MEMO

TO: Jane Canada, Justin Stuehrenberg & Ben Smith (IndyGo)

CC: Jack Gonsalves & Will Tolbert (WSP)

FROM: Ericka Miller (WSP)

SUBJECT: Purple Line BRT Traffic Analysis Summary

DATE: September 11, 2018

The purpose of this memo is to summarize traffic analysis completed to-date related to IndyGo's Purple Line BRT project.

Traffic operations were evaluated using a rating system called Level of Service (LOS). These LOS ratings are measured in terms of average delay, where delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. LOS A is the best operating condition, and LOS F has the longest delays, therefore being the worst operating condition. LOS D or better is considered acceptable in most urban settings, and LOS E is sometimes tolerated at high-volume locations. The LOS criteria for signalized intersections is provided in the 2010 Highway Capacity Manual and summarized in the table below.

LEVEL OF SERVICE	Description	Average Control Delay Per Vehicle (seconds)
A	Little or no delay.	≤ 10.0
B	Short traffic delays.	> 10.0 and ≤ 20.0
C	Average traffic delays.	> 20.0 and ≤ 35.0
D	Long traffic delays.	> 35.0 and ≤ 55.0
E	Very long traffic delays.	> 55.0 and ≤ 80.0
F	Demand exceeds capacity resulting in extreme delays and queuing.	> 80.0

Overall intersection LOS was evaluated for every existing signalized intersection along the Purple Line corridor (for the AM and PM peak hours) using Synchro software. Existing peak hour traffic volumes were utilized (assuming no growth to the 2020 construction year), and the following diversion assumptions were applied:

- 25% diversion on Meridian Street
- 15% diversion on 38th Street
- 15% diversion on Post Road

Diversion reductions were applied to all volumes except cross-street through movements. For intersections where U-turn movements will be accommodated in the proposed scenario, U-turn volumes were estimated based on the number of access points along the corridor adjacent to each intersection. Pedestrian phases were modeled on recall where crosswalks are proposed along Meridian Street. Along 38th Street and Post Road, pedestrian phases were modeled on recall across side-streets and across station legs. Given this criteria, the following intersections will require two-stage pedestrian crossings across the station legs, in order to maintain acceptable operations: 38th Street & Meadows Drive / Oxford Street, 38th Street & Emerson Avenue, 38th Street & Post Road, 42nd Street & Post Road, and Post Road & Pendleton Pike. In the Synchro models, 90 sec cycle lengths were utilized along Meridian Street. Along 38th Street and Post Road, cycle lengths were optimized within existing coordinated systems and for individual intersections that are not part of existing systems.

Per guidance from IndyGo and DPW, overall intersection LOS was considered acceptable for the build scenario if it was the same or better than existing LOS, or if it was LOS D or better; it should be noted that criteria was not associated with individual movement LOS. Given the current locally preferred alternative (LPA), the only intersections that do not meet the overall intersection LOS criteria are:

- Meridian Street & 16th Street,
- 38th Street & Keystone Avenue,
- 38th Street & Post Road, and
- Post Road & Pendleton Pike

Under existing conditions, the intersection of Meridian Street & 16th Street operates at LOS C during both the AM and PM peak hours; under proposed conditions, the intersection is projected to operate at LOS D during the AM peak hour and LOS E during the PM peak hour. Under existing conditions, the intersection of 38th Street & Keystone Avenue operates at LOS C during the AM peak hour and LOS D during the PM peak hour; under proposed conditions, the intersection is projected to operate at LOS D during the AM peak hour and LOS E during the PM peak hour. Under existing conditions, the intersection of 38th Street & Post Road operates at LOS C during the AM peak hour and LOS D during the PM peak hour; under proposed conditions, the intersection is projected to operate at LOS D during the AM peak hour and LOS E during the PM peak hour. Under existing conditions, the intersection of Post Road & Pendleton Pike operates at LOS D during both the AM and PM peak hours; under proposed conditions, the intersection is projected to operate at LOS E during the AM peak hour and LOS D during the PM peak hour. It should be noted that DPW and INDOT have reviewed and accepted traffic analysis results for the intersection(s) in their respective jurisdictions.

