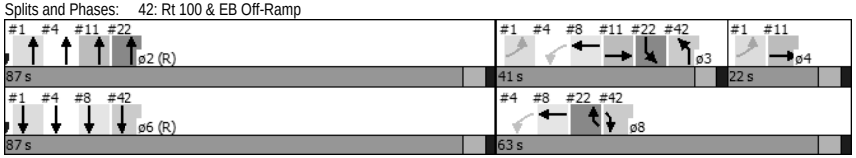
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
42: Rt 100 & EB Off-Ramp Alt 8 Weekday PM

Lane Group	NBL	NBT	SBT	SBR	SEL	SER	ø2	ø4
Vehicle Extension (s)	3.0		3.0			3.0	3.0	3.0
Recall Mode	None		C-Max			None	C-Max	None
Walk Time (s)						5.0	5.0	5.0
Flash Dont Walk (s)						11.0	11.0	11.0
Pedestrian Calls (#/hr)						0	0	0
Act Effct Green (s)	36.0	150.0	82.0			58.0		
Actuated g/C Ratio	0.24	1.00	0.55			0.39		
v/c Ratio	0.95	0.57	1.28			0.94		
Control Delay	90.2	0.5	138.5			60.5		
Queue Delay	48.2	1.4	0.0			44.0		
Total Delay	138.4	1.9	138.5			104.5		
LOS	F	A	F			F		
Approach Delay		18.1	138.5					
Approach LOS		B	F					
Queue Length 50th (ft)	372	0	~1552			509		
Queue Length 95th (ft)	#580	0	m71			#662		
Internal Link Dist (ft)		324	68		50			
Turn Bay Length (ft)	250							
Base Capacity (vph)	402	4978	2721			1020		
Starvation Cap Reductn	0	0	0			149		
Spillback Cap Reductn	179	1843	0			0		
Storage Cap Reductn	0	0	0			0		
Reduced v/c Ratio	1.72	0.90	1.28			1.10		

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 144 (96%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.35
Intersection Signal Delay: 83.7 Intersection LOS: F
Intersection Capacity Utilization 109.3% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 42: Rt 100 & EB Off-Ramp



Lanes, Volumes, Timings Alt 8 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\9 - Displaced Left Turn Interchange\Weekday PM NRK 150.syn Synchro 8

Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (vph)	515	0	0	0	0	38
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	1765	0	0	0	0	1526
Flt Permitted						
Satd. Flow (perm)	1765	0	0	0	0	1526
Link Speed (mph)	30			30	30	
Link Distance (ft)	336			643	114	
Travel Time (s)	7.6			14.6	2.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	542	0	0	0	0	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	542	0	0	0	0	40
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
5: NBR & SBL/EB On-Ramp Alt 8 Weekday PM

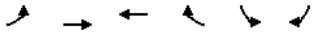
Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NEL	NER
Vol, veh/h	515	0	0	0	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	1081	409	536	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	542	0	0	0	0	40

Major/Minor	Major1		Minor1	
Conflicting Flow All	0	0	542	542
Stage 1	-	-	542	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	7.12	6.22
Critical Hdwy Stg 1	-	-	6.12	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	451	540
Stage 1	-	-	525	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	451	540
Mov Cap-2 Maneuver	-	-	451	-
Stage 1	-	-	525	-
Stage 2	-	-	-	-

Approach	EB	NE
HCM Control Delay, s	0	12.2
HCM LOS		B

Minor Lane/Major Mvmt	NELn1	EBT	EBR
Capacity (veh/h)	540	-	-
HCM Lane V/C Ratio	0.074	-	-
HCM Control Delay (s)	12.2	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑			↱
Volume (vph)	0	0	364	0	0	432
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	0	1765	0	0	1526
Flt Permitted						
Satd. Flow (perm)	0	0	1765	0	0	1526
Link Speed (mph)		30	30		30	
Link Distance (ft)		632	319		163	
Travel Time (s)		14.4	7.3		3.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	383	0	0	455
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	383	0	0	455
Sign Control		Stop	Free		Stop	

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

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
9: NBL & SBR Alt 8 Weekday PM

Intersection	
Int Delay, s/veh	11.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	0	364	0	0	432
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	383	0	0	455

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	383	383
Stage 1	-	-	383	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	7.12	6.22
Critical Hdwy Stg 1	-	-	6.12	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	575	664
Stage 1	-	-	640	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	575	664
Mov Cap-2 Maneuver	-	-	575	-
Stage 1	-	-	640	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Control Delay, s	0	21.4
HCM LOS		C

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	664
HCM Lane V/C Ratio	-	-	0.685
HCM Control Delay (s)	-	-	21.4
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	5.4

ALTERNATIVE 13

Third Northbound Travel Lane + New Station Access

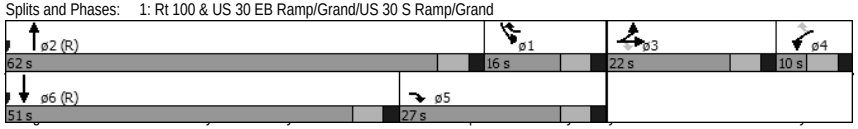
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	352	39	1405	15	0	80	0	2605	57	198	2360	0
Ideal Flow (vphpl)	1000	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		1	2		1	0		0	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	0.97	1.00	1.00	1.00	*0.91	0.91	1.00	0.95	1.00
Frt			0.850			0.850		0.997				
Flt Protected	0.950	0.961		0.950						0.950		
Satd. Flow (prot)	949	1625	2653	3384	0	1613	0	4988	0	1637	3386	0
Flt Permitted	0.950	0.961		0.950						0.950		
Satd. Flow (perm)	949	1625	2653	3384	0	1613	0	4988	0	1637	3386	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			978			693	
Travel Time (s)		27.0			6.2			14.8			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	383	42	1527	16	0	87	0	2832	62	215	2565	0
Shared Lane Traffic (%)	45%											
Lane Group Flow (vph)	211	214	1527	16	0	87	0	2894	0	215	2565	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3	5	4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	5	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	9.0	9.0	9.0	9.0		9.0		26.0		9.0	26.0	
Total Split (s)	22.0	22.0	27.0	10.0		16.0		62.0		16.0	51.0	
Total Split (%)	20.0%	20.0%	24.5%	9.1%		14.5%		56.4%		14.5%	46.4%	

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 13 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	16.0	16.0	21.0	4.0		10.0		56.0		10.0	45.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag	Lag		Lag		Lead		Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	17.0	17.0	44.0	5.0		13.0		63.0		11.0	52.0	
Actuated g/C Ratio	0.15	0.15	0.40	0.05		0.12		0.57		0.10	0.47	
v/c Ratio	1.45	0.85	1.44	0.10		0.46		1.01		1.32	1.60	
Control Delay	269.8	75.2	231.7	51.9		41.5		36.6		195.8	296.6	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	3.2	
Total Delay	269.8	75.2	231.7	51.9		41.5		36.6		195.8	299.8	
LOS	F	E	F	D		D		D		F	F	
Approach Delay		218.7						36.6			291.8	
Approach LOS		F						D			F	
Queue Length 50th (ft)	~213	156	~834	5		59		649		~203	~1325	
Queue Length 95th (ft)	#371	#296	#983	17		74		#958		m#224	m#1518	
Internal Link Dist (ft)		1307			239			898			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	146	251	1061	153		190		2856		163	1600	
Starvation Cap Reductn	0	0	0	0		0		0		0	0	
Spillback Cap Reductn	0	0	0	0		0		0		0	816	
Storage Cap Reductn	0	0	0	0		0		0		0	0	
Reduced v/c Ratio	1.45	0.85	1.44	0.10		0.46		1.01		1.32	3.27	

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 79 (72%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.60		
Intersection Signal Delay: 174.4		Intersection LOS: F
Intersection Capacity Utilization 135.7%		ICU Level of Service H
Analysis Period (min) 15		
* User Entered Value		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	193	0	264	0	2425	4	0	2365	112
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	14
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												122
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	210	0	287	0	2636	4	0	2571	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	210	0	287	0	2640	0	0	2571	122
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				7.0		7.0		20.0			20.0	20.0
Minimum Split (s)				13.0		13.0		26.0			26.0	26.0
Total Split (s)				18.0		18.0		92.0			92.0	92.0
Total Split (%)				16.4%		16.4%		83.6%			83.6%	83.6%
Maximum Green (s)				12.0		12.0		86.0			86.0	86.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

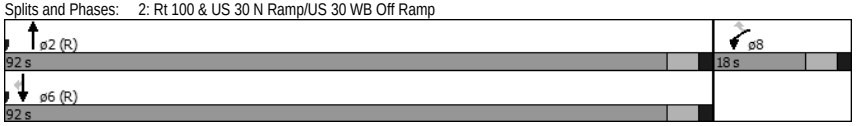
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt 13 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				13.0		13.0		87.0			87.0	87.0
Actuated g/C Ratio				0.12		0.12		0.79			0.79	0.79
v/c Ratio				0.54		0.86		0.54			0.97	0.10
Control Delay				51.5		72.2		2.3			20.3	0.2
Queue Delay				0.0		0.0		0.1			0.0	0.0
Total Delay				51.5		72.2		2.4			20.3	0.2
LOS				D		E		A			C	A
Approach Delay								2.4			19.3	
Approach LOS								A			B	
Queue Length 50th (ft)				73		114		56			813	0
Queue Length 95th (ft)				111		#195		m83			#559	m0
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				386		334		4849			2651	1278
Starvation Cap Reductn				0		0		618			0	0
Spillback Cap Reductn				0		0		460			0	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.54		0.86		0.62			0.97	0.10

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 51 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 15.4 Intersection LOS: B
Intersection Capacity Utilization 82.3% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



Lanes, Volumes, Timings Alt 13 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\18A - Concept Plan\Weekday AM.syn Synchro 8

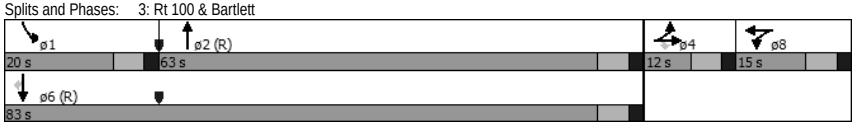
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	5	65	48	7	40	0	2131	89	47	2341	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.944			0.994				0.850
Flt Protected	0.950	0.976			0.975					0.950		
Satd. Flow (prot)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Flt Permitted	0.950	0.976			0.975					0.950		
Satd. Flow (perm)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			149					11				89
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	5	71	52	8	43	0	2316	97	51	2545	24
Shared Lane Traffic (%)	34%											
Lane Group Flow (vph)	10	10	71	0	103	0	0	2413	0	51	2545	24
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		20.0	26.0	26.0
Total Split (s)	12.0	12.0	12.0	15.0	15.0			63.0		20.0	83.0	83.0
Total Split (%)	10.9%	10.9%	10.9%	13.6%	13.6%			57.3%		18.2%	75.5%	75.5%
Maximum Green (s)	6.0	6.0	6.0	9.0	9.0			57.0		14.0	77.0	77.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
3: Rt 100 & Bartlett Alt 13 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	6.8	6.8	6.8		9.7			68.1		9.9	80.7	80.7
Actuated g/C Ratio	0.06	0.06	0.06		0.09			0.62		0.09	0.73	0.73
v/c Ratio	0.10	0.10	0.30		0.62			0.65		0.35	0.72	0.02
Control Delay	51.0	50.9	3.3		65.2			10.5		34.8	19.1	0.3
Queue Delay	0.0	0.0	0.5		7.3			0.1		0.0	0.1	0.0
Total Delay	51.0	50.9	3.8		72.6			10.7		34.8	19.2	0.3
LOS	D	D	A		E			B		C	B	A
Approach Delay		14.1			72.6			10.7			19.3	
Approach LOS		B			E			B			B	
Queue Length 50th (ft)	7	7	0		71			185		32	490	0
Queue Length 95th (ft)	26	26	0		#138			230		m42	509	m0
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	100	103	237		171			3740		221	3536	1198
Starvation Cap Reductn	0	0	0		0			379		0	0	0
Spillback Cap Reductn	0	0	35		37			0		0	199	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.10	0.10	0.35		0.77			0.72		0.23	0.76	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 80 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 16.3		Intersection LOS: B	
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Rt 100 & Bartlett



Lanes, Volumes, Timings Alt 13 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\18A - Concept Plan\Weekday AM.syn Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	23	156	115	27	13	354	2231	84	1	2125	101
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.951			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3236	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.728			0.741			0.950			0.950		
Satd. Flow (perm)	1317	1809	1624	1327	3236	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			159		14			11				149
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	108	25	170	125	29	14	385	2425	91	1	2310	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	25	170	125	43	0	385	2516	0	1	2310	110
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0		22.0	78.0		10.0	66.0	66.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%		20.0%	70.9%		9.1%	60.0%	60.0%
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0		16.0	72.0		4.0	60.0	60.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

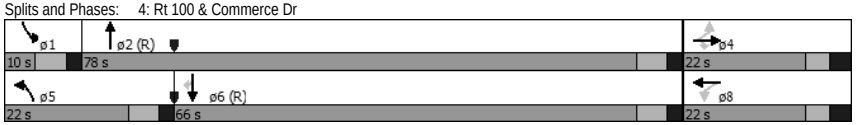
McMahon Associates, Inc.
4: Rt 100 & Commerce Dr

Pottstown Pike Congestion Mitigation Study
Alt 13 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	14.9	14.9	14.9	14.9	14.9		16.5	83.1		5.0	63.6	63.6
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14		0.15	0.76		0.05	0.58	0.58
v/c Ratio	0.61	0.10	0.47	0.69	0.10		0.77	0.67		0.01	0.83	0.11
Control Delay	59.0	41.4	12.7	65.2	30.4		70.8	2.4		52.0	12.9	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	59.0	41.4	12.7	65.2	30.4		70.8	2.4		52.0	12.9	0.6
LOS	E	D	B	E	C		E	A		D	B	A
Approach Delay		31.6			56.3			11.5			12.4	
Approach LOS		C			E			B			B	
Queue Length 50th (ft)	71	15	7	84	9		148	38		1	185	1
Queue Length 95th (ft)	130	41	68	#150	26		#201	56		m2	258	m2
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	203	279	385	205	511		512	3782		76	2783	996
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.53	0.09	0.44	0.61	0.08		0.75	0.67		0.01	0.83	0.11

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 97 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 79.9%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: Rt 100 & Commerce Dr



Lanes, Volumes, Timings
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Alt 13 Weekday AM
Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	76	108	14	22	12	0	2641	426	0	3750	84
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		600	0		300
Storage Lanes	1		0	1		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Frt		0.912			0.947				0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	1765	1609	0	1676	1671	0	1774	4890	1507	0	3353	1500
Flt Permitted				0.288								
Satd. Flow (perm)	1765	1609	0	508	1671	0	1774	4890	1507	0	3353	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53			7				463			69
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		103			249			1573			978	
Travel Time (s)		2.3			5.7			23.8			14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Adj. Flow (vph)	0	83	117	15	24	13	0	2871	463	0	4076	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	200	0	15	37	0	0	2871	463	0	4076	91
Number of Detectors	1	2		1	2		1	2	1		2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right		Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20		100	20
Trailing Detector (ft)	0	0		0	0		0	0	0		0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0		0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20		6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm		NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8					2			6
Detector Phase	4	4		8	8		5	2	2		6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0	21.0		21.0	21.0
Total Split (s)	19.0	19.0		19.0	19.0		13.0	91.0	91.0		78.0	78.0
Total Split (%)	17.3%	17.3%		17.3%	17.3%		11.8%	82.7%	82.7%		70.9%	70.9%
Maximum Green (s)	14.0	14.0		14.0	14.0		8.0	86.0	86.0		73.0	73.0

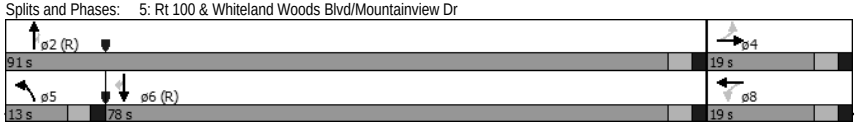
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0		-1.0	-1.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)		13.9		13.9	13.9			88.1	88.1		88.1	88.1
Actuated g/C Ratio		0.13		0.13	0.13			0.80	0.80		0.80	0.80
v/c Ratio		0.80		0.23	0.17			0.73	0.36		1.52	0.07
Control Delay		57.8		52.2	38.0			6.9	1.0		250.3	0.5
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay		57.8		52.2	38.0			6.9	1.0		250.3	0.5
LOS		E		D	D			A	A		F	A
Approach Delay		57.8			42.1			6.1			244.9	
Approach LOS		E			D			A			F	
Queue Length 50th (ft)		101		10	19			301	0		~2140	1
Queue Length 95th (ft)		#213		31	51			347	18		m#535	m0
Internal Link Dist (ft)		23			169			1493			898	
Turn Bay Length (ft)									600			300
Base Capacity (vph)		265		69	233			3916	1299		2685	1214
Starvation Cap Reductn		0		0	0			0	0		1	0
Spillback Cap Reductn		0		0	0			0	0		0	0
Storage Cap Reductn		0		0	0			0	0		0	0
Reduced v/c Ratio		0.75		0.22	0.16			0.73	0.36		1.52	0.07