The attached tables summarize traffic analysis results for the current LPA, including LOS, delay and queue.

Intersection	Approach/ Movement	No-Build								Proposed Alternative							
		AM Peak				PM Peak				AM Peak				PM Peak			
		LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)
Alabama & Washington	Intersection	C	25	-	-	C	23.1	-	-	C	24.6	-	-	C	21	-	-
	WB Thru	C	27.9	276	-	C	34.6	163	-	C	28.8	282	-	C	33.8	148	-
	NB LT	D	45.1	30	-	D	45.5	30	-	D	44.9	30	-	D	41.3	28	-
	SB Thru	B	17	119	-	A	8.8	63	-	B	14.2	87	-	A	4	44	-
	SB RT	C	21.1	164	-	B	16.6	233	-	B	17	m102	-	B	14.5	m#324	-
Alabama & Market	Intersection	C	25.1	-	-	D	43	-	-	C	25.9	-	-	D	44.6	-	-
	EB Thru/RT	D	41.7	#211	-	E	70.6	#314	-	D	38.5	#227	-	D	50.7	#309	-
	WB LT	B	19.7	92	-	B	13.5	19	-	C	34.8	103	-	B	13	20	-
	WB Thru	B	15.1	117	-	B	13.9	56	-	B	19.3	132	-	B	13.3	58	-
	SB LT	D	52	#89	-	F	104.5	#176	-	D	51.7	m55	150	F	117.8	m#182	**150**
	SB Thru/RT	C	20.4	243	-	B	16.4	195	-	-	-	-	-	-	-	-	-
	SB Thru	-	-	-	-	-	-	-	-	B	18.8	m167	-	C	34.5	234	-
	SB RT	-	-	-	-	-	-	-	-	A	5.4	m7	150	B	10.5	m27	150
Alabama & Ohio	Intersection	C	29.9	-	-	C	22.1	-	-	D	37.4	-	-	C	24.5	-	-
	EB Thru/RT	A	1	2	-	C	26	m191	-	A	4.6	26	-	C	26	m297	-
	WB LT/Thru	D	41.9	#518	-	C	25.1	99	-	D	50	#532	-	B	17.2	94	-
	SB LT	D	46.4	38	-	C	33.4	81	-	D	53.1	46	-	E	59.3	100	-
	SB Thru	B	19.2	124	-	A	9.8	76	-	C	27.1	236	-	B	19.1	131	-
Delaware & Washington	Intersection	C	22.3	-	-	C	25.1	-	-	C	28.8	-	-	C	33.9	-	-
	WB Thru	A	3.8	28	-	A	8.8	29	-	B	12.9	153	-	A	8.3	68	-
	WB RT	C	27.6	m#205	-	C	30.3	92	-	E	66.4	#269	-	E	72.7	#236	-
	NB LT/Thru	C	34.1	#305	-	C	31.6	#372	-	-	-	-	-	-	-	-	-
	NB LT	-	-	-	-	-	-	-	-	C	21.4	140	-	B	10.2	85	-
	NB Thru	-	-	-	-	-	-	-	-	D	36.4	#305	-	D	45	#396	-
Delaware & Market	Intersection	B	15.1	-	-	D	36.5	-	-	C	20.9	-	-	C	25.6	-	-
	EB LT/Thru	B	12.1	60	-	B	18	176	-	B	16.9	80	-	C	34.1	230	-
	WB Thru/RT	D	35.1	193	-	C	32.8	123	-	C	25.3	82	-	C	25.1	124	-
	NB LT/Thru/RT	B	11.4	#354	-	D	41.9	#409	-	-	-	-	-	-	-	-	-
	NB LT	-	-	-	-	-	-	-	-	C	20.6	99	-	B	19.5	m23	-
	NB Thru	-	-	-	-	-	-	-	-	C	22.2	278	-	C	25	m204	-
	NB RT	-	-	-	-	-	-	-	-	A	7.7	56	90	A	8.9	m25	90
Delaware & Ohio	Intersection	B	10.1	-	-	C	20.8	-	-	C	22.5	-	-	D	42.4	-	-
	EB LT/Thru	B	16.4	83	-	C	21.9	171	-	B	15.5	70	-	D	42	#307	-
	WB Thru/RT	B	16	m176	-	B	11.8	45	-	C	34	m178	-	C	26.7	136	-
	NB LT/Thru/RT	A	5.5	30	-	C	21.7	m77	-	-	-	-	-	-	-	-	-
	NB LT	-	-	-	-	-	-	-	-	C	22.1	#138	-	B	14.2	m73	-
	NB Thru/RT	-	-	-	-	-	-	-	-	B	15.7	135	-	D	47.4	m#546	-
Pennsylvania & Ohio	Intersection	C	26.5	-	-	C	20.6	-	-	D	53.1	-	-	C	32.1	-	-
	EB Thru	C	34.5	98	-	C	33.1	215	-	D	42.7	133	-	B	16.1	91	-
	EB RT	D	42.5	134	-	D	39.5	m192	-	F	91	#192	170	C	26.7	#204	170
	WB LT/Thru	D	35.7	#358	-	C	23.5	m98	-	-	-	-	-	-	-	-	-
	WB LT	-	-	-	-	-	-	-	-	F	89	#426	-	E	66.3	#224	-
	WB Thru	-	-	-	-	-	-	-	-	D	44.9	496	-	A	9.6	80	-
	SB LT	A	6.9	m28	-	B	10.6	33	-	C	26.1	133	-	C	24.8	69	-
	SB Thru/RT	C	20.8	#451	-	B	12	127	-	D	49.3	#628	-	D	39.3	#348	-
Meridian & Ohio	Intersection	B	12.8	-	-	C	24.9	-	-	C	26.9	-	-	C	24.5	-	-
	EB Thru/RT	C	23.5	74	-	C	33.8	218	-	B	18.6	54	-	C	31.2	158	-
	WB Thru/RT	B	16	m122	-	B	18.8	115	-	D	48	#370	-	C	20.7	m65	-
	NB Thru/RT	B	17	180	-	C	25.1	328	-	C	26.8	160	-	C	24.5	254	-
	SB LT	A	3.9	14	-	B	12.6	m36	-	B	10.8	m20	225	B	16.3	40	225
	SB Thru	A	5.1	47	-	B	16.3	144	-	-	-	-	-	-	-	-	-
	SB RT	A	2.9	0	-	A	6.4	19	-	-	-	-	-	-	-	-	-
	SB Thru/RT	-	-	-	-	-	-	-	-	B	13.2	88	-	B	15.5	165	-
Meridian & New York	Intersection	B	19.5	-	-	B	19.1	-	-	C	20.1	-	-	B	18.5	-	-
	EB LT	C	31	39	70	C	22.7	129	70	C	26.5	31	70	B	18.8	89	70
	EB Thru	D	36.4	103	-	C	26.3	253	-	C	29.3	101	-	C	23.7	231	-
	EB RT	B	10.1	18	180	A	4.7	16	180	A	9.7	16	180	A	4.3	14	180
	NB Thru/RT	A	2.4	16	-	A	5.5	27	-	-	-	-	-	-	-	-	-
	NB Thru	-	-	-	-	-	-	-	-	A	4.6	m26	-	A	10	42	-
	NB RT	-	-	-	-	-	-	-	-	A	0.2	m0	70	A	0.6	m1	70
	SB LT/Thru	B	14.8	214	-	B	16.9	145	-	-	-	-	-	-	-	-	-
	SB LT	-	-	-	-	-	-	-	-	B	13.8	m33	170	B	15.4	m80	170
	SB Thru	-	-	-	-	-	-	-	-	B	18.8	225	-	B	14.5	181	-
Meridian & Vermont	Intersection	A	9.9	-	-	B	17.3	-	-	C	27.2	-	-	C	25.3	-	-
	EB LT/Thru	C	26.9	48	-	D	36.7	249	-	C	28.1	48	-	D	40.6	260	-
	EB RT	A	7.4	0	50	B	10.8	33	50	A	3.9	0	50	B	12.7	31	50
	WB LT/Thru/RT	C	23.1	91	-	D	42.5	81	-	-	-	-	-	-	-	-	-
	WB Thru/RT	-	-	-	-	-	-	-	-	D	35.4	131	-	C	27.7	106	-
	NB Thru/RT	A	6.6	18	-	B	10	78	-	-	-	-	-	-	-	-	-
	NB LT/Thru/RT	-	-	-	-	-	-	-	-	A	4.2	45	-	C	23.9	296	-
	SB LT/Thru/RT	A	6.5	70	-	A	3.7	27	-	C	30.7	134	-	B	15.8	362	-