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 65 (59%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.52
Intersection Signal Delay: 136.0 Intersection LOS: F
Intersection Capacity Utilization 128.4% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountainview Dr

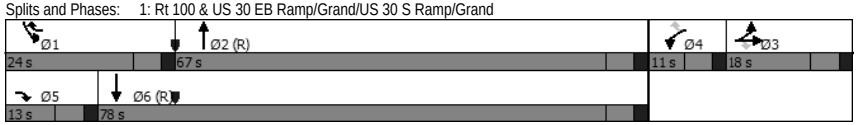


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	431	92	817	56	0	323	0	3054	38	459	3354	0
Future Volume (vph)	431	92	817	56	0	323	0	3054	38	459	3354	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		1	2		1	0		0	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	0.97	1.00	1.00	1.00	*0.91	0.91	1.00	0.95	1.00
Frt			0.850			0.850		0.998				
Flt Protected	0.950	0.968		0.950						0.950		
Satd. Flow (prot)	1707	1642	2653	3384	0	1613	0	4993	0	1637	3386	0
Flt Permitted	0.950	0.968		0.950						0.950		
Satd. Flow (perm)	1707	1642	2653	3384	0	1613	0	4993	0	1637	3386	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			995			693	
Travel Time (s)		27.0			6.2			15.1			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	468	100	888	61	0	351	0	3320	41	499	3646	0
Shared Lane Traffic (%)	40%											
Lane Group Flow (vph)	281	287	888	61	0	351	0	3361	0	499	3646	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3	5	4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	5	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	11.0	11.0	9.0	11.0		10.0		26.0		10.0	26.0	
Total Split (s)	18.0	18.0	13.0	11.0		24.0		67.0		24.0	78.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	15.0%	15.0%	10.8%	9.2%		20.0%		55.8%		20.0%	65.0%	
Maximum Green (s)	12.0	12.0	7.0	5.0		18.0		61.0		18.0	72.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lead	Lead		Lead		Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	13.0	13.0	26.0	6.0		23.8		64.2		19.0	75.2	
Actuated g/C Ratio	0.11	0.11	0.22	0.05		0.20		0.54		0.16	0.63	
v/c Ratio	1.53	1.62	1.55	0.36		1.10		1.26		1.93	1.72	
Control Delay	299.3	338.6	288.1	61.4		119.9		141.5		448.5	342.5	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	1.7	
Total Delay	299.3	338.6	288.1	61.4		119.9		141.5		448.5	344.2	
LOS	F	F	F	E		F		F		F	F	
Approach Delay		300.2			111.3			141.5			356.8	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	~320	~335	~550	24		~220		~1231		~599	~2231	
Queue Length 95th (ft)	#503	#521	#689	47		#444		#1301		m#360	m#1256	
Internal Link Dist (ft)		1307			239			915			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	184	177	574	169		320		2671		259	2121	
Starvation Cap Reductn	0	0	0	0		0		0		0	79	
Spillback Cap Reductn	0	0	0	0		0		0		0	860	
Storage Cap Reductn	0	0	0	0		0		0		0	0	
Reduced v/c Ratio	1.53	1.62	1.55	0.36		1.10		1.26		1.93	2.89	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 65 (54%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.93			
Intersection Signal Delay: 260.0		Intersection LOS: F	
Intersection Capacity Utilization 143.0%		ICU Level of Service H	
Analysis Period (min) 15			
* User Entered Value			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	304	0	560	0	3105	30	0	3508	432
Future Volume (vph)	0	0	0	304	0	560	0	3105	30	0	3508	432
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	12
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850		0.999				0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												309
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	330	0	609	0	3375	33	0	3813	470
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	330	0	609	0	3408	0	0	3813	470
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0		20.0			20.0	20.0
Minimum Split (s)				11.0		11.0		26.0			26.0	26.0
Total Split (s)				25.0		25.0		95.0			95.0	95.0
Total Split (%)				20.8%		20.8%		79.2%			79.2%	79.2%
Maximum Green (s)				19.0		19.0		89.0			89.0	89.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0

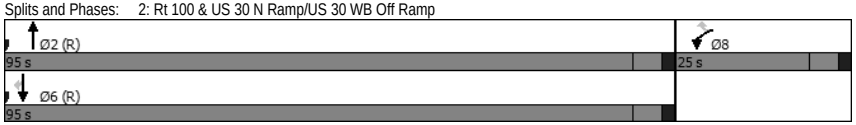
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt 13 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				20.0		20.0		90.0			90.0	90.0
Actuated g/C Ratio				0.17		0.17		0.75			0.75	0.75
v/c Ratio				0.61		1.29		0.74			1.52	0.39
Control Delay				51.7		187.4		8.8			249.0	0.4
Queue Delay				0.0		0.0		0.5			0.8	1.8
Total Delay				51.7		187.4		9.2			249.9	2.2
LOS				D		F		A			F	A
Approach Delay					139.7			9.2			222.7	
Approach LOS					F			A			F	
Queue Length 50th (ft)				123		~342		318			~2166	0
Queue Length 95th (ft)				173		#469		m207			m#1930	m0
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				544		471		4593			2514	1191
Starvation Cap Reductn				0		0		578			1	539
Spillback Cap Reductn				0		0		634			715	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.61		1.29		0.86			2.12	0.72

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 28 (23%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.52
Intersection Signal Delay: 129.4 Intersection LOS: F
Intersection Capacity Utilization 119.0% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



Lanes, Volumes, Timings Alt 13 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\18A - Concept Plan\Weekday PM.syn Synchro 10

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	4	381	15	10	19	0	3631	34	47	3231	216
Future Volume (vph)	197	4	381	15	10	19	0	3631	34	47	3231	216
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.941			0.999				0.850
Flt Protected	0.950	0.954			0.984					0.950		
Satd. Flow (prot)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Flt Permitted	0.950	0.954			0.984					0.950		
Satd. Flow (perm)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			139					2				143
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	4	414	16	11	21	0	3947	37	51	3512	235
Shared Lane Traffic (%)	49%											
Lane Group Flow (vph)	109	109	414	0	48	0	0	3984	0	51	3512	235
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		10.0	26.0	26.0
Total Split (s)	24.0	24.0	24.0	18.0	18.0			68.0		10.0	78.0	78.0
Total Split (%)	20.0%	20.0%	20.0%	15.0%	15.0%			56.7%		8.3%	65.0%	65.0%
Maximum Green (s)	18.0	18.0	18.0	12.0	12.0			62.0		4.0	72.0	72.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
3: Rt 100 & Bartlett Alt 13 Weekday PM

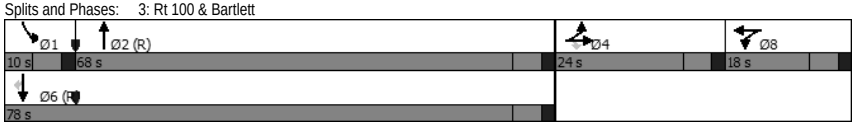
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	0.2	0.2			0.2		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	19.0	19.0	19.0		7.4			72.8		5.0	80.8	80.8
Actuated g/C Ratio	0.16	0.16	0.16		0.06			0.61		0.04	0.67	0.67
v/c Ratio	0.44	0.43	1.15		0.42			1.08		0.76	1.08	0.21
Control Delay	51.8	51.8	124.0		64.7			62.3		62.7	68.2	5.4
Queue Delay	0.0	0.0	0.6		0.0			0.9		0.0	7.5	0.0
Total Delay	51.8	51.8	124.6		64.7			63.2		62.7	75.7	5.4
LOS	D	D	F		E			E		E	E	A
Approach Delay		99.5			64.7			63.2			71.2	
Approach LOS		F			E			E			E	
Queue Length 50th (ft)	81	81	~280		37			~1041		37	~1172	50
Queue Length 95th (ft)	143	143	#482		76			m#1059		m28	m833	m36
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	250	251	361		204			3682		67	3245	1124
Starvation Cap Reductn	0	0	0		0			7		0	0	0
Spillback Cap Reductn	0	0	20		0			0		0	51	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.44	0.43	1.21		0.24			1.08		0.76	1.10	0.21

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 54 (45%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.15
Intersection Signal Delay: 69.5 Intersection LOS: E
Intersection Capacity Utilization 107.5% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Rt 100 & Bartlett



Lanes, Volumes, Timings Alt 13 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\18A - Concept Plan\Weekday PM.syn Synchro 10

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	213	541	195	75	6	640	3182	117	14	2757	716
Future Volume (vph)	231	213	541	195	75	6	640	3182	117	14	2757	716
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.988			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3362	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.696			0.425			0.950			0.950		
Satd. Flow (perm)	1259	1809	1624	761	3362	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221		7			8				279
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	251	232	588	212	82	7	696	3459	127	15	2997	778
Shared Lane Traffic (%)												
Lane Group Flow (vph)	251	232	588	212	89	0	696	3586	0	15	2997	778
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	33.0	33.0	33.0	33.0	33.0		26.0	77.0		10.0	61.0	61.0
Total Split (%)	27.5%	27.5%	27.5%	27.5%	27.5%		21.7%	64.2%		8.3%	50.8%	50.8%
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0		20.0	71.0		4.0	55.0	55.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
4: Rt 100 & Commerce Dr Alt 13 Weekday PM

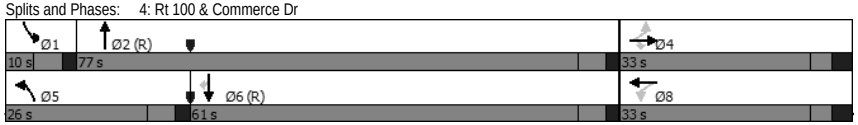
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	28.0	28.0	28.0	28.0	28.0		21.0	78.0		5.0	56.0	56.0
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23		0.18	0.65		0.04	0.47	0.47
v/c Ratio	0.86	0.55	1.07	1.20	0.11		1.20	1.10		0.21	1.33	0.86
Control Delay	71.2	46.2	87.4	171.5	33.8		133.4	71.7		55.5	179.8	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.1
Total Delay	71.2	46.2	87.4	171.5	33.8		133.4	71.7		55.5	179.8	23.6
LOS	E	D	F	F	C		F	E		E	F	C
Approach Delay		74.7			130.8			81.7			147.2	
Approach LOS		E			F			F			F	
Queue Length 50th (ft)	187	159	~366	~199	26		~332	~1142		11	~1100	255
Queue Length 95th (ft)	#335	243	#590	#355	49		m#301	m#1123		m17	m#1060	m260
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	293	422	548	177	789		580	3256		70	2247	902
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	4
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.86	0.55	1.07	1.20	0.11		1.20	1.10		0.21	1.33	0.87

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 110 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.33
Intersection Signal Delay: 108.8 Intersection LOS: F
Intersection Capacity Utilization 115.5% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Rt 100 & Commerce Dr

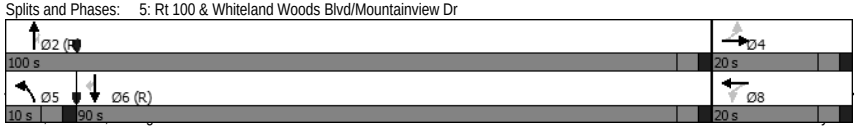


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	62	85	97	34	41	0	3062	192	0	4144	143
Future Volume (vph)	0	62	85	97	34	41	0	3062	192	0	4144	143
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1900
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	175		300	0		200
Storage Lanes	1		0	1		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Frt		0.913			0.918				0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	1765	1611	0	1676	1620	0	1774	4842	1507	0	3386	1583
Flt Permitted				0.407								
Satd. Flow (perm)	1765	1611	0	718	1620	0	1774	4842	1507	0	3386	1583
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		48			3				209			
Link Speed (mph)		30			30			45			30	
Link Distance (ft)		186			194			1556			995	
Travel Time (s)		4.2			4.4			23.6			22.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	67	92	105	37	45	0	3328	209	0	4504	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	159	0	105	82	0	0	3328	209	0	4504	155
Number of Detectors	1	2		1	2		1	2	1		2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right		Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20		100	20
Trailing Detector (ft)	0	0		0	0		0	0	0		0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0		0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20		6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm		NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8					2			6
Detector Phase	4	4		8	8		5	2	2		6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0	21.0		21.0	21.0
Total Split (s)	20.0	20.0		20.0	20.0		10.0	100.0	100.0		90.0	90.0
Total Split (%)	16.7%	16.7%		16.7%	16.7%		8.3%	83.3%	83.3%		75.0%	75.0%

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	15.0	15.0		15.0	15.0		5.0	95.0	95.0		85.0	85.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0		-1.0	-1.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)		16.0		16.0	16.0			96.0	96.0		96.0	96.0
Actuated g/C Ratio		0.13		0.13	0.13			0.80	0.80		0.80	0.80
v/c Ratio		0.62		1.11	0.38			0.86	0.17		1.66	0.12
Control Delay		45.5		171.9	51.3			10.8	0.6		314.6	0.7
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay		45.5		171.9	51.3			10.8	0.6		314.6	0.7
LOS		D		F	D			B	A		F	A
Approach Delay		45.5			119.0			10.2			304.2	
Approach LOS		D			F			B			F	
Queue Length 50th (ft)		82		~92	57			489	0		~2690	5
Queue Length 95th (ft)		157		#208	109			558	13		m#299	m3
Internal Link Dist (ft)		106			114			1476			915	
Turn Bay Length (ft)									300			200
Base Capacity (vph)		256		95	218			3873	1247		2708	1266
Starvation Cap Reductn		0		0	0			0	0		20	0
Spillback Cap Reductn		0		0	0			0	0		0	0
Storage Cap Reductn		0		0	0			0	0		0	0
Reduced v/c Ratio		0.62		1.11	0.38			0.86	0.17		1.68	0.12

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 64 (53%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.66			
Intersection Signal Delay: 173.6		Intersection LOS: F	
Intersection Capacity Utilization 145.5%		ICU Level of Service H	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountainview Dr



ALTERNATIVE 14

Third Northbound Travel Lane & Channelization + New Station Access

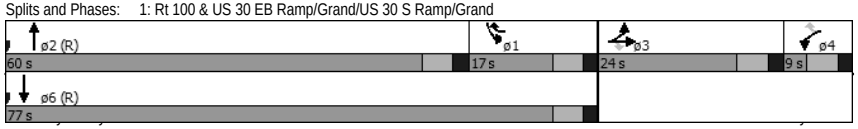
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	352	39	0	15	0	80	0	2605	57	198	2360	0
Ideal Flow (vphpl)	1000	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		1	2		1	0		0	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	0.97	1.00	1.00	1.00	*0.91	0.91	1.00	0.95	1.00
Frt						0.850		0.997				
Flt Protected	0.950	0.961		0.950						0.950		
Satd. Flow (prot)	949	1625	1774	3384	0	1613	0	4988	0	1637	3386	0
Flt Permitted	0.950	0.961		0.950						0.950		
Satd. Flow (perm)	949	1625	1774	3384	0	1613	0	4988	0	1637	3386	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			978			693	
Travel Time (s)		27.0			6.2			14.8			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	383	42	0	16	0	87	0	2832	62	215	2565	0
Shared Lane Traffic (%)	45%											
Lane Group Flow (vph)	211	214	0	16	0	87	0	2894	0	215	2565	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	Perm	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3		4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	3	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	9.0	9.0	9.0	9.0		9.0		26.0		9.0	26.0	
Total Split (s)	24.0	24.0	24.0	9.0		17.0		60.0		17.0	77.0	
Total Split (%)	21.8%	21.8%	21.8%	8.2%		15.5%		54.5%		15.5%	70.0%	

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 14 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	18.0	18.0	18.0	3.0		11.0		54.0		11.0	71.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lead	Lag		Lag		Lead		Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	19.0	19.0		4.0		13.6		60.4		12.0	77.4	
Actuated g/C Ratio	0.17	0.17		0.04		0.12		0.55		0.11	0.70	
v/c Ratio	1.29	0.76		0.13		0.44		1.06		1.21	1.08	
Control Delay	208.3	62.2		53.7		39.8		46.7		149.6	50.9	
Queue Delay	0.0	0.0		0.0		0.0		0.0		0.0	9.9	
Total Delay	208.3	62.2		53.7		39.8		46.7		149.6	60.8	
LOS	F	E		D		D		D		F	E	
Approach Delay		134.7						46.7			67.7	
Approach LOS		F						D			E	
Queue Length 50th (ft)	~200	153		5		59		524		~185	~1015	
Queue Length 95th (ft)	#357	#273		18		72		#970		m#209	m#1220	
Internal Link Dist (ft)		1307			239			898			613	
Turn Bay Length (ft)	200											
Base Capacity (vph)	163	280		123		199		2739		178	2382	
Starvation Cap Reductn	0	0		0		0		0		0	72	
Spillback Cap Reductn	0	0		0		0		0		0	0	
Storage Cap Reductn	0	0		0		0		0		0	0	
Reduced v/c Ratio	1.29	0.76		0.13		0.44		1.06		1.21	1.11	

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 12 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.29		
Intersection Signal Delay: 62.0	Intersection LOS: E	
Intersection Capacity Utilization 103.7%	ICU Level of Service G	
Analysis Period (min) 15		
* User Entered Value		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	193	0	264	0	2425	4	0	2365	112
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	14
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												122
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	210	0	287	0	2636	4	0	2571	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	210	0	287	0	2640	0	0	2571	122
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				7.0		7.0		20.0			20.0	20.0
Minimum Split (s)				13.0		13.0		26.0			26.0	26.0
Total Split (s)				17.0		17.0		93.0			93.0	93.0
Total Split (%)				15.5%		15.5%		84.5%			84.5%	84.5%
Maximum Green (s)				11.0		11.0		87.0			87.0	87.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