Intersection	Approach/ Movement	No-Build								Proposed Alternative							
		AM Peak				PM Peak				AM Peak				PM Peak			
		LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)
Meridian & Michigan	Intersection	B	17.7	-	-	B	15.3	-	-	C	26.5	-	-	B	19.8	-	-
	WB LT/Thru	C	29.8	242	-	C	30	185	-	C	33.3	248	-	C	31.5	187	-
	WB RT	A	5.7	19	-	A	6	38	-	A	6.7	17	-	A	6.7	34	-
	NB LT/Thru	A	7.2	18	-	A	9.3	116	-	-	-	-	-	-	-	-	-
	NB LT	-	-	-	-	-	-	-	-	B	16.8	m18	50	B	17.6	m46	50
	NB Thru	-	-	-	-	-	-	-	-	B	15.3	51	-	C	21.8	351	-
	SB Thru/RT	A	5.7	104	-	A	6.5	m127	-	-	-	-	-	-	-	-	-
	SB Thru	-	-	-	-	-	-	-	-	C	21.4	m174	-	A	5.3	m57	-
	SB RT	-	-	-	-	-	-	-	-	B	12.2	m46	100	A	1.4	m6	100
Meridian & North	Intersection	B	10.1	-	-	C	23.5	-	-	C	24.6	-	-	D	35.4	-	-
	EB LT/Thru/RT	C	23	36	-	D	44.7	190	-	C	24.1	35	-	D	49.1	184	-
	WB LT/Thru	C	32.2	134	-	C	31.9	100	-	C	32.8	127	-	C	33	99	-
	WB RT	A	2.6	0	-	A	6.9	37	-	A	0.8	0	-	A	4.3	20	-
	NB LT/Thru/RT	A	10	55	-	B	16.4	182	-	-	-	-	-	-	-	-	-
	NB Thru/RT	-	-	-	-	-	-	-	-	C	32.2	117	-	E	62.1	#497	-
	SB LT/Thru/RT	A	6.4	21	-	B	15.7	#133	-	-	-	-	-	-	-	-	-
	SB LT	-	-	-	-	-	-	-	-	C	27	m44	60	B	10.9	m57	60
	SB Thru/RT	-	-	-	-	-	-	-	-	C	22.3	m256	-	A	9.1	238	-
Meridian & St Clair	Intersection	B	10.7	-	-	B	14.8	-	-	C	28	-	-	C	21.6	-	-
	EB LT/Thru/RT	C	25.6	80	-	D	50.1	229	-	C	25.9	78	-	D	42.5	224	-
	WB LT/Thru/RT	D	43.1	231	-	C	26.7	148	-	D	41	#234	-	C	29	152	-
	NB LT/Thru/RT	A	5.5	39	-	A	8	m174	-	-	-	-	-	-	-	-	-
	NB Thru	-	-	-	-	-	-	-	-	A	21	15	-	B	10.2	m328	-
	NB RT	-	-	-	-	-	-	-	-	A	0	m0	70	A	1.3	m6	70
	SB LT/Thru/RT	A	3	53	-	A	4.9	272	-	-	-	-	-	-	-	-	-
	SB LT/Thru/RT	-	-	-	-	-	-	-	-	C	30	#855	-	C	21.6	332	-
9th & Meridian	Intersection	No analysis for No-Build (existing intersection is unsignalized)								A	7.7	-	-	A	9..3	-	-
	EB LT/Thru/RT									C	25.8	20	-	C	20.1	14	-
	WB LT/Thru/RT									C	25.7	17	-	B	13.7	7	-
	NB Thru/RT									A	0.3	m6	-	B	13.9	288	-
	SB Thru/RT									A	9	300	-	A	3.1	m32	-
Meridian & 10th	Intersection	B	13	-	-	B	16.1	-	-	B	18.7	-	-	D	41.1	-	-
	EB LT	C	23.7	48	130	D	36	156	130	C	27.2	42	130	D	41.2	137	**130**
	EB Thru/RT	B	19.9	55	-	C	21.3	143	-	C	23.7	58	-	C	27.6	173	-
	WB LT	C	21.1	21	110	B	16.9	9	110	C	24.6	19	110	C	22	9	110
	WB Thru/RT	C	20	71	-	B	18	72	-	C	24.4	77	-	C	23.4	86	-
	NB LT	B	11.3	m9	105	B	18.7	m63	105	C	31.9	16	30	D	50.8	m49	30