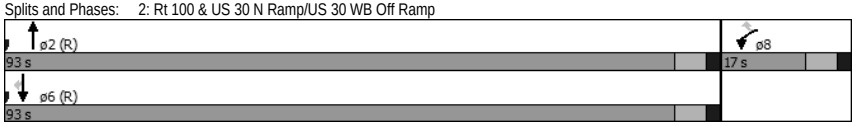
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt 14 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				12.0		12.0		88.0			88.0	88.0
Actuated g/C Ratio				0.11		0.11		0.80			0.80	0.80
v/c Ratio				0.59		0.93		0.54			0.96	0.09
Control Delay				54.0		85.9		0.7			15.5	0.1
Queue Delay				0.0		0.0		0.1			22.1	0.0
Total Delay				54.0		85.9		0.8			37.7	0.1
LOS				D		F		A			D	A
Approach Delay								0.8			36.0	
Approach LOS								A			D	
Queue Length 50th (ft)				73		115		15			212	0
Queue Length 95th (ft)				113		#206		m10			#1035	m0
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				356		308		4904			2681	1291
Starvation Cap Reductn				0		0		798			44	0
Spillback Cap Reductn				0		0		103			230	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.59		0.93		0.64			1.05	0.09

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 104 (95%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 23.1 Intersection LOS: C
Intersection Capacity Utilization 82.3% ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



Lanes, Volumes, Timings Alt 14 Weekday AM
Weekday AM.syn Synchro 8

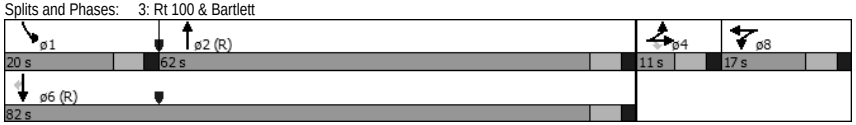
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	5	65	48	7	40	0	2131	89	47	2341	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.944			0.994				0.850
Flt Protected	0.950	0.976			0.975					0.950		
Satd. Flow (prot)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Flt Permitted	0.950	0.976			0.975					0.950		
Satd. Flow (perm)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			149					11				89
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	5	71	52	8	43	0	2316	97	51	2545	24
Shared Lane Traffic (%)	34%											
Lane Group Flow (vph)	10	10	71	0	103	0	0	2413	0	51	2545	24
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		20.0	26.0	26.0
Total Split (s)	11.0	11.0	11.0	17.0	17.0			62.0		20.0	82.0	82.0
Total Split (%)	10.0%	10.0%	10.0%	15.5%	15.5%			56.4%		18.2%	74.5%	74.5%
Maximum Green (s)	5.0	5.0	5.0	11.0	11.0			56.0		14.0	76.0	76.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
3: Rt 100 & Bartlett Alt 14 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	6.0	6.0	6.0		11.0			67.6		9.9	80.2	80.2
Actuated g/C Ratio	0.05	0.05	0.05		0.10			0.61		0.09	0.73	0.73
v/c Ratio	0.12	0.11	0.32		0.55			0.65		0.35	0.72	0.02
Control Delay	52.7	52.4	3.7		58.5			9.2		66.1	2.4	0.0
Queue Delay	0.0	0.0	0.2		0.9			0.1		0.0	0.1	0.0
Total Delay	52.7	52.4	3.8		59.3			9.3		66.1	2.6	0.0
LOS	D	D	A		E			A		E	A	A
Approach Delay		14.6			59.3			9.3			3.8	
Approach LOS		B			E			A			A	
Queue Length 50th (ft)	7	7	0		70			186		35	42	0
Queue Length 95th (ft)	26	26	0		126			177		m45	57	m0
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	86	88	224		204			3712		221	3513	1190
Starvation Cap Reductn	0	0	0		0			370		0	0	0
Spillback Cap Reductn	0	0	11		18			0		0	194	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.12	0.11	0.33		0.55			0.72		0.23	0.77	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 19 (17%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 7.6		Intersection LOS: A	
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Rt 100 & Bartlett



Lanes, Volumes, Timings Alt 14 Weekday AM
Weekday AM.syn Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	23	156	115	27	13	354	2231	84	1	2125	101
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.951			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3236	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.728			0.741			0.950			0.950		
Satd. Flow (perm)	1317	1809	1624	1327	3236	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			170		14			8				89
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	108	25	170	125	29	14	385	2425	91	1	2310	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	25	170	125	43	0	385	2516	0	1	2310	110
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	19.0	19.0	19.0	19.0	19.0		21.0	66.0		25.0	70.0	70.0
Total Split (%)	17.3%	17.3%	17.3%	17.3%	17.3%		19.1%	60.0%		22.7%	63.6%	63.6%
Maximum Green (s)	13.0	13.0	13.0	13.0	13.0		15.0	60.0		19.0	64.0	64.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

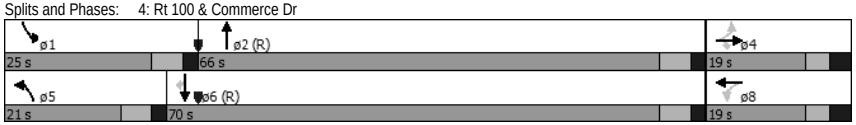
McMahon Associates, Inc.
4: Rt 100 & Commerce Dr

Pottstown Pike Congestion Mitigation Study
Alt 14 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	13.4	13.4	13.4	13.4	13.4		15.7	84.2		6.7	65.9	65.9
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.12		0.14	0.77		0.06	0.60	0.60
v/c Ratio	0.68	0.11	0.49	0.78	0.11		0.81	0.66		0.01	0.80	0.11
Control Delay	67.7	44.0	11.9	78.1	32.3		45.3	15.4		54.0	13.0	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	67.7	44.0	11.9	78.1	32.3		45.3	15.4		54.0	13.0	2.6
LOS	E	D	B	E	C		D	B		D	B	A
Approach Delay		34.5			66.3			19.4			12.6	
Approach LOS		C			E			B			B	
Queue Length 50th (ft)	74	16	0	86	9		132	431		0	227	3
Queue Length 95th (ft)	#149	42	62	#181	27		#204	554		m2	252	m7
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	167	230	355	168	424		482	3834		307	2885	1003
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.65	0.11	0.48	0.74	0.10		0.80	0.66		0.00	0.80	0.11

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 99 (90%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 79.9%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: Rt 100 & Commerce Dr



Lanes, Volumes, Timings
Weekday AM.syn

Alt 14 Weekday AM
Synchro 8

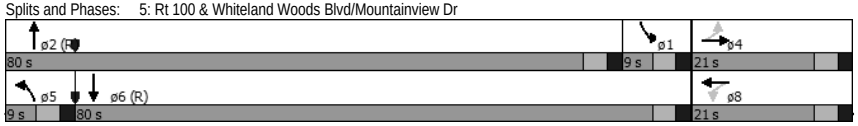
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	26	108	14	22	12	0	2641	426	50	3708	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		200	0		300
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.891			0.947			0.979			0.999	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1572	0	1676	1671	0	1774	4780	0	1676	4813	0
Flt Permitted				0.416						0.950		
Satd. Flow (perm)	0	1572	0	734	1671	0	1774	4780	0	1676	4813	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		59			13			65			3	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		103			249			1573			978	
Travel Time (s)		2.3			5.7			23.8			14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Adj. Flow (vph)	0	28	117	15	24	13	0	2871	463	54	4030	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	145	0	15	37	0	0	3334	0	54	4067	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	21.0	21.0		21.0	21.0		9.0	80.0		9.0	80.0	
Total Split (%)	19.1%	19.1%		19.1%	19.1%		8.2%	72.7%		8.2%	72.7%	
Maximum Green (s)	16.0	16.0		16.0	16.0		4.0	75.0		4.0	75.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)		12.2		12.2	12.2			82.6		5.0	89.8	
Actuated g/C Ratio		0.11		0.11	0.11			0.75		0.05	0.82	
v/c Ratio		0.64		0.19	0.19			0.93		0.71	1.04	
Control Delay		39.9		47.5	32.8			18.5		84.9	34.3	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		39.9		47.5	32.8			18.5		84.9	34.3	
LOS		D		D	C			B		F	C	
Approach Delay		39.9			37.0			18.5			35.0	
Approach LOS		D			D			B			C	
Queue Length 50th (ft)		58		10	15			644		38	~1130	
Queue Length 95th (ft)		120		30	46			#982		m51	m#1110	
Internal Link Dist (ft)		23			169			1493			898	
Turn Bay Length (ft)												
Base Capacity (vph)		292		113	269			3604		76	3928	
Starvation Cap Reductn		0		0	0			0		0	0	
Spillback Cap Reductn		0		0	0			0		0	0	
Storage Cap Reductn		0		0	0			0		0	0	
Reduced v/c Ratio		0.50		0.13	0.14			0.93		0.71	1.04	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 104 (95%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 27.9		Intersection LOS: C	
Intersection Capacity Utilization 95.4%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountainview Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	431	92	0	56	0	323	0	3054	38	459	3354	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		1	2		1	0		0	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	0.97	1.00	1.00	1.00	*0.91	0.91	1.00	0.95	1.00
Frt						0.850		0.998				
Flt Protected	0.950	0.968		0.950						0.950		
Satd. Flow (prot)	1707	1642	1774	3384	0	1613	0	4993	0	1637	3386	0
Flt Permitted	0.950	0.968		0.950						0.950		
Satd. Flow (perm)	1707	1642	1774	3384	0	1613	0	4993	0	1637	3386	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			995			693	
Travel Time (s)		27.0			6.2			15.1			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	468	100	0	61	0	351	0	3320	41	499	3646	0
Shared Lane Traffic (%)	40%											
Lane Group Flow (vph)	281	287	0	61	0	351	0	3361	0	499	3646	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	Prot	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3	3	4		1		2		1	6	
Permitted Phases						4						
Detector Phase	3	3	3	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	11.0	11.0	11.0	11.0		10.0		26.0		10.0	26.0	
Total Split (s)	19.0	19.0	19.0	11.0		27.0		63.0		27.0	90.0	
Total Split (%)	15.8%	15.8%	15.8%	9.2%		22.5%		52.5%		22.5%	75.0%	

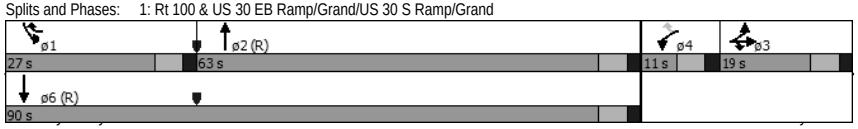
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 14 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	13.0	13.0	13.0	5.0		21.0		57.0		21.0	84.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	14.0	14.0		6.0		26.8		60.2		22.0	87.2	
Actuated g/C Ratio	0.12	0.12		0.05		0.22		0.50		0.18	0.73	
v/c Ratio	1.41	1.50		0.36		0.97		1.34		1.66	1.48	
Control Delay	251.5	288.3		61.4		83.7		179.3		334.7	235.7	
Queue Delay	0.0	0.0		0.0		0.0		0.0		0.0	0.4	
Total Delay	251.5	288.3		61.4		83.7		179.3		334.7	236.1	
LOS	F	F		E		F		F		F	F	
Approach Delay		270.1						179.3			248.0	
Approach LOS		F						F			F	
Queue Length 50th (ft)	~307	~324		24		193		~1268		~565	~2084	
Queue Length 95th (ft)	#491	#509		47		#382		m#1288		m#336	m#1151	
Internal Link Dist (ft)		1307			239			915			613	
Turn Bay Length (ft)	200											
Base Capacity (vph)	199	191		169		360		2504		300	2460	
Starvation Cap Reductn	0	0		0		0		0		0	123	
Spillback Cap Reductn	0	0		0		0		0		0	399	
Storage Cap Reductn	0	0		0		0		0		0	0	
Reduced v/c Ratio	1.41	1.50		0.36		0.97		1.34		1.66	1.77	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 7 (6%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.66
Intersection Signal Delay: 214.1 Intersection LOS: F
Intersection Capacity Utilization 128.0% ICU Level of Service H
Analysis Period (min) 15
* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	304	0	560	0	3105	30	0	3508	432
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	12
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850		0.999				0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												331
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	330	0	609	0	3375	33	0	3813	470
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	330	0	609	0	3408	0	0	3813	470
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0		20.0			20.0	20.0
Minimum Split (s)				11.0		11.0		26.0			26.0	26.0
Total Split (s)				23.0		23.0		97.0			97.0	97.0
Total Split (%)				19.2%		19.2%		80.8%			80.8%	80.8%
Maximum Green (s)				17.0		17.0		91.0			91.0	91.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt 14 Weekday PM

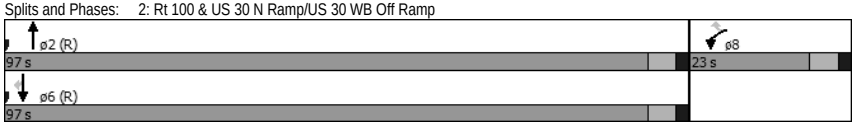
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				18.0		18.0		92.0			92.0	92.0
Actuated g/C Ratio				0.15		0.15		0.77			0.77	0.77
v/c Ratio				0.67		1.44		0.73			1.48	0.39
Control Delay				55.8		246.8		2.4			234.2	0.8
Queue Delay				0.0		0.0		0.4			0.5	1.6
Total Delay				55.8		246.8		2.8			234.7	2.4
LOS				E		F		A			F	A
Approach Delay								2.8			209.2	
Approach LOS								A			F	
Queue Length 50th (ft)				126		~363		109			~2145	4
Queue Length 95th (ft)				177		#490		m83			m#1993	m4
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				490		424		4695			2569	1215
Starvation Cap Reductn				0		0		663			7	550
Spillback Cap Reductn				0		0		409			518	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.67		1.44		0.85			1.86	0.71

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 105 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.48
Intersection Signal Delay: 124.5 Intersection LOS: F
Intersection Capacity Utilization 119.0% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



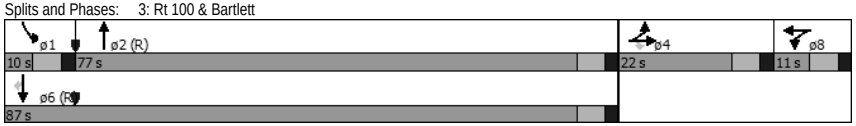
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	4	381	15	10	19	0	3631	34	47	3231	216
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.941			0.999				0.850
Flt Protected	0.950	0.954			0.984					0.950		
Satd. Flow (prot)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Flt Permitted	0.950	0.954			0.984					0.950		
Satd. Flow (perm)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			136					2				177
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	4	414	16	11	21	0	3947	37	51	3512	235
Shared Lane Traffic (%)	49%											
Lane Group Flow (vph)	109	109	414	0	48	0	0	3984	0	51	3512	235
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		10.0	26.0	26.0
Total Split (s)	22.0	22.0	22.0	11.0	11.0			77.0		10.0	87.0	87.0
Total Split (%)	18.3%	18.3%	18.3%	9.2%	9.2%			64.2%		8.3%	72.5%	72.5%
Maximum Green (s)	16.0	16.0	16.0	5.0	5.0			71.0		4.0	81.0	81.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
3: Rt 100 & Bartlett Alt 14 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	0.2	0.2			0.2		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	17.0	17.0	17.0		6.0			76.2		5.0	84.2	84.2
Actuated g/C Ratio	0.14	0.14	0.14		0.05			0.64		0.04	0.70	0.70
v/c Ratio	0.49	0.48	1.24		0.51			1.03		0.76	1.04	0.20
Control Delay	55.6	55.5	158.6		74.7			36.8		73.2	27.6	0.5
Queue Delay	0.0	0.0	3.9		0.0			0.7		0.0	0.0	0.0
Total Delay	55.6	55.5	162.5		74.7			37.5		73.2	27.6	0.5
LOS	E	E	F		E			D		E	C	A
Approach Delay		125.6			74.7			37.5			26.6	
Approach LOS		F			E			D			C	
Queue Length 50th (ft)	83	83	~302		37			~378		42	~1106	1
Queue Length 95th (ft)	146	146	#504		#84			m#365		m38	m157	m0
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	224	225	335		94			3851		67	3380	1175
Starvation Cap Reductn	0	0	0		0			7		0	0	0
Spillback Cap Reductn	0	0	91		0			0		0	0	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.49	0.48	1.70		0.51			1.04		0.76	1.04	0.20

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.24		
Intersection Signal Delay: 39.4	Intersection LOS: D	
Intersection Capacity Utilization 107.5%	ICU Level of Service G	
Analysis Period (min) 15		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 3: Rt 100 & Bartlett



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	213	541	195	75	6	640	3182	117	14	2757	716
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.988			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3362	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.696			0.379			0.950			0.950		
Satd. Flow (perm)	1259	1809	1624	679	3362	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			207		7			7				331
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	251	232	588	212	82	7	696	3459	127	15	2997	778
Shared Lane Traffic (%)												
Lane Group Flow (vph)	251	232	588	212	89	0	696	3586	0	15	2997	778
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	29.0	29.0	29.0	29.0	29.0		20.0	66.0		25.0	71.0	71.0
Total Split (%)	24.2%	24.2%	24.2%	24.2%	24.2%		16.7%	55.0%		20.8%	59.2%	59.2%
Maximum Green (s)	23.0	23.0	23.0	23.0	23.0		14.0	60.0		19.0	65.0	65.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

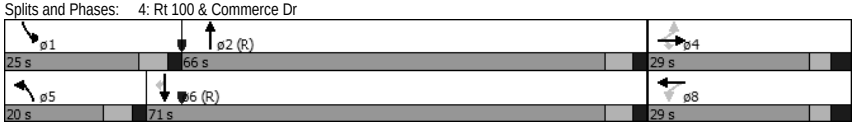
McMahon Associates, Inc.
4: Rt 100 & Commerce Dr

Pottstown Pike Congestion Mitigation Study
Alt 14 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	24.0	24.0	24.0	24.0	24.0		15.0	80.4		7.8	66.0	66.0
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20		0.12	0.67		0.06	0.55	0.55
v/c Ratio	1.00	0.64	1.20	1.57	0.13		1.68	1.07		0.14	1.13	0.75
Control Delay	105.4	53.3	136.0	322.6	36.9		338.3	57.5		54.9	83.3	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.1
Total Delay	105.4	53.3	136.0	322.6	36.9		338.3	57.5		54.9	83.3	9.7
LOS	F	D	F	F	D		F	E		D	F	A
Approach Delay		110.9			238.1			103.1			68.1	
Approach LOS		F			F			F			E	
Queue Length 50th (ft)	196	166	~417	~232	27		~413	691		12	~978	126
Queue Length 95th (ft)	#369	254	#642	#389	51		m#406	m#1163		m17	m#937	m129
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	251	361	490	135	678		414	3357		282	2649	1037
Starvation Cap Reductn	0	0	0	0	0		0	0		0	6	14
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	1.00	0.64	1.20	1.57	0.13		1.68	1.07		0.05	1.13	0.76

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 118 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.68		
Intersection Signal Delay: 94.3		Intersection LOS: F
Intersection Capacity Utilization 115.5%		ICU Level of Service H
Analysis Period (min) 15		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



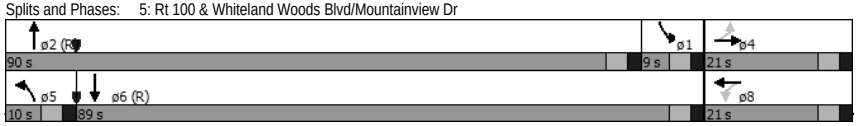
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	13	85	97	34	41	0	3062	192	49	4144	94
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		200
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.883			0.918			0.991			0.997	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1558	0	1676	1620	0	1774	4798	0	1676	4850	0
Flt Permitted				0.577						0.950		
Satd. Flow (perm)	0	1558	0	1018	1620	0	1774	4798	0	1676	4850	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		65			43			20			7	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		186			194			1556			995	
Travel Time (s)		4.2			4.4			23.6			15.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	14	92	105	37	45	0	3328	209	53	4504	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	106	0	105	82	0	0	3537	0	53	4606	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	21.0	21.0		21.0	21.0		10.0	90.0		9.0	89.0	
Total Split (%)	17.5%	17.5%		17.5%	17.5%		8.3%	75.0%		7.5%	74.2%	
Maximum Green (s)	16.0	16.0		16.0	16.0		5.0	85.0		4.0	84.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)		15.6		15.6	15.6			89.2		5.0	96.4	
Actuated g/C Ratio		0.13		0.13	0.13			0.74		0.04	0.80	
v/c Ratio		0.41		0.80	0.33			0.99		0.77	1.18	
Control Delay		25.6		88.9	28.5			29.3		57.6	92.5	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.1	
Total Delay		25.6		88.9	28.5			29.3		57.6	92.5	
LOS		C		F	C			C		E	F	
Approach Delay		25.6			62.4			29.3			92.2	
Approach LOS		C			E			C			F	
Queue Length 50th (ft)		28		79	27			~1070		43	~1622	
Queue Length 95th (ft)		84		#169	76			#1148		m41	m52	
Internal Link Dist (ft)		106			114			1476			915	
Turn Bay Length (ft)												
Base Capacity (vph)		276		144	266			3572		69	3898	
Starvation Cap Reductn		0		0	0			0		0	215	
Spillback Cap Reductn		0		0	0			0		0	0	
Storage Cap Reductn		0		0	0			0		0	0	
Reduced v/c Ratio		0.38		0.73	0.31			0.99		0.77	1.25	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 64.5		Intersection LOS: E	
Intersection Capacity Utilization 105.7%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountainview Dr



ALTERNATIVE 15

Third Southbound Travel Lane + New Station Access

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	352	39	1405	15	0	80	0	2605	57	198	2360	0
Ideal Flow (vphpl)	1000	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		1	2		1	0		0	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	0.97	1.00	1.00	1.00	*0.75	0.91	1.00	0.91	1.00
Frt			0.850			0.850		0.997				
Flt Protected	0.950	0.961		0.950						0.950		
Satd. Flow (prot)	949	1625	2653	3384	0	1613	0	4111	0	1637	4865	0
Flt Permitted	0.950	0.961		0.950						0.950		
Satd. Flow (perm)	949	1625	2653	3384	0	1613	0	4111	0	1637	4865	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			978			693	
Travel Time (s)		27.0			6.2			14.8			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	383	42	1527	16	0	87	0	2832	62	215	2565	0
Shared Lane Traffic (%)	45%											
Lane Group Flow (vph)	211	214	1527	16	0	87	0	2894	0	215	2565	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3	5	4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	5	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	9.0	9.0	9.0	9.0		9.0		26.0		9.0	26.0	
Total Split (s)	22.0	22.0	26.0	9.0		15.0		64.0		15.0	53.0	
Total Split (%)	20.0%	20.0%	23.6%	8.2%		13.6%		58.2%		13.6%	48.2%	

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 15 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	16.0	16.0	20.0	3.0		9.0		58.0		9.0	47.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag	Lag		Lag		Lead		Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	17.0	17.0	43.0	4.0		11.6		64.4		10.0	53.4	
Actuated g/C Ratio	0.15	0.15	0.39	0.04		0.11		0.59		0.09	0.49	
v/c Ratio	1.45	0.85	1.47	0.13		0.51		1.20		1.45	1.09	
Control Delay	269.8	75.2	246.4	53.7		45.6		110.3		250.4	69.4	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay	269.8	75.2	246.4	53.7		45.6		110.3		250.4	69.4	
LOS	F	E	F	D		D		F		F	E	
Approach Delay		230.2						110.3			83.4	
Approach LOS		F						F			F	
Queue Length 50th (ft)	~213	156	~843	5		60		~1067		~207	~645	
Queue Length 95th (ft)	#371	#296	#993	18		77		#1275		m#232	m#875	
Internal Link Dist (ft)		1307			239			898			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	146	251	1037	123		170		2406		148	2361	
Starvation Cap Reductn	0	0	0	0		0		0		0	0	
Spillback Cap Reductn	0	0	0	0		0		0		0	0	
Storage Cap Reductn	0	0	0	0		0		0		0	0	
Reduced v/c Ratio	1.45	0.85	1.47	0.13		0.51		1.20		1.45	1.09	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 12 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.47	
Intersection Signal Delay: 130.1	Intersection LOS: F
Intersection Capacity Utilization 115.0%	ICU Level of Service H
Analysis Period (min) 15	

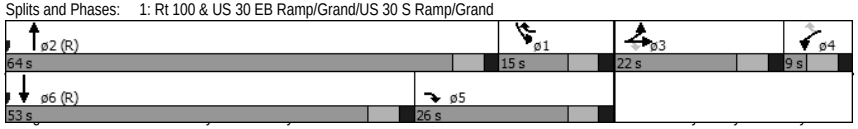
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	193	0	264	0	2425	4	0	2365	112
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	14
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												122
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	210	0	287	0	2636	4	0	2571	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	210	0	287	0	2640	0	0	2571	122
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				7.0		7.0		20.0			20.0	20.0
Minimum Split (s)				13.0		13.0		26.0			26.0	26.0
Total Split (s)				17.0		17.0		93.0			93.0	93.0
Total Split (%)				15.5%		15.5%		84.5%			84.5%	84.5%
Maximum Green (s)				11.0		11.0		87.0			87.0	87.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

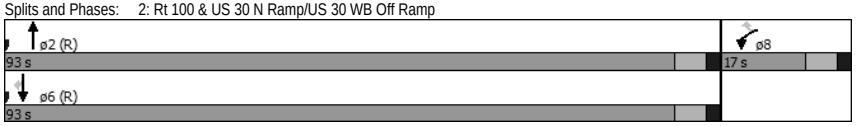
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt 15 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				12.0		12.0		88.0			88.0	88.0
Actuated g/C Ratio				0.11		0.11		0.80			0.80	0.80
v/c Ratio				0.59		0.93		0.54			0.96	0.09
Control Delay				54.0		85.9		0.5			15.5	0.1
Queue Delay				0.0		0.0		0.1			1.5	0.0
Total Delay				54.0		85.9		0.6			17.1	0.1
LOS				D		F		A			B	A
Approach Delay								0.6			16.3	
Approach LOS								A			B	
Queue Length 50th (ft)				73		115		15			212	0
Queue Length 95th (ft)				113		#206		m9			#1035	m0
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				356		308		4904			2681	1291
Starvation Cap Reductn				0		0		850			44	0
Spillback Cap Reductn				0		0		276			0	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.59		0.93		0.65			0.97	0.09

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 104 (95%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 14.0 Intersection LOS: B
Intersection Capacity Utilization 82.3% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



Lanes, Volumes, Timings Alt 15 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\14 - Future with Station and 3 Lanes SB\Weekday AM.syn Synchro 8

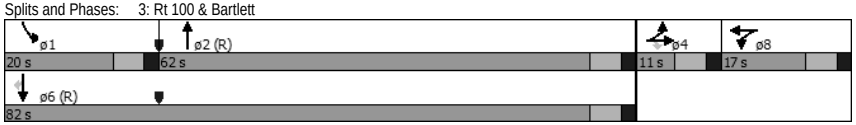
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	5	65	48	7	40	0	2131	89	47	2341	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.944			0.994				0.850
Flt Protected	0.950	0.976			0.975					0.950		
Satd. Flow (prot)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Flt Permitted	0.950	0.976			0.975					0.950		
Satd. Flow (perm)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			149					11				89
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	5	71	52	8	43	0	2316	97	51	2545	24
Shared Lane Traffic (%)	34%											
Lane Group Flow (vph)	10	10	71	0	103	0	0	2413	0	51	2545	24
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		20.0	26.0	26.0
Total Split (s)	11.0	11.0	11.0	17.0	17.0			62.0		20.0	82.0	82.0
Total Split (%)	10.0%	10.0%	10.0%	15.5%	15.5%			56.4%		18.2%	74.5%	74.5%
Maximum Green (s)	5.0	5.0	5.0	11.0	11.0			56.0		14.0	76.0	76.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
3: Rt 100 & Bartlett Alt 15 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	6.0	6.0	6.0		11.0			67.6		9.9	80.2	80.2
Actuated g/C Ratio	0.05	0.05	0.05		0.10			0.61		0.09	0.73	0.73
v/c Ratio	0.12	0.11	0.32		0.55			0.65		0.35	0.72	0.02
Control Delay	52.7	52.4	3.7		58.5			11.9		66.1	2.4	0.0
Queue Delay	0.0	0.0	0.2		0.9			0.1		0.0	0.1	0.0
Total Delay	52.7	52.4	3.8		59.3			12.1		66.1	2.6	0.0
LOS	D	D	A		E			B		E	A	A
Approach Delay		14.6			59.3			12.1			3.8	
Approach LOS		B			E			B			A	
Queue Length 50th (ft)	7	7	0		70			228		35	42	0
Queue Length 95th (ft)	26	26	0		126			204		m45	57	m0
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	86	88	224		204			3712		221	3513	1190
Starvation Cap Reductn	0	0	0		0			370		0	0	0
Spillback Cap Reductn	0	0	11		18			0		0	194	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.12	0.11	0.33		0.55			0.72		0.23	0.77	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 19 (17%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 8.9		Intersection LOS: A	
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Rt 100 & Bartlett



Lanes, Volumes, Timings Alt 15 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\14 - Future with Station and 3 Lanes SB\Weekday AM.syn Synchro 8

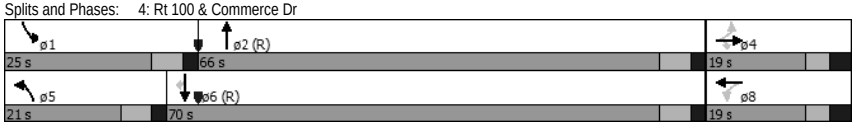
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	23	156	115	27	13	354	2231	84	1	2125	101
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.951			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3236	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.728			0.741			0.950			0.950		
Satd. Flow (perm)	1317	1809	1624	1327	3236	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			170		14			8				89
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	108	25	170	125	29	14	385	2425	91	1	2310	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	25	170	125	43	0	385	2516	0	1	2310	110
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	19.0	19.0	19.0	19.0	19.0		21.0	66.0		25.0	70.0	70.0
Total Split (%)	17.3%	17.3%	17.3%	17.3%	17.3%		19.1%	60.0%		22.7%	63.6%	63.6%
Maximum Green (s)	13.0	13.0	13.0	13.0	13.0		15.0	60.0		19.0	64.0	64.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
4: Rt 100 & Commerce Dr Alt 15 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	13.4	13.4	13.4	13.4	13.4		15.7	84.2		6.7	65.9	65.9
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.12		0.14	0.77		0.06	0.60	0.60
v/c Ratio	0.68	0.11	0.49	0.78	0.11		0.81	0.66		0.01	0.80	0.11
Control Delay	67.7	44.0	11.9	78.1	32.3		46.1	15.6		54.0	13.0	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	67.7	44.0	11.9	78.1	32.3		46.1	15.6		54.0	13.0	2.6
LOS	E	D	B	E	C		D	B		D	B	A
Approach Delay		34.5			66.3			19.6			12.6	
Approach LOS		C			E			B			B	
Queue Length 50th (ft)	74	16	0	86	9		134	431		0	227	3
Queue Length 95th (ft)	#149	42	62	#181	27		#205	555		m2	252	m7
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	167	230	355	168	424		482	3834		307	2885	1003
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.65	0.11	0.48	0.74	0.10		0.80	0.66		0.00	0.80	0.11

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 99 (90%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 18.8		Intersection LOS: B	
Intersection Capacity Utilization 79.9%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: Rt 100 & Commerce Dr



Lanes, Volumes, Timings Alt 15 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\14 - Future with Station and 3 Lanes SB\Weekday AM.syn Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	26	108	14	22	12	0	2641	426	50	3708	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		200	0		300
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.891			0.947			0.979			0.999	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1572	0	1676	1671	0	1774	4780	0	1676	4813	0
Flt Permitted				0.416						0.950		
Satd. Flow (perm)	0	1572	0	734	1671	0	1774	4780	0	1676	4813	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		59			13			65			3	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		103			249			1573			978	
Travel Time (s)		2.3			5.7			23.8			14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Adj. Flow (vph)	0	28	117	15	24	13	0	2871	463	54	4030	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	145	0	15	37	0	0	3334	0	54	4067	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	21.0	21.0		21.0	21.0		9.0	80.0		9.0	80.0	
Total Split (%)	19.1%	19.1%		19.1%	19.1%		8.2%	72.7%		8.2%	72.7%	
Maximum Green (s)	16.0	16.0		16.0	16.0		4.0	75.0		4.0	75.0	

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
5: Rt 100 & Whiteland Woods Blvd/Mountainview Dr Alt 15 Weekday AM

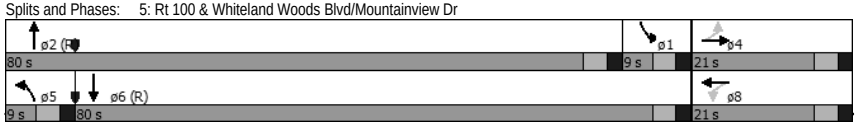
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)		12.2		12.2	12.2			82.6		5.0	89.8	
Actuated g/C Ratio		0.11		0.11	0.11			0.75		0.05	0.82	
v/c Ratio		0.64		0.19	0.19			0.93		0.71	1.04	
Control Delay		39.9		47.5	32.8			18.5		51.8	26.7	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		39.9		47.5	32.8			18.5		51.8	26.7	
LOS		D		D	C			B		D	C	
Approach Delay		39.9			37.0			18.5			27.1	
Approach LOS		D			D			B			C	
Queue Length 50th (ft)		58		10	15			644		37	~1131	
Queue Length 95th (ft)		120		30	46			#982		m31	m368	
Internal Link Dist (ft)		23			169			1493			898	
Turn Bay Length (ft)												
Base Capacity (vph)		292		113	269			3604		76	3928	
Starvation Cap Reductn		0		0	0			0		0	0	
Spillback Cap Reductn		0		0	0			0		0	0	
Storage Cap Reductn		0		0	0			0		0	0	
Reduced v/c Ratio		0.50		0.13	0.14			0.93		0.71	1.04	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 108 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 23.7 Intersection LOS: C
Intersection Capacity Utilization 95.4% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountainview Dr