	NB Thru/RT	A	6.3	58	-	B	19.4	343	-	B	10.9	124	-	E	67.2	272	-
	SB LT	A	6.7	m18	110	A	4.6	6	110	-	-	-	-	-	-	-	-
	SB Thru/RT	B	11.4	196	-	A	3.1	36	-	-	-	-	-	-	-	-	-
	SB Thru	-	-	-	-	-	-	-	-	B	17.3	367	-	C	32.4	#488	-
	SB RT	-	-	-	-	-	-	-	-	-	-	-	-	A	0.1	m0	60
Meridian & 11th	Intersection	B	17.1	-	-	B	16.4	-	-	D	36.2	-	-	D	45.9	-	-
	EB LT/Thru	C	21.5	114	-	C	30.3	106	-	C	32	153	-	C	29.3	103	-
	EB RT	C	29.8	232	-	A	6.8	27	-	C	22.5	148	-	A	7	25	-
	NB Thru/RT	C	24	174	-	B	16.1	143	-	-	-	-	-	-	-	-	-
	NB Thru	-	-	-	-	-	-	-	-	C	34.8	237	-	F	81.9	#805	-
	NB RT	-	-	-	-	-	-	-	-	A	2.8	11	70	A	5.2	m20	70
	SB LT/U-Turn	A	5.8	m31	170	C	33.7	m137	170	C	28.4	107	100	F	116.3	m#124	100
	SB Thru	A	8	129	-	A	4.3	30	-	D	49.7	479	-	A	6.3	m89	-
Meridian & 12th	Intersection	B	15.3	-	-	B	13.3	-	-	C	31.6	-	-	C	26.2	-	-
	WB LT	C	30.1	158	-	C	25.9	71	-	C	29.4	124	-	C	27.3	59	-
	WB Thru	C	32.6	229	-	C	27	100	-	D	35.4	235	-	C	29.2	105	-
	WB RT	A	5.5	60	-	C	22.7	187	-	A	5.8	55	-	A	7	54	-
	NB LT	B	10.7	26	170	B	12.3	m69	170	E	69.5	#65	100	D	39.1	m0	100
	NB Thru	A	4.2	18	-	A	2	m36	-	A	8.7	91	-	A	2.4	m15	-
	SB Thru/RT	A	7.7	128	-	B	13.4	158	-	D	39.6	m259	-	D	46.9	m#662	-
Meridian & 14th	Intersection	A	6	-	-	B	11.1	-	-	D	51.3	-	-	D	48.7	-	-
	EB LT/Thru/RT	B	19.5	23	-	D	38.1	158	-	B	17.6	21	-	C	32.4	148	-
	WB LT/Thru/RT	C	25.1	12	-	B	19.4	11	-	C	22.5	10	-	B	19.1	11	-
	NB Thru/RT	A	7.6	114	-	B	11.3	342	-	-	-	-	-	-	-	-	-
	NB LT/U-Turn	-	-	-	-	-	-	-	-	F	85.8	17	70	D	36.1	21	70
	NB Thru/RT	-	-	-	-	-	-	-	-	B	12.7	194	-	E	70.8	#883	-
	SB Thru/RT	A	4.5	81	-	A	5.2	m89	-	-	-	-	-	-	-	-	-
	SB LT/U-Turn	-	-	-	-	-	-	-	-	D	46	40	75	D	52.4	28	75
	SB Thru/RT	-	-	-	-	-	-	-	-	E	69.9	#795	-	C	28	#673	-
Meridian & 16th	Intersection	C	26	-	-	C	26.1	-	-	D	47.1	-	-	E	65.6	-	-
	EB LT	C	26.5	61	75	C	25.5	81	75	E	65.2	#72	75	E	66.7	#120	**75**
	EB Thru/RT	C	26.8	160	-	D	37.5	#422	-	D	40.4	216	-	E	73.1	#586	-
	WB LT	B	17.3	47	65	B	17.8	32	65	C	29.9	56	65	C	34.2	38	65
	WB Thru/RT	D	41.7	#347	-	D	35.7	278	-	E	68.7	#468	-	E	61.8	#413	-
	NB LT/U-Turn	D	48.9	#88	130	B	17.1	24	130	F	91.8	#105	**100**	E	76.8	106	**100**
	NB Thru/RT	A	8.2	53	-	A	8.2	107	-	C	26.1	263	-	E	77.7	#940	-
	SB LT/U-Turn	B	15.6	55	140	F	113.9	#164	140	E	66.3	107	**100**	F	152	#186	**100**
	SB Thru	C	21.3	351	-	B	18.4	255	-	D	39.6	#743	-	D	37	555	-
	SB RT									A	7.8	70	100	A	2	17	100