Lanes, Volumes, Timings Alt 15 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\14 - Future with Station and 3 Lanes SB\Weekday AM.syn Synchro 8

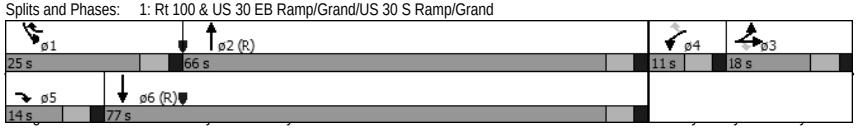
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	431	92	817	56	0	323	0	3054	38	459	3354	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		1	2		1	0		0	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	0.97	1.00	1.00	1.00	*0.75	0.91	1.00	0.91	1.00
Frt			0.850			0.850		0.998				
Flt Protected	0.950	0.968		0.950						0.950		
Satd. Flow (prot)	1707	1642	2653	3384	0	1613	0	4115	0	1637	4865	0
Flt Permitted	0.950	0.968		0.950						0.950		
Satd. Flow (perm)	1707	1642	2653	3384	0	1613	0	4115	0	1637	4865	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1387			319			995			693	
Travel Time (s)		27.0			6.2			22.6			15.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	468	100	888	61	0	351	0	3320	41	499	3646	0
Shared Lane Traffic (%)	40%											
Lane Group Flow (vph)	281	287	888	61	0	351	0	3361	0	499	3646	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	custom	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3	5	4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	5	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	11.0	11.0	9.0	11.0		10.0		26.0		10.0	26.0	
Total Split (s)	18.0	18.0	14.0	11.0		25.0		66.0		25.0	77.0	
Total Split (%)	15.0%	15.0%	11.7%	9.2%		20.8%		55.0%		20.8%	64.2%	

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 15 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	12.0	12.0	8.0	5.0		19.0		60.0		19.0	71.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lead	Lead		Lead		Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	13.0	13.0	27.0	6.0		24.8		63.2		20.0	74.2	
Actuated g/C Ratio	0.11	0.11	0.22	0.05		0.21		0.53		0.17	0.62	
v/c Ratio	1.53	1.62	1.49	0.36		1.05		1.55		1.83	1.21	
Control Delay	299.3	338.6	263.5	61.4		106.2		272.8		408.3	117.7	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.5	
Total Delay	299.3	338.6	263.5	61.4		106.2		272.8		408.3	118.1	
LOS	F	F	F	E		F		F		F	F	
Approach Delay		285.2						272.8			153.1	
Approach LOS		F						F			F	
Queue Length 50th (ft)	~320	~335	~539	24		~204		~1658		~604	~1291	
Queue Length 95th (ft)	#503	#521	#678	47		#425		m#1682		m#371	m468	
Internal Link Dist (ft)		1307			239			915			613	
Turn Bay Length (ft)	200		200									
Base Capacity (vph)	184	177	596	169		333		2167		272	3008	
Starvation Cap Reductn	0	0	0	0		0		0		0	298	
Spillback Cap Reductn	0	0	0	0		0		0		0	611	
Storage Cap Reductn	0	0	0	0		0		0		0	0	
Reduced v/c Ratio	1.53	1.62	1.49	0.36		1.05		1.55		1.83	1.52	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 4 (3%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.83		
Intersection Signal Delay: 214.1	Intersection LOS: F	
Intersection Capacity Utilization 124.3%	ICU Level of Service H	
Analysis Period (min) 15		
* User Entered Value		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	304	0	560	0	3105	30	0	3508	432
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	12
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850		0.999				0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												331
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			15.8			6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	330	0	609	0	3375	33	0	3813	470
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	330	0	609	0	3408	0	0	3813	470
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0		20.0			20.0	20.0
Minimum Split (s)				11.0		11.0		26.0			26.0	26.0
Total Split (s)				23.0		23.0		97.0			97.0	97.0
Total Split (%)				19.2%		19.2%		80.8%			80.8%	80.8%
Maximum Green (s)				17.0		17.0		91.0			91.0	91.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

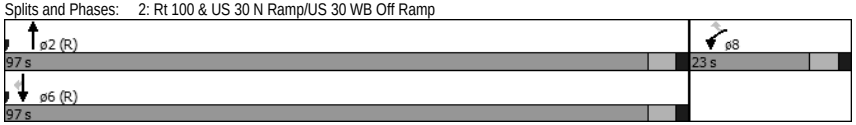
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				18.0		18.0		92.0			92.0	92.0
Actuated g/C Ratio				0.15		0.15		0.77			0.77	0.77
v/c Ratio				0.67		1.44		0.73			1.48	0.39
Control Delay				55.8		246.8		3.2			234.6	1.0
Queue Delay				0.0		0.0		0.7			0.5	1.6
Total Delay				55.8		246.8		3.9			235.1	2.7
LOS				E		F		A			F	A
Approach Delay								3.9			209.6	
Approach LOS								A			F	
Queue Length 50th (ft)				126		~363		151			~2145	10
Queue Length 95th (ft)				177		#490		m80			m#1993	m9
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				490		424		4695			2569	1215
Starvation Cap Reductn				0		0		825			63	549
Spillback Cap Reductn				0		0		559			505	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.67		1.44		0.88			1.85	0.71

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 105 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.48
Intersection Signal Delay: 125.1 Intersection LOS: F
Intersection Capacity Utilization 119.0% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



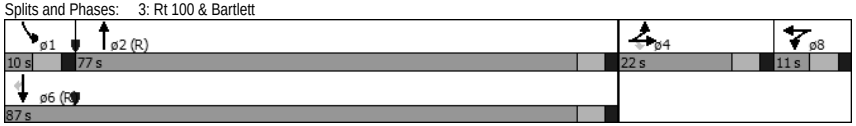
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	4	381	15	10	19	0	3631	34	47	3231	216
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.941			0.999				0.850
Flt Protected	0.950	0.954			0.984					0.950		
Satd. Flow (prot)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Flt Permitted	0.950	0.954			0.984					0.950		
Satd. Flow (perm)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			136					2				177
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			6.8			29.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	4	414	16	11	21	0	3947	37	51	3512	235
Shared Lane Traffic (%)	49%											
Lane Group Flow (vph)	109	109	414	0	48	0	0	3984	0	51	3512	235
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		10.0	26.0	26.0
Total Split (s)	22.0	22.0	22.0	11.0	11.0			77.0		10.0	87.0	87.0
Total Split (%)	18.3%	18.3%	18.3%	9.2%	9.2%			64.2%		8.3%	72.5%	72.5%
Maximum Green (s)	16.0	16.0	16.0	5.0	5.0			71.0		4.0	81.0	81.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
3: Rt 100 & Bartlett Alt 15 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	0.2	0.2			0.2		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	17.0	17.0	17.0		6.0			76.2		5.0	84.2	84.2
Actuated g/C Ratio	0.14	0.14	0.14		0.05			0.64		0.04	0.70	0.70
v/c Ratio	0.49	0.48	1.24		0.51			1.03		0.76	1.04	0.20
Control Delay	55.6	55.5	158.6		74.7			39.1		65.4	31.3	1.5
Queue Delay	0.0	0.0	7.0		0.0			0.7		0.0	0.0	0.0
Total Delay	55.6	55.5	165.6		74.7			39.9		65.4	31.3	1.5
LOS	E	E	F		E			D		E	C	A
Approach Delay		127.7			74.7			39.9			29.9	
Approach LOS		F			E			D			C	
Queue Length 50th (ft)	83	83	~302		37			~468		42	~1087	5
Queue Length 95th (ft)	146	146	#504		#84			m#429		m37	m253	m2
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	224	225	335		94			3851		67	3380	1175
Starvation Cap Reductn	0	0	0		0			7		0	0	0
Spillback Cap Reductn	0	0	138		0			0		0	0	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.49	0.48	2.10		0.51			1.04		0.76	1.04	0.20

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.24		
Intersection Signal Delay: 42.2	Intersection LOS: D	
Intersection Capacity Utilization 107.5%	ICU Level of Service G	
Analysis Period (min) 15		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 3: Rt 100 & Bartlett



Lanes, Volumes, Timings Alt 15 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\14 - Future with Station and 3 Lanes SB\Weekday PM.syn Synchro 8

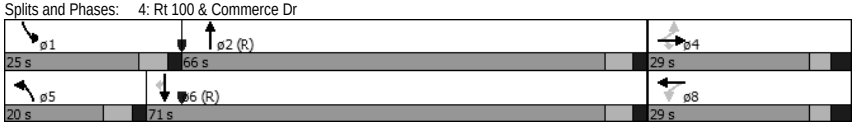
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	213	541	195	75	6	640	3182	117	14	2757	716
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.988			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3362	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.696			0.379			0.950			0.950		
Satd. Flow (perm)	1259	1809	1624	679	3362	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			207		7			7				331
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			29.3			18.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	251	232	588	212	82	7	696	3459	127	15	2997	778
Shared Lane Traffic (%)												
Lane Group Flow (vph)	251	232	588	212	89	0	696	3586	0	15	2997	778
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	29.0	29.0	29.0	29.0	29.0		20.0	66.0		25.0	71.0	71.0
Total Split (%)	24.2%	24.2%	24.2%	24.2%	24.2%		16.7%	55.0%		20.8%	59.2%	59.2%
Maximum Green (s)	23.0	23.0	23.0	23.0	23.0		14.0	60.0		19.0	65.0	65.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
4: Rt 100 & Commerce Dr Alt 15 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	24.0	24.0	24.0	24.0	24.0		15.0	80.4		7.8	66.0	66.0
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20		0.12	0.67		0.06	0.55	0.55
v/c Ratio	1.00	0.64	1.20	1.57	0.13		1.68	1.07		0.14	1.13	0.75
Control Delay	105.4	53.3	136.0	322.6	36.9		336.7	60.8		52.6	85.2	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.1
Total Delay	105.4	53.3	136.0	322.6	36.9		336.7	60.8		52.6	85.2	11.8
LOS	F	D	F	F	D		F	E		D	F	B
Approach Delay		110.9			238.1			105.7			70.0	
Approach LOS		F			F			F			E	
Queue Length 50th (ft)	196	166	~417	~232	27		~404	816		12	~978	160
Queue Length 95th (ft)	#369	254	#642	#389	51		m#395	m#1163		m17	m#937	m164
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	251	361	490	135	678		414	3357		282	2649	1037
Starvation Cap Reductn	0	0	0	0	0		0	0		0	6	14
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	1.00	0.64	1.20	1.57	0.13		1.68	1.07		0.05	1.13	0.76

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 118 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.68		
Intersection Signal Delay: 96.2	Intersection LOS: F	
Intersection Capacity Utilization 115.5%	ICU Level of Service H	
Analysis Period (min) 15		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



Lanes, Volumes, Timings Alt 15 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\14 - Future with Station and 3 Lanes SB\Weekday PM.syn Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	13	85	97	34	41	0	3062	192	49	4144	94
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		200
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.883			0.918			0.991			0.997	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1558	0	1676	1620	0	1774	4798	0	1676	4850	0
Flt Permitted				0.577						0.950		
Satd. Flow (perm)	0	1558	0	1018	1620	0	1774	4798	0	1676	4850	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			43			20			7	
Link Speed (mph)		30			30			30			45	
Link Distance (ft)		186			194			1556			995	
Travel Time (s)		4.2			4.4			35.4			15.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	14	92	105	37	45	0	3328	209	53	4504	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	106	0	105	82	0	0	3537	0	53	4606	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	21.0	21.0		21.0	21.0		9.0	90.0		9.0	90.0	
Total Split (%)	17.5%	17.5%		17.5%	17.5%		7.5%	75.0%		7.5%	75.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		4.0	85.0		4.0	85.0	

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
5: Rt 100 & Whiteland Woods Blvd/Mountainview Dr Alt 15 Weekday PM

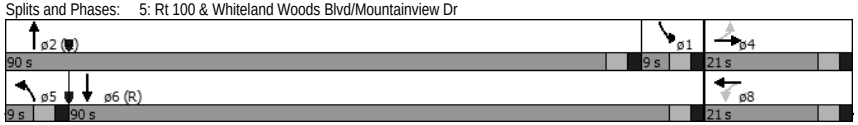
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)		15.6		15.6	15.6			89.2		5.0	96.4	
Actuated g/C Ratio		0.13		0.13	0.13			0.74		0.04	0.80	
v/c Ratio		0.43		0.80	0.33			0.99		0.77	1.18	
Control Delay		31.0		88.9	28.5			29.3		59.8	94.5	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.1	
Total Delay		31.0		88.9	28.5			29.3		59.8	94.6	
LOS		C		F	C			C		E	F	
Approach Delay		31.0			62.4			29.3			94.2	
Approach LOS		C			E			C			F	
Queue Length 50th (ft)		38		79	27			~1070		44	~1623	
Queue Length 95th (ft)		94		#169	76			#1148		m35	m227	
Internal Link Dist (ft)		106			114			1476			915	
Turn Bay Length (ft)												
Base Capacity (vph)		265		144	266			3572		69	3898	
Starvation Cap Reductn		0		0	0			0		0	242	
Spillback Cap Reductn		0		0	0			0		0	0	
Storage Cap Reductn		0		0	0			0		0	0	
Reduced v/c Ratio		0.40		0.73	0.31			0.99		0.77	1.26	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.18
Intersection Signal Delay: 65.7 Intersection LOS: E
Intersection Capacity Utilization 105.7% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountainview Dr



Lanes, Volumes, Timings Alt 15 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\14 - Future with Station and 3 Lanes SB\Weekday PM.syn Synchro 8

ALTERNATIVE 16

Third Southbound Travel Lane & Channelization + New Station Access

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	352	39	0	15	0	80	0	2605	57	198	2360	0
Ideal Flow (vphpl)	1000	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		1	2		1	0		0	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	0.97	1.00	1.00	1.00	*0.75	0.91	1.00	0.91	1.00
Frt						0.850		0.997				
Flt Protected	0.950	0.961		0.950						0.950		
Satd. Flow (prot)	949	1625	1774	3384	0	1613	0	4111	0	1637	4865	0
Flt Permitted	0.950	0.961		0.950						0.950		
Satd. Flow (perm)	949	1625	1774	3384	0	1613	0	4111	0	1637	4865	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			978			693	
Travel Time (s)		27.0			6.2			14.8			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	383	42	0	16	0	87	0	2832	62	215	2565	0
Shared Lane Traffic (%)	45%											
Lane Group Flow (vph)	211	214	0	16	0	87	0	2894	0	215	2565	0
Number of Detectors	1	1	1	1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left	6x40 Left	6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35	35	35		35		100		20	100	
Trailing Detector (ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5	-5	-5		-5		0		0	0	
Detector 1 Size(ft)	40	40	40	40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA	Perm	Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3		4		1		2		1	6	
Permitted Phases			3			4						
Detector Phase	3	3	3	4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	9.0	9.0	9.0	9.0		9.0		26.0		9.0	26.0	
Total Split (s)	18.0	18.0	18.0	13.0		15.0		64.0		15.0	79.0	
Total Split (%)	16.4%	16.4%	16.4%	11.8%		13.6%		58.2%		13.6%	71.8%	

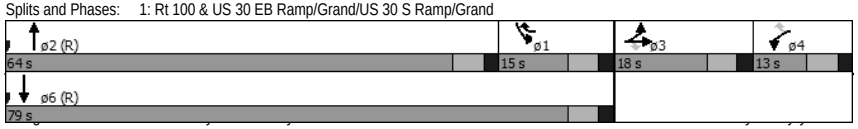
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 16 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	12.0	12.0	12.0	7.0		9.0		58.0		9.0	73.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lead	Lag		Lag		Lead		Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		C-Max		None	C-Max	
Act Effct Green (s)	13.0	13.0		7.2		13.1		66.9		10.0	81.9	
Actuated g/C Ratio	0.12	0.12		0.07		0.12		0.61		0.09	0.74	
v/c Ratio	1.88	1.11		0.07		0.46		1.16		1.45	0.71	
Control Delay	458.1	144.3		48.7		42.0		88.7		250.4	5.6	
Queue Delay	0.0	0.0		0.0		0.0		0.0		0.0	0.4	
Total Delay	458.1	144.3		48.7		42.0		88.7		250.4	6.0	
LOS	F	F		D		D		F		F	A	
Approach Delay		300.1						88.7			24.9	
Approach LOS		F						F			C	
Queue Length 50th (ft)	~240	~183		5		60		~1016		~207	105	
Queue Length 95th (ft)	#397	#343		17		77		#1275		m#232	m330	
Internal Link Dist (ft)		1307			239			898			613	
Turn Bay Length (ft)	200											
Base Capacity (vph)	112	192		246		191		2500		148	3622	
Starvation Cap Reductn	0	0		0		0		0		0	473	
Spillback Cap Reductn	0	0		0		0		0		0	0	
Storage Cap Reductn	0	0		0		0		0		0	0	
Reduced v/c Ratio	1.88	1.11		0.07		0.46		1.16		1.45	0.81	

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 12 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.88		
Intersection Signal Delay: 73.8	Intersection LOS: E	
Intersection Capacity Utilization 103.7%	ICU Level of Service G	
Analysis Period (min) 15		

* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	193	0	264	0	2425	4	0	2365	112
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	14
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6131	0	0	3352	1584
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												122
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	210	0	287	0	2636	4	0	2571	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	210	0	287	0	2640	0	0	2571	122
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				7.0		7.0		20.0			20.0	20.0
Minimum Split (s)				13.0		13.0		26.0			26.0	26.0
Total Split (s)				17.0		17.0		93.0			93.0	93.0
Total Split (%)				15.5%		15.5%		84.5%			84.5%	84.5%
Maximum Green (s)				11.0		11.0		87.0			87.0	87.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

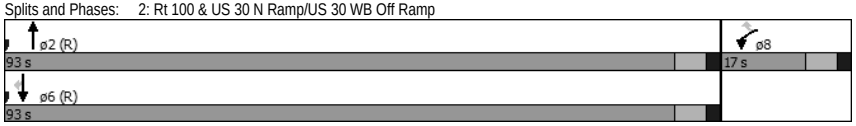
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt 16 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				12.0		12.0		88.0			88.0	88.0
Actuated g/C Ratio				0.11		0.11		0.80			0.80	0.80
v/c Ratio				0.59		0.93		0.54			0.96	0.09
Control Delay				54.0		85.9		0.5			15.5	0.1
Queue Delay				0.0		0.0		0.1			1.5	0.0
Total Delay				54.0		85.9		0.6			17.1	0.1
LOS				D		F		A			B	A
Approach Delay								0.6			16.3	
Approach LOS								A			B	
Queue Length 50th (ft)				73		115		15			212	0
Queue Length 95th (ft)				113		#206		m9			#1035	m0
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				356		308		4904			2681	1291
Starvation Cap Reductn				0		0		850			44	0
Spillback Cap Reductn				0		0		315			0	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.59		0.93		0.65			0.97	0.09

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 104 (95%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 14.0 Intersection LOS: B
Intersection Capacity Utilization 82.3% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



Lanes, Volumes, Timings Alt 16 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\15 - Future with Station and 3 Lanes SB No EBR\Weekday AM.syn Synchro 8

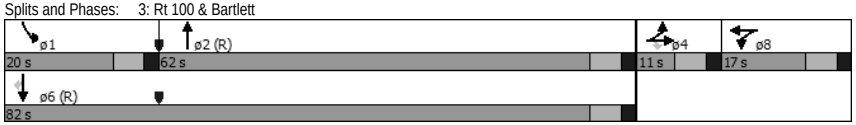
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	5	65	48	7	40	0	2131	89	47	2341	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.944			0.994				0.850
Flt Protected	0.950	0.976			0.975					0.950		
Satd. Flow (prot)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Flt Permitted	0.950	0.976			0.975					0.950		
Satd. Flow (perm)	1585	1628	1542	0	1876	0	0	6034	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			149					11				89
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	5	71	52	8	43	0	2316	97	51	2545	24
Shared Lane Traffic (%)	34%											
Lane Group Flow (vph)	10	10	71	0	103	0	0	2413	0	51	2545	24
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		20.0	26.0	26.0
Total Split (s)	11.0	11.0	11.0	17.0	17.0			62.0		20.0	82.0	82.0
Total Split (%)	10.0%	10.0%	10.0%	15.5%	15.5%			56.4%		18.2%	74.5%	74.5%
Maximum Green (s)	5.0	5.0	5.0	11.0	11.0			56.0		14.0	76.0	76.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
3: Rt 100 & Bartlett Alt 16 Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	6.0	6.0	6.0		11.0			67.6		9.9	80.2	80.2
Actuated g/C Ratio	0.05	0.05	0.05		0.10			0.61		0.09	0.73	0.73
v/c Ratio	0.12	0.11	0.32		0.55			0.65		0.35	0.72	0.02
Control Delay	52.7	52.4	3.7		58.5			12.1		66.1	2.4	0.0
Queue Delay	0.0	0.0	0.2		0.9			0.1		0.0	0.1	0.0
Total Delay	52.7	52.4	3.8		59.3			12.2		66.1	2.6	0.0
LOS	D	D	A		E			B		E	A	A
Approach Delay		14.6			59.3			12.2			3.8	
Approach LOS		B			E			B			A	
Queue Length 50th (ft)	7	7	0		70			218		35	42	0
Queue Length 95th (ft)	26	26	0		126			228		m45	57	m0
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	86	88	224		204			3712		221	3513	1190
Starvation Cap Reductn	0	0	0		0			370		0	0	0
Spillback Cap Reductn	0	0	11		18			0		0	194	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.12	0.11	0.33		0.55			0.72		0.23	0.77	0.02

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 19 (17%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 80		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.72		
Intersection Signal Delay: 9.0	Intersection LOS: A	
Intersection Capacity Utilization 70.3%	ICU Level of Service C	
Analysis Period (min) 15		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 3: Rt 100 & Bartlett



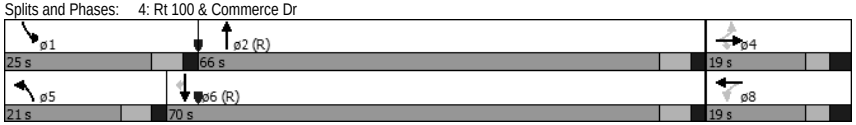
Lanes, Volumes, Timings Alt 16 Weekday AM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\15 - Future with Station and 3 Lanes SB No EBR\Weekday AM.sy6 Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	23	156	115	27	13	354	2231	84	1	2125	101
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.951			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3236	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.728			0.741			0.950			0.950		
Satd. Flow (perm)	1317	1809	1624	1327	3236	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			170		14			8				89
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	108	25	170	125	29	14	385	2425	91	1	2310	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	25	170	125	43	0	385	2516	0	1	2310	110
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	19.0	19.0	19.0	19.0	19.0		21.0	66.0		25.0	70.0	70.0
Total Split (%)	17.3%	17.3%	17.3%	17.3%	17.3%		19.1%	60.0%		22.7%	63.6%	63.6%
Maximum Green (s)	13.0	13.0	13.0	13.0	13.0		15.0	60.0		19.0	64.0	64.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	13.4	13.4	13.4	13.4	13.4		15.7	84.2		6.7	65.9	65.9
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.12		0.14	0.77		0.06	0.60	0.60
v/c Ratio	0.68	0.11	0.49	0.78	0.11		0.81	0.66		0.01	0.80	0.11
Control Delay	67.7	44.0	11.9	78.1	32.3		46.0	15.7		54.0	13.0	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	67.7	44.0	11.9	78.1	32.3		46.0	15.7		54.0	13.0	2.6
LOS	E	D	B	E	C		D	B		D	B	A
Approach Delay		34.5			66.3			19.7			12.6	
Approach LOS		C			E			B			B	
Queue Length 50th (ft)	74	16	0	86	9		135	431		0	227	3
Queue Length 95th (ft)	#149	42	62	#181	27		#205	554		m2	252	m7
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	167	230	355	168	424		482	3834		307	2885	1003
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.65	0.11	0.48	0.74	0.10		0.80	0.66		0.00	0.80	0.11

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 99 (90%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.81		
Intersection Signal Delay: 18.9	Intersection LOS: B	
Intersection Capacity Utilization 79.9%	ICU Level of Service D	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



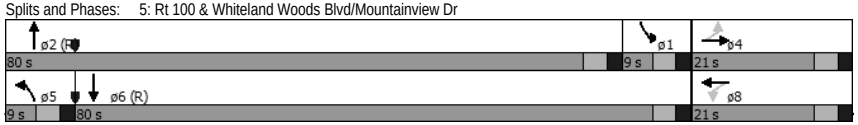
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	26	108	14	22	12	0	2641	426	50	3708	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		200	0		300
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.891			0.947			0.979			0.999	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1572	0	1676	1671	0	1774	4780	0	1676	4813	0
Flt Permitted				0.416						0.950		
Satd. Flow (perm)	0	1572	0	734	1671	0	1774	4780	0	1676	4813	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		59			13			65			3	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		103			249			1573			978	
Travel Time (s)		2.3			5.7			23.8			14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Adj. Flow (vph)	0	28	117	15	24	13	0	2871	463	54	4030	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	145	0	15	37	0	0	3334	0	54	4067	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	21.0	21.0		21.0	21.0		9.0	80.0		9.0	80.0	
Total Split (%)	19.1%	19.1%		19.1%	19.1%		8.2%	72.7%		8.2%	72.7%	
Maximum Green (s)	16.0	16.0		16.0	16.0		4.0	75.0		4.0	75.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)		12.2		12.2	12.2			82.6		5.0	89.8	
Actuated g/C Ratio		0.11		0.11	0.11			0.75		0.05	0.82	
v/c Ratio		0.64		0.19	0.19			0.93		0.71	1.04	
Control Delay		39.9		47.5	32.8			18.5		89.7	35.5	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		39.9		47.5	32.8			18.5		89.7	35.5	
LOS		D		D	C			B		F	D	
Approach Delay		39.9			37.0			18.5			36.2	
Approach LOS		D			D			B			D	
Queue Length 50th (ft)		58		10	15			644		38	~1134	
Queue Length 95th (ft)		120		30	46			#982		m#75	#1250	
Internal Link Dist (ft)		23			169			1493			898	
Turn Bay Length (ft)												
Base Capacity (vph)		292		113	269			3604		76	3928	
Starvation Cap Reductn		0		0	0			0		0	0	
Spillback Cap Reductn		0		0	0			0		0	0	
Storage Cap Reductn		0		0	0			0		0	0	
Reduced v/c Ratio		0.50		0.13	0.14			0.93		0.71	1.04	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 108 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 28.6		Intersection LOS: C	
Intersection Capacity Utilization 95.4%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountainview Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	431	92	0	56	0	323	0	3054	38	459	3354	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	12	12	13	13	13	13	11	12	12
Grade (%)		-1%			-4%			-1%			0%	
Storage Length (ft)	200		200	0		0	0		0	0		0
Storage Lanes	1		0	2		1	0		0	1		0
Taper Length (ft)	290			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	0.97	1.00	1.00	1.00	*0.75	0.91	1.00	0.91	1.00
Frt						0.850		0.998				
Flt Protected	0.950	0.968		0.950						0.950		
Satd. Flow (prot)	1707	1642	0	3384	0	1613	0	4115	0	1637	4865	0
Flt Permitted	0.950	0.968		0.950						0.950		
Satd. Flow (perm)	1707	1642	0	3384	0	1613	0	4115	0	1637	4865	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1387			319			995			693	
Travel Time (s)		27.0			6.2			15.1			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	468	100	0	61	0	351	0	3320	41	499	3646	0
Shared Lane Traffic (%)	40%											
Lane Group Flow (vph)	281	287	0	61	0	351	0	3361	0	499	3646	0
Number of Detectors	1	1		1		1		2		1	2	
Detector Template	6x40 Left	6x40 Left		6x40 Left		6x40 Left		Thru		Left	Thru	
Leading Detector (ft)	35	35		35		35		100		20	100	
Trailing Detector (ft)	-5	-5		-5		-5		0		0	0	
Detector 1 Position(ft)	-5	-5		-5		-5		0		0	0	
Detector 1 Size(ft)	40	40		40		40		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Split	NA		Prot		pm+ov		NA		Prot	NA	
Protected Phases	3	3		4		1		2		1	6	
Permitted Phases						4						
Detector Phase	3	3		4		1		2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		3.0		3.0		20.0		3.0	20.0	
Minimum Split (s)	11.0	11.0		11.0		10.0		26.0		10.0	26.0	
Total Split (s)	18.0	18.0		11.0		25.0		66.0		25.0	91.0	
Total Split (%)	15.0%	15.0%		9.2%		20.8%		55.0%		20.8%	75.8%	

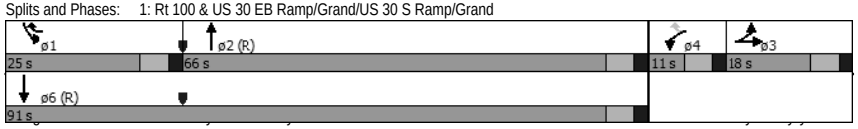
McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand Alt 16 Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	12.0	12.0		5.0		19.0		60.0		19.0	85.0	
Yellow Time (s)	4.0	4.0		4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0		-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0		5.0		5.0		5.0	5.0	
Lead/Lag	Lag	Lag		Lead		Lead		Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None		None		None		C-Max		None	C-Max	
Act Effct Green (s)	13.0	13.0		6.0		24.8		63.2		20.0	88.2	
Actuated g/C Ratio	0.11	0.11		0.05		0.21		0.53		0.17	0.74	
v/c Ratio	1.53	1.62		0.36		1.05		1.55		1.83	1.02	
Control Delay	299.3	338.6		61.4		106.2		270.0		408.4	21.7	
Queue Delay	0.0	0.0		0.0		0.0		0.0		0.0	32.9	
Total Delay	299.3	338.6		61.4		106.2		270.0		408.4	54.7	
LOS	F	F		E		F		F		F	D	
Approach Delay		319.1						270.0			97.2	
Approach LOS		F						F			F	
Queue Length 50th (ft)	~320	~335		24		~204		~1658		~588	~1118	
Queue Length 95th (ft)	#503	#521		47		#425		m#1682		m#359	m170	
Internal Link Dist (ft)		1307			239			915			613	
Turn Bay Length (ft)	200											
Base Capacity (vph)	184	177		169		333		2167		272	3575	
Starvation Cap Reductn	0	0		0		0		0		0	521	
Spillback Cap Reductn	0	0		0		0		0		0	444	
Storage Cap Reductn	0	0		0		0		0		0	0	
Reduced v/c Ratio	1.53	1.62		0.36		1.05		1.55		1.83	1.19	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 20 (17%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.83		
Intersection Signal Delay: 180.6	Intersection LOS: F	
Intersection Capacity Utilization 124.3%	ICU Level of Service H	
Analysis Period (min) 15		

* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Rt 100 & US 30 EB Ramp/Grand/US 30 S Ramp/Grand



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	304	0	560	0	3105	30	0	3508	432
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	12	12	12	12	12	12
Grade (%)		0%			1%			-2%			2%	
Storage Length (ft)	0		0	150		150	185		0	0		0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			170			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.88	1.00	0.86	0.86	1.00	0.95	1.00
Frt						0.850		0.999				0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3268	0	2830	0	6125	0	0	3352	1485
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												331
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1402			2063			693			300	
Travel Time (s)		31.9			46.9			10.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	1%	2%
Adj. Flow (vph)	0	0	0	330	0	609	0	3375	33	0	3813	470
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	330	0	609	0	3408	0	0	3813	470
Number of Detectors				1		1		1			1	1
Detector Template				6x40 Left		6x40 Left						
Leading Detector (ft)				35		35		6			6	6
Trailing Detector (ft)				-5		-5		0			0	0
Detector 1 Position(ft)				-5		-5		0			0	0
Detector 1 Size(ft)				40		40		6			6	6
Detector 1 Type				Cl+Ex		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0		0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0		0.0			0.0	0.0
Turn Type				Prot		Perm		NA			NA	Perm
Protected Phases				8				2			6	
Permitted Phases						8						6
Detector Phase				8		8		2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0		20.0			20.0	20.0
Minimum Split (s)				11.0		11.0		26.0			26.0	26.0
Total Split (s)				23.0		23.0		97.0			97.0	97.0
Total Split (%)				19.2%		19.2%		80.8%			80.8%	80.8%
Maximum Green (s)				17.0		17.0		91.0			91.0	91.0
Yellow Time (s)				4.0		4.0		4.0			4.0	4.0
All-Red Time (s)				2.0		2.0		2.0			2.0	2.0
Lost Time Adjust (s)				-1.0		-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)				5.0		5.0		5.0			5.0	5.0

McMahon Associates, Inc. Pottstown Pike Congestion Mitigation Study
2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp Alt 16 Weekday PM

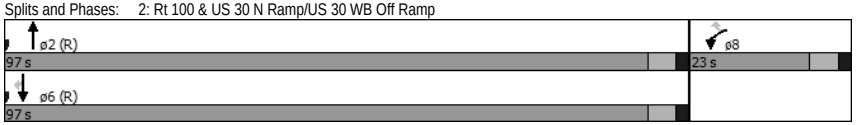
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0		3.0			3.0	3.0
Recall Mode				None		None		C-Max			C-Max	C-Max
Act Effct Green (s)				18.0		18.0		92.0			92.0	92.0
Actuated g/C Ratio				0.15		0.15		0.77			0.77	0.77
v/c Ratio				0.67		1.44		0.73			1.48	0.39
Control Delay				55.8		246.8		6.7			234.2	0.8
Queue Delay				0.0		0.0		0.7			0.2	1.6
Total Delay				55.8		246.8		7.4			234.4	2.4
LOS				E		F		A			F	A
Approach Delay								7.4			208.9	
Approach LOS								A			F	
Queue Length 50th (ft)				126		~363		267			~2145	4
Queue Length 95th (ft)				177		#490		m123			m#1993	m4
Internal Link Dist (ft)		1322			1983			613			220	
Turn Bay Length (ft)				150		150						
Base Capacity (vph)				490		424		4695			2569	1215
Starvation Cap Reductn				0		0		825			7	550
Spillback Cap Reductn				0		0		452			211	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.67		1.44		0.88			1.62	0.71