Intersection	Approach/ Movement	No-Build								Proposed Alternative							
		AM Peak				PM Peak				AM Peak				PM Peak			
		LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)
38th & College	Intersection	E	55.2	-	-	E	67.7	-	-	D	44.3	-	-	E	56.3	-	-
	EB LT	E	77.3	#220	135	F	149.3	#401	135	E	77.4	#175	**135**	F	108	#320	**135**
	EB Thru/RT	D	38.6	341	-	D	39.9	469	-	C	33.1	273	-	D	35.6	382	-
	WB LT	C	30.8	68	100	C	33.2	43	100	D	47.5	74	110	D	47.5	50	110
	WB Thru/RT	E	64.9	#543	-	D	51.2	#447	-	D	44	404	-	D	45.1	353	-
	NB LT	E	78.8	56	70	F	82.8	#104	70	F	90.2	50	70	F	93.9	#97	**70**
	NB Thru/RT	C	24.7	332	-	F	82.7	#1059	-	C	26.2	291	-	E	56.7	#864	-
	SB LT/Thru/RT	E	68.3	#599	-	F	100.4	#445	-	D	53.3	#481	-	F	88.9	#379	-
38th & Fall Creek	Intersection	F	113	-	-	F	108.3	-	-	F	156.8	-	-	F	163.3	-	-
	EB LT	F	151.6	#435	520	F	156.8	#625	520	F	21.5	#465	**400**	F	339.5	#618	**400**
	EB Thru/RT	D	50.4	405	-	D	45.8	#525	-	E	56.6	354	-	D	42	283	-
	WB LT/U-Turn	F	124.7	#200	290	F	93.8	111	290	F	324	#452	**420**	F	282.6	#258	420
	WB Thru/RT	F	122.3	#409	-	F	129.1	#426	-	E	72.2	#443	-	E	60	424	-
	NB Thru	B	19.6	227	-	F	154.9	#1326	-	C	25.1	270	-	F	235.7	#1437	-
	NB RT	A	2.9	14	530	A	3.6	34	530	A	3.8	16	530	A	6.3	46	530
	SB Thru	F	163.9	#1389	-	C	25.7	370	-	F	214.1	#1572	-	C	32.8	420	-
	SB RT	B	14.3	529	-	A	7.2	206	-	C	22.9	622	-	B	15	274	-
38th & Orchard	Intersection	B	12.3	-	-	B	12.5	-	-	C	34.7	-	-	D	44.1	-	-
	EB LT	B	12	68	125	B	11.4	118	125	E	78.2	#113	210	E	63.5	#179	210
	EB Thru/RT	A	7.4	137	-	A	6.2	170	-	C	23.8	422	-	D	35.6	#695	-
	WB LT/U-Turn	A	2.6	m3	75	A	1.9	m3	75	D	48	33	70	D	50	38	70
	WB Thru/RT	A	2.8	33	-	A	1.5	28	-	D	45.3	#587	-	E	65.2	#649	-
	NB LT	E	75.9	#74	100	F	128.3	#82	100	C	29.5	55	100	C	27.9	59	100
	NB Thru/RT	B	19.7	35	-	C	31.5	85	-	B	18.5	35	-	C	22.7	80	-
	SB LT	C	25.3	5	100	C	27.8	10	100	C	23.5	5	100	C	23.2	9	100
	SB Thru/RT	C	31.4	168	-	C	23.4	121	-	C	20.5	160	-	B	14.3	108	-
38th & Keystone	Intersection	C	23.1	-	-	D	35.8	-	-	D	46.3	-	-	E	74.8	-	-
	EB LT/U-Turn	B	19.8	#72	130	F	85.6	#151	130	F	108.6	#132	230	F	107.6	#179	230
	EB Thru	C	25.9	213	-	C	34.1	300	-	-	-	-	-	-	-	-	-
	EB RT	A	5.4	18	130	A	6.8	41	130	-	-	-	-	-	-	-	-
	EB Thru/RT	-	-	-	-	-	-	-	-	C	34.9	240	-	D	45.4	364	-
	WB LT/U-Turn	B	18.3	m#127	160	F	139.6	#151	160	C	31.8	m101	200	F	106	#221	**200**
	WB Thru/RT	B	19.9	72	-	C	23.6	242	-	D	42	m#607	-	F	154.8	#872	-
	NB LT	C	33.2	74	200	C	22.1	63	200	D	45.7	65	200	C	26.6	58	200
	NB Thru/RT	C	22.7	146	-	C	33	288	-	D	45.3	253	-	E	79.7	428	-
	SB LT	C	23.5	71	200	F	161.5	#148	200	D	37.3	72	200	D	52.3	#101	200
	SB Thru	C	27	197	-	C	21	190	-	E	63.6	328	-	C	34	279	-
	SB RT	A	9.6	43	200	A	7.3	36	200	A	0.6	0	200	A	0.4	0	200
38th & Meadows	Intersection	B	17.8	-	-	B	11.7	-	-	D	47.3	-	-	C	31.6	-	-
	EB LT/U-Turn	B	12.9	20	120	A	4	m19	120	E	58.7	#230	**230**	D	51.3	#149	230
	EB Thru/RT	A	2.5	25	-	A	4.8	m157	-	B	19.4	378	-	C	24.6	#752	-
	WB LT/U-Turn	B	16.3	11	100	B	14.8	23	100	E	65.8	24	310	E	66.6	42	310
	WB Thru/RT	B	19.5	326	-	B	13.2	235	-	D	52.1	#870	-	D	39.8	#621	-
	NB LT/Thru/RT	C	29.6	83	-	C	30.9	70	-	D	49.3	130	-	C	26.6	66	-
	SB LT	D	49.9	111	130	D	42.7	87	130	F	107.8	#179	**130**	C	32.8	75	130
	SB Thru	C	27.9	53	-	C	29.8	41	-	D	45.7	84	-	C	27.5	41	-
	SB RT	A	9.7	41	175	A	5.7	23	175	A	4.9	15	175	A	1	0	175
38th & Lasalle	Intersection	No analysis for No-Build (existing intersection is unsignalized)								B	10.2	-	-	A	8.3	-	-
	EB LT/U-Turn									D	40.9	22	80	D	48.8	m20	80
	EB Thru/RT									A	7.1	135	-	A	4.1	85	-
	WB LT/U-Turn									D	42	11	75	D	42	33	75
	WB Thru/RT									A	9.7	305	-	A	9.3	384	-
	NB LT/Thru/RT									A	0.9	0	-	A	1.2	0	-
	SB LT/Thru/RT									C	29.8	4	-	C	34.4	7	-
38th & Sherman	Intersection	B	19.2	-	-	C	20.5	-	-	D	54.3	-	-	D	53.8	-	-