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 105 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.48
Intersection Signal Delay: 126.1 Intersection LOS: F
Intersection Capacity Utilization 119.0% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 100 & US 30 N Ramp/US 30 WB Off Ramp



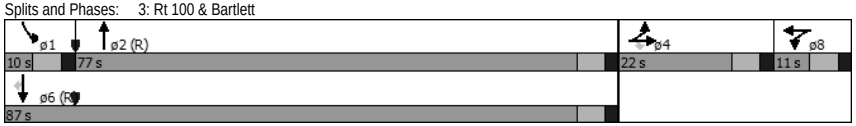
Lanes, Volumes, Timings Alt 16 Weekday PM
I:\eng\816731 - WWT Rt100Study\Traffic\Analysis\2028 Future\15 - Future with Station and 3 Lanes SB No EBR\Weekday PM.sy6 Synchro 8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	4	381	15	10	19	0	3631	34	47	3231	216
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	15	15	15	12	12	12	11	12	14
Grade (%)		1%			-10%			0%			0%	
Storage Length (ft)	0		260	0		0	0		0	70		230
Storage Lanes	1		1	0		0	0		0	1		1
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	0.91	1.00
Frt			0.850		0.941			0.999				0.850
Flt Protected	0.950	0.954			0.984					0.950		
Satd. Flow (prot)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Flt Permitted	0.950	0.954			0.984					0.950		
Satd. Flow (perm)	1585	1591	1542	0	1887	0	0	6065	0	1621	4818	1600
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			136					2				177
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1482			1088			300			1289	
Travel Time (s)		33.7			24.7			4.5			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	4	414	16	11	21	0	3947	37	51	3512	235
Shared Lane Traffic (%)	49%											
Lane Group Flow (vph)	109	109	414	0	48	0	0	3984	0	51	3512	235
Number of Detectors	1	1	1	1	1			1		1	1	1
Detector Template	6x40 Left	6x40 Left		Left	6x40 Left					6x40 Left		
Leading Detector (ft)	35	35	6	20	35			6		35	6	6
Trailing Detector (ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	0	-5			0		-5	0	0
Detector 1 Size(ft)	40	40	6	20	40			6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Turn Type	Split	NA	Perm	Split	NA			NA		Prot	NA	Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4	8	8			2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0			20.0		3.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0			26.0		10.0	26.0	26.0
Total Split (s)	22.0	22.0	22.0	11.0	11.0			77.0		10.0	87.0	87.0
Total Split (%)	18.3%	18.3%	18.3%	9.2%	9.2%			64.2%		8.3%	72.5%	72.5%
Maximum Green (s)	16.0	16.0	16.0	5.0	5.0			71.0		4.0	81.0	81.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0			-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0		5.0	5.0	5.0
Lead/Lag								Lag		Lead		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	0.2	0.2			0.2		3.0	3.0	3.0
Recall Mode	None	None	None	None	None			C-Max		None	C-Max	C-Max
Act Effct Green (s)	17.0	17.0	17.0		6.0			76.2		5.0	84.2	84.2
Actuated g/C Ratio	0.14	0.14	0.14		0.05			0.64		0.04	0.70	0.70
v/c Ratio	0.49	0.48	1.24		0.51			1.03		0.76	1.04	0.20
Control Delay	55.6	55.5	158.6		74.7			40.2		73.2	27.6	0.5
Queue Delay	0.0	0.0	3.9		0.0			0.7		0.0	0.0	0.0
Total Delay	55.6	55.5	162.5		74.7			40.9		73.2	27.6	0.5
LOS	E	E	F		E			D		E	C	A
Approach Delay		125.6			74.7			40.9			26.6	
Approach LOS		F			E			D			C	
Queue Length 50th (ft)	83	83	~302		37			~547		42	~1106	1
Queue Length 95th (ft)	146	146	#504		#84			m#506		m38	m157	m0
Internal Link Dist (ft)		1402			1008			220			1209	
Turn Bay Length (ft)			260							70		230
Base Capacity (vph)	224	225	335		94			3851		67	3380	1175
Starvation Cap Reductn	0	0	0		0			7		0	0	0
Spillback Cap Reductn	0	0	91		0			0		0	0	0
Storage Cap Reductn	0	0	0		0			0		0	0	0
Reduced v/c Ratio	0.49	0.48	1.70		0.51			1.04		0.76	1.04	0.20

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.24		
Intersection Signal Delay: 41.0	Intersection LOS: D	
Intersection Capacity Utilization 107.5%	ICU Level of Service G	
Analysis Period (min) 15		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 3: Rt 100 & Bartlett

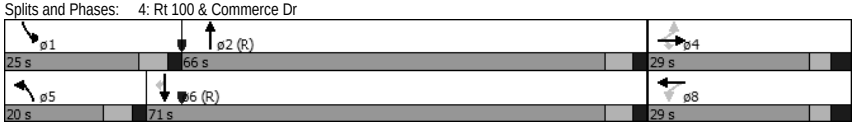


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	213	541	195	75	6	640	3182	117	14	2757	716
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	13	12	13	13	12	12	14
Grade (%)		-1%			1%			-2%			2%	
Storage Length (ft)	250		0	65		130	910		0	200		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			140			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	1.00
Frt			0.850		0.988			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1809	1624	1701	3362	0	3317	5006	0	1693	4817	1616
Flt Permitted	0.696			0.379			0.950			0.950		
Satd. Flow (perm)	1259	1809	1624	679	3362	0	3317	5006	0	1693	4817	1616
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			207		7			7				331
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1201			1082			1289			816	
Travel Time (s)		23.4			21.1			19.5			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	251	232	588	212	82	7	696	3459	127	15	2997	778
Shared Lane Traffic (%)												
Lane Group Flow (vph)	251	232	588	212	89	0	696	3586	0	15	2997	778
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	6x40 Left	6x40 Left		6x40 Left	6x40 Left		40' Left on Mai			40' Left on Mai		
Leading Detector (ft)	35	35	6	35	35		35	6		35	6	6
Trailing Detector (ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Position(ft)	-5	-5	0	-5	-5		-5	0		-5	0	0
Detector 1 Size(ft)	40	40	6	40	40		40	6		40	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		10.0	36.0		25.0	36.0	36.0
Total Split (s)	29.0	29.0	29.0	29.0	29.0		20.0	66.0		25.0	71.0	71.0
Total Split (%)	24.2%	24.2%	24.2%	24.2%	24.2%		16.7%	55.0%		20.8%	59.2%	59.2%
Maximum Green (s)	23.0	23.0	23.0	23.0	23.0		14.0	60.0		19.0	65.0	65.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	0.2		3.0	0.2	0.2
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			23.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	0
Act Effct Green (s)	24.0	24.0	24.0	24.0	24.0		15.0	80.4		7.8	66.0	66.0
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20		0.12	0.67		0.06	0.55	0.55
v/c Ratio	1.00	0.64	1.20	1.57	0.13		1.68	1.07		0.14	1.13	0.75
Control Delay	105.4	53.3	136.0	322.6	36.9		338.3	57.4		54.9	83.3	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.1
Total Delay	105.4	53.3	136.0	322.6	36.9		338.3	57.4		54.9	83.3	9.7
LOS	F	D	F	F	D		F	E		D	F	A
Approach Delay		110.9			238.1			103.1			68.1	
Approach LOS		F			F			F			E	
Queue Length 50th (ft)	196	166	~417	~232	27		~413	691		12	~978	126
Queue Length 95th (ft)	#369	254	#642	#389	51		m#406	m#1162		m17	m#937	m129
Internal Link Dist (ft)		1121			1002			1209			736	
Turn Bay Length (ft)	250			65			910			200		150
Base Capacity (vph)	251	361	490	135	678		414	3357		282	2649	1037
Starvation Cap Reductn	0	0	0	0	0		0	0		0	6	14
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	1.00	0.64	1.20	1.57	0.13		1.68	1.07		0.05	1.13	0.76

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 118 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.68		
Intersection Signal Delay: 94.2		Intersection LOS: F
Intersection Capacity Utilization 115.5%		ICU Level of Service H
Analysis Period (min) 15		
~ Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 4: Rt 100 & Commerce Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	13	85	97	34	41	0	3062	192	49	4144	94
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		200
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.883			0.918			0.991			0.997	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1558	0	1676	1620	0	1774	4798	0	1676	4850	0
Flt Permitted				0.577						0.950		
Satd. Flow (perm)	0	1558	0	1018	1620	0	1774	4798	0	1676	4850	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			43			20			7	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		186			194			1556			995	
Travel Time (s)		4.2			4.4			23.6			15.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	14	92	105	37	45	0	3328	209	53	4504	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	106	0	105	82	0	0	3537	0	53	4606	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	21.0	21.0		21.0	21.0		9.0	90.0		9.0	90.0	
Total Split (%)	17.5%	17.5%		17.5%	17.5%		7.5%	75.0%		7.5%	75.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		4.0	85.0		4.0	85.0	

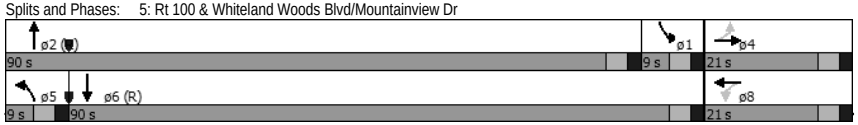
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)		15.6		15.6	15.6			89.2		5.0	96.4	
Actuated g/C Ratio		0.13		0.13	0.13			0.74		0.04	0.80	
v/c Ratio		0.43		0.80	0.33			0.99		0.77	1.18	
Control Delay		31.0		88.9	28.5			29.3		85.7	94.6	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		31.0		88.9	28.5			29.3		85.7	94.6	
LOS		C		F	C			C		F	F	
Approach Delay		31.0			62.4			29.3			94.5	
Approach LOS		C			E			C			F	
Queue Length 50th (ft)		38		79	27			~1070		41	~1579	
Queue Length 95th (ft)		94		#169	76			#1148		m50	m#1549	
Internal Link Dist (ft)		106			114			1476			915	
Turn Bay Length (ft)												
Base Capacity (vph)		265		144	266			3572		69	3898	
Starvation Cap Reductn		0		0	0			0		0	0	
Spillback Cap Reductn		0		0	0			0		0	0	
Storage Cap Reductn		0		0	0			0		0	0	
Reduced v/c Ratio		0.40		0.73	0.31			0.99		0.77	1.18	

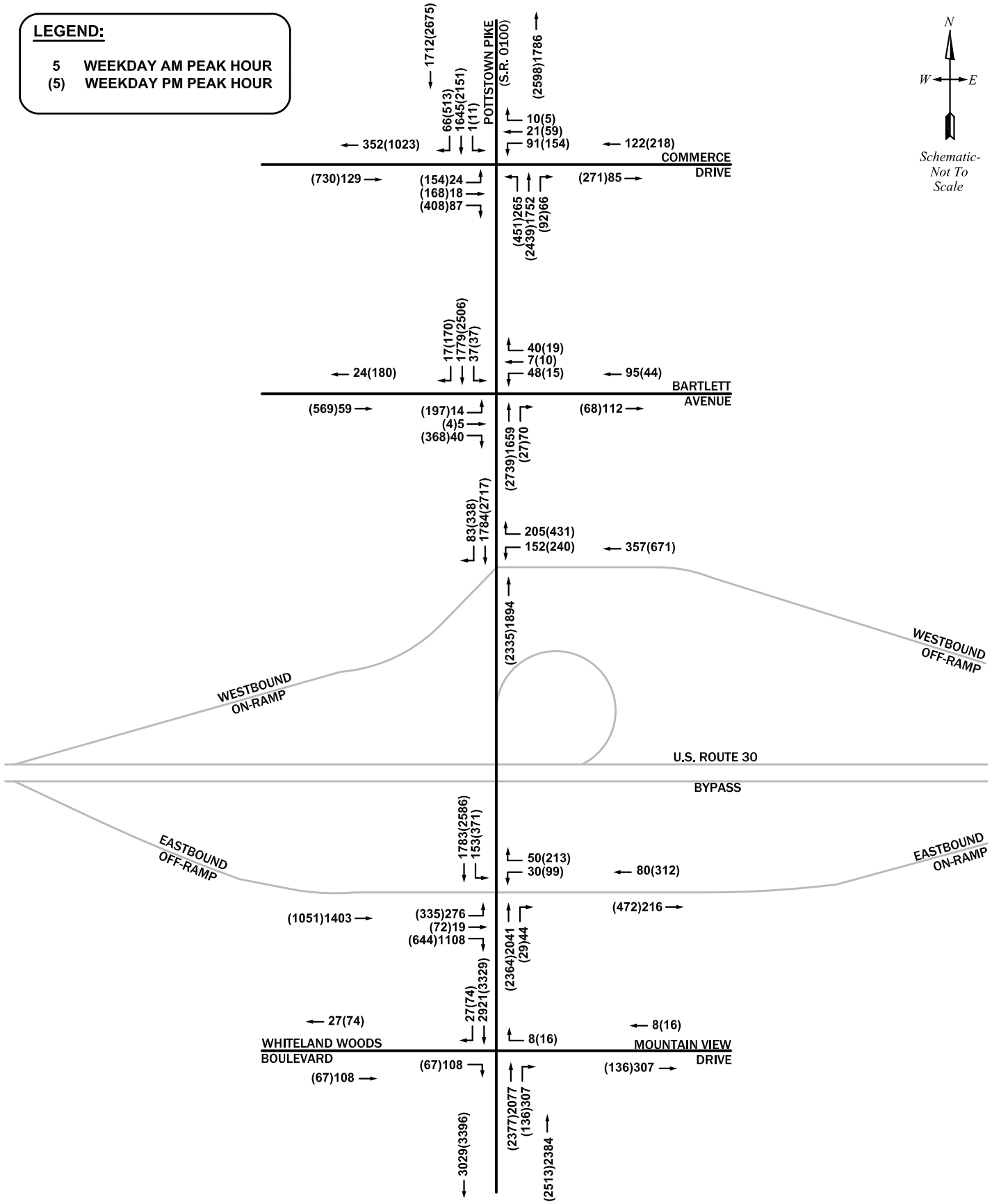
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 2 (2%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.18
Intersection Signal Delay: 65.8 Intersection LOS: E
Intersection Capacity Utilization 105.7% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Rt 100 & Whiteland Woods Blvd/Mountainview Dr





Existing Weekday Peak Hour Traffic Volumes

POTTSTOWN PIKE CONGESTION MITIGATION STUDY

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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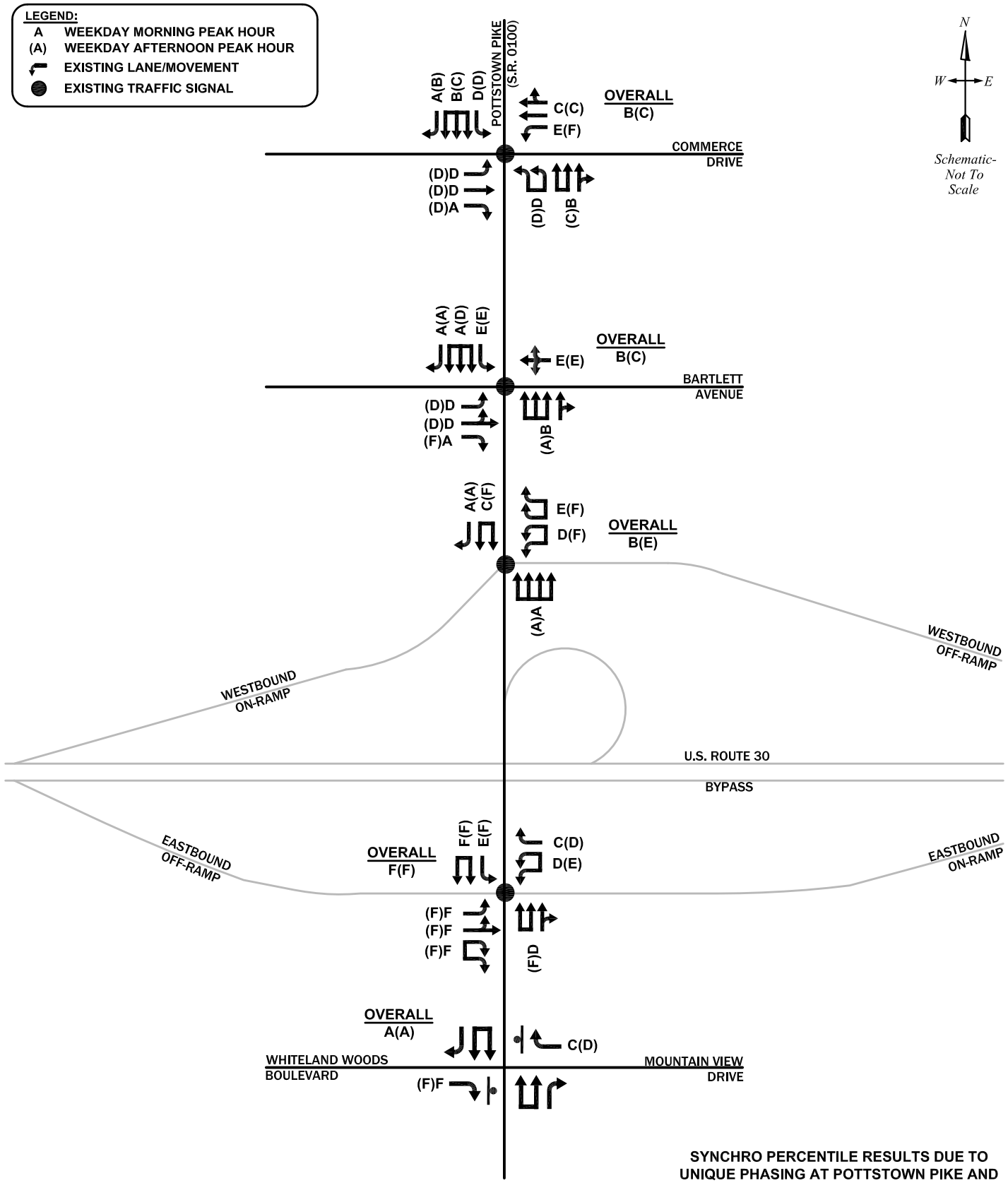
WEST WHITELAND TOWNSHIP, CHESTER COUNTY, PA



SYNCHRO PERCENTILE RESULTS DUE TO UNIQUE PHASING AT POTTSTOWN PIKE AND EASTBOUND OFF-RAMP WHICH DOES NOT ALLOW HCM ANALYSIS

Existing Peak Hour Levels-of-Service

POTTSTOWN PIKE CONGESTION MITIGATION STUDY

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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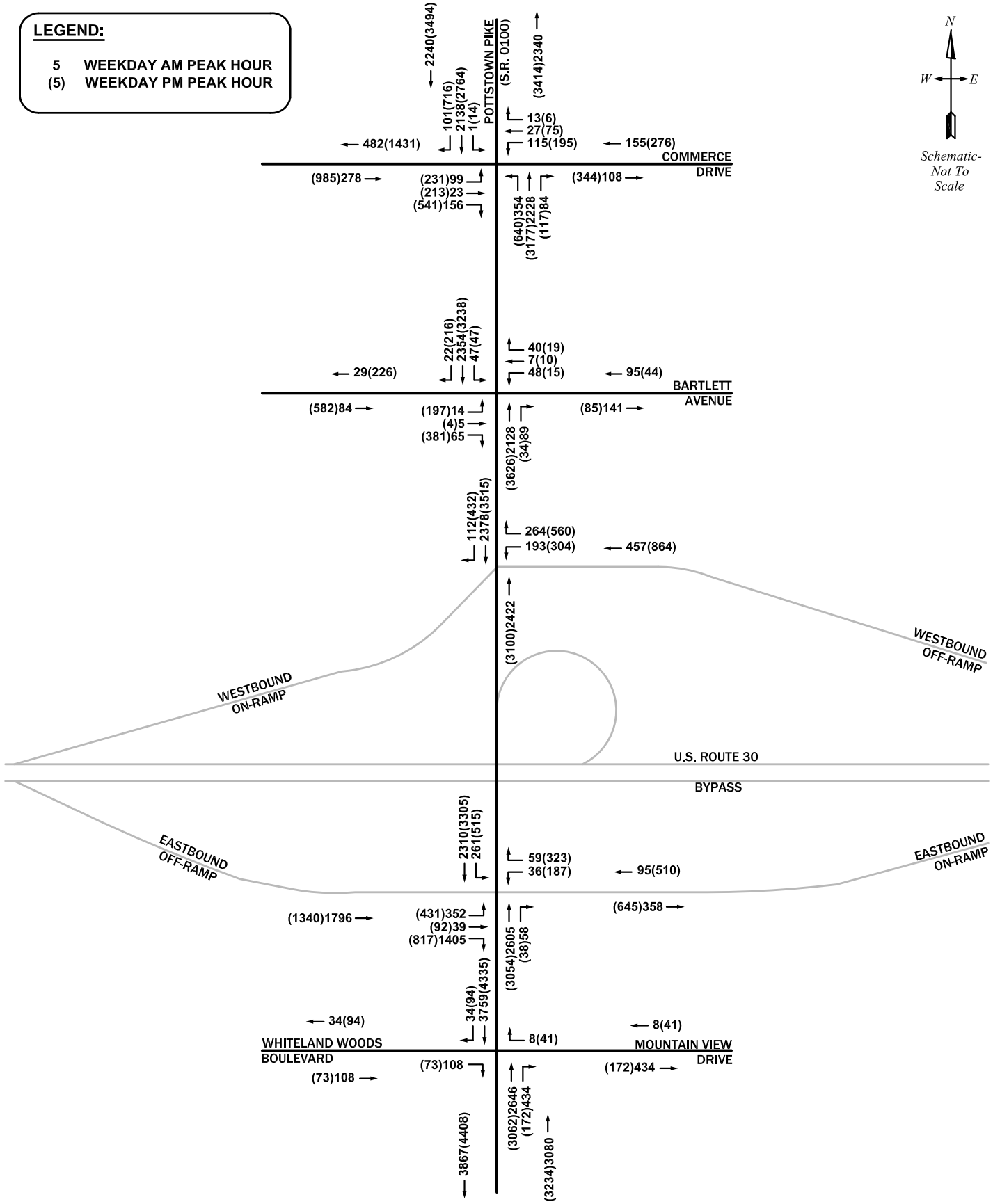
WEST WHITELAND TOWNSHIP, CHESTER COUNTY, PA



2028 Future No-Build Peak Hour Traffic Volumes

POTTSTOWN PIKE CONGESTION MITIGATION STUDY

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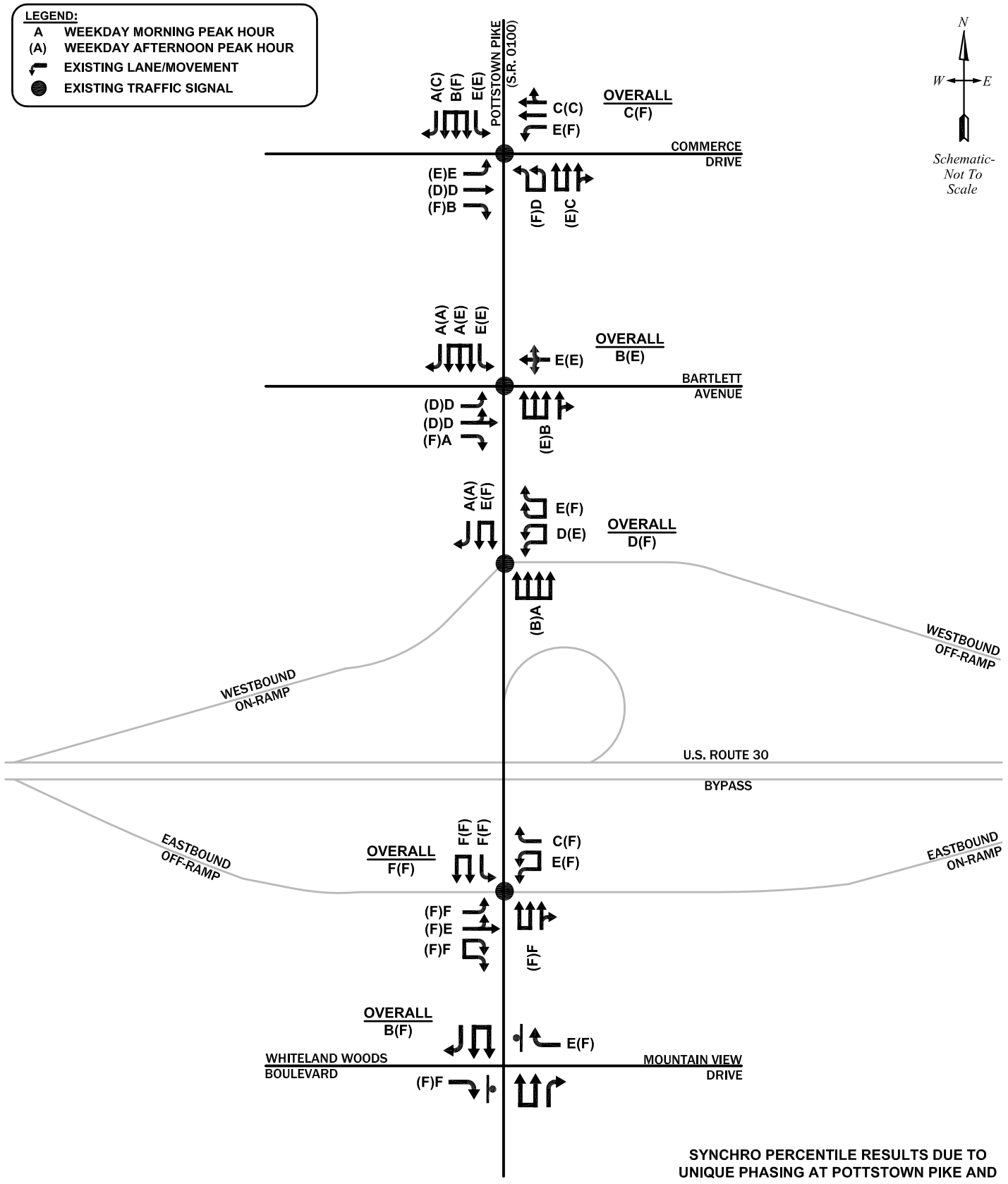
WEST WHITELAND TOWNSHIP, CHESTER COUNTY, PA



2028 Future No-Build Peak Hour Levels-of-Service

POTTSTOWN PIKE CONGESTION MITIGATION STUDY

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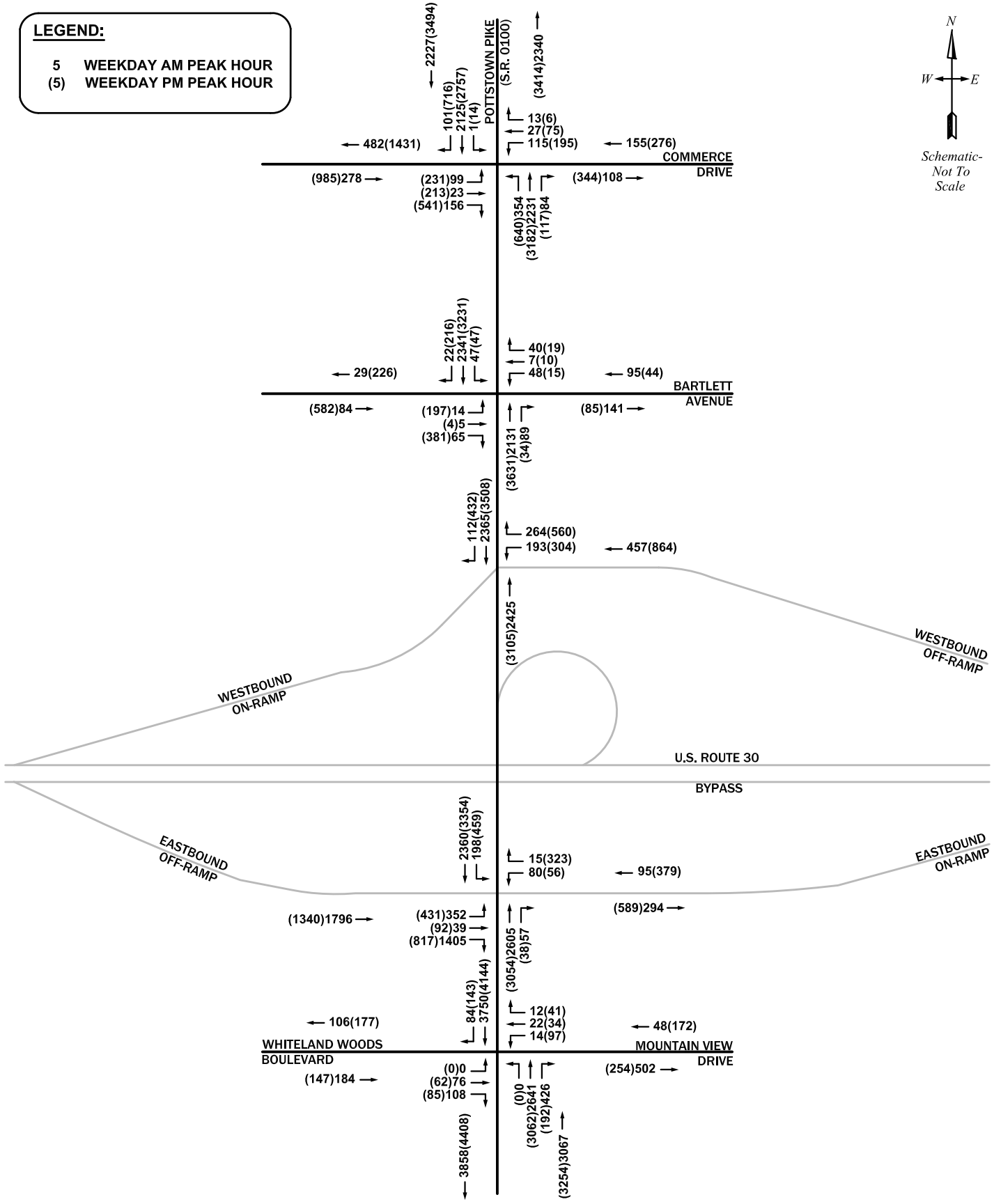
WEST WHITELAND TOWNSHIP, CHESTER COUNTY, PA



2028 Future Build Peak Hour Traffic Volumes

POTTSTOWN PIKE CONGESTION MITIGATION STUDY

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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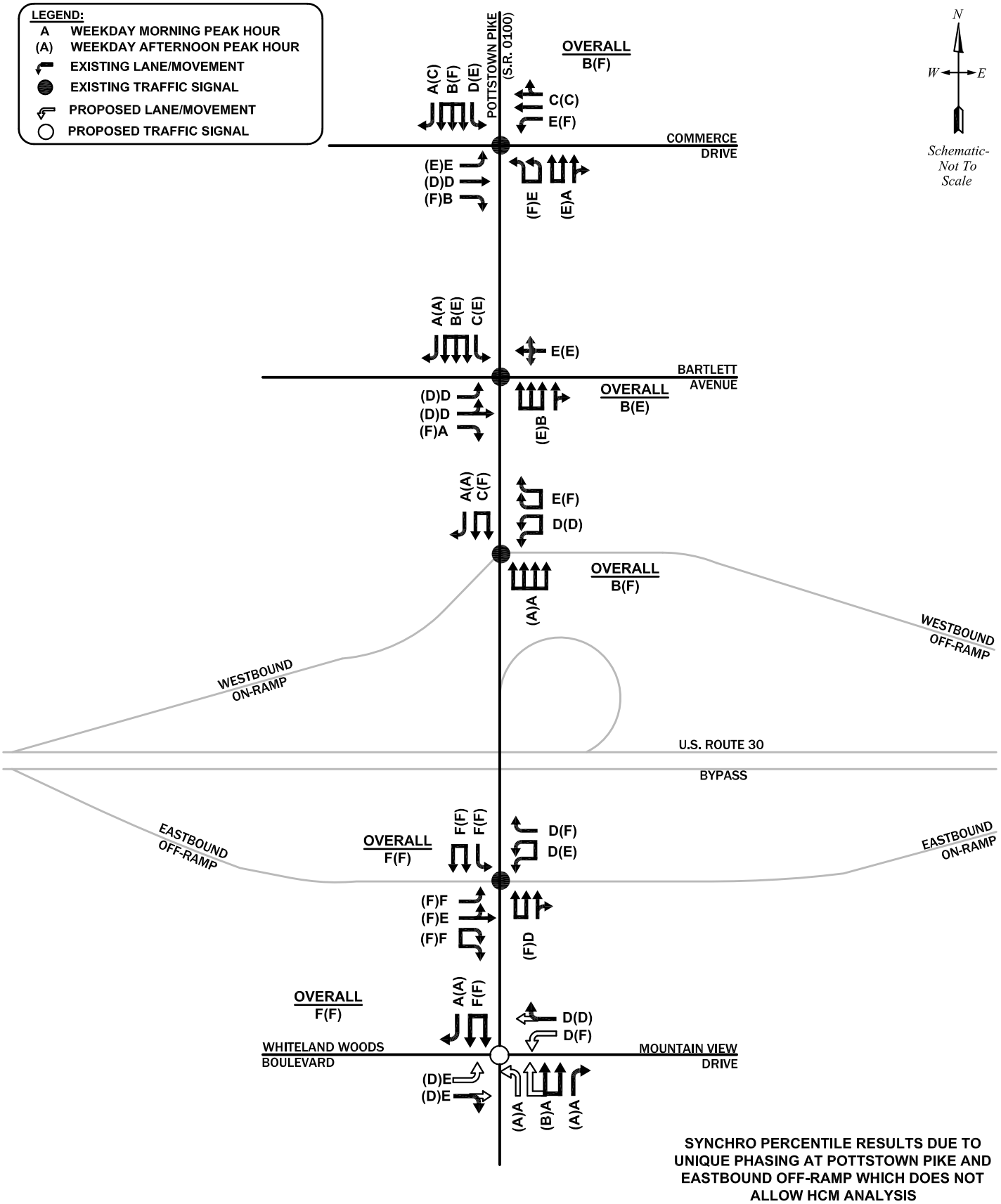
WEST WHITELAND TOWNSHIP, CHESTER COUNTY, PA



2028 Future Build Peak Hour Levels-of-Service

POTTSTOWN PIKE CONGESTION MITIGATION STUDY

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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WEST WHITELAND TOWNSHIP, CHESTER COUNTY, PA