	EB LT/U-Turn	C	23.4	#58	125	B	14.4	44	125	F	106.9	#144	180	E	69.6	123	180
	EB Thru/RT	B	13.1	120	-	B	16	230	-	C	27.5	367	-	E	66.9	#881	-
	WB LT/U-Turn	B	13.2	21	125	B	16	34	125	E	77.9	86	100	E	76.8	#128	**100**
	WB Thru/RT	B	18.8	123	-	B	14.8	121	-	E	67.1	#733	-	D	36.9	509	-
	NB LT	C	25	82	130	D	52.7	#99	130	D	50.6	158	**130**	E	61.8	171	**130**
	NB Thru	C	29.3	134	-	C	26.9	145	-	E	60.5	254	-	D	53.8	273	-
	NB RT	A	0.2	0	130	A	2	0	130	A	0.2	0	130	A	1	0	130
	SB LT	C	21.9	41	100	C	24.1	62	100	E	68.8	79	100	E	67	#135	**100**
	SB Thru	C	27.2	123	-	C	31.7	160	-	D	51.1	233	-	E	57.5	303	-
	SB RT	A	2.6	11	250	A	0.6	0	250	A	0.9	0	250	A	0.5	0	250
38th & Forest Manor	Intersection	A	5.3	-	-	A	4.4	-	-	B	13.4	-	-	B	13.3	-	-
	EB LT/Thru/RT	A	2.4	24	-	A	2	43	-	-	-	-	-	-	-	-	-
	EB LT/U-Turn	-	-	-	-	-	-	-	-	E	65.2	37	80	E	55.3	43	80
	EB Thru/RT	-	-	-	-	-	-	-	-	A	8.1	161	-	B	15.1	542	-
	WB LT/Thru/RT	A	4.4	90	-	A	3.7	85	-	-	-	-	-	-	-	-	-
	WB LT/U-Turn	-	-	-	-	-	-	-	-	E	56.1	11	80	E	59.8	24	80
	WB Thru/RT	-	-	-	-	-	-	-	-	A	9.5	58	-	A	1.6	11	-
	NB LT/Thru/RT	C	28.8	29	-	C	25.2	49	-	D	40.3	34	-	D	35	58	-
	SB LT/Thru/RT	C	22.2	29	-	C	23.7	47	-	C	30	34	-	C	31.4	55	-

Intersection	Approach/ Movement	No-Build								Proposed Alternative							
		AM Peak				PM Peak				AM Peak				PM Peak			
		LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)
38th & Arthington	Intersection	No analysis for No-Build (existing intersection is unsignalized)								C	20.7	-	-	C	22.1	-	-
	EB LT/U-Turn									E	58.2	11	140	D	51.4	m19	140
	EB Thru/RT									B	10.8	67	-	B	15.4	290	-
	WB LT/U-Turn									D	45.9	9	110	D	49.3	15	110
	WB Thru/RT									C	24.6	#463	-	C	26.4	#611	-
	NB LT/Thru/RT									C	23.2	5	-	A	0.1	0	-
	SB LT/Thru/RT									A	0.1	0	-	B	17	3	-
38th & Emerson	Intersection	C	25.6	-	-	C	28.5	-	-	D	47.9	-	-	D	54.7	-	-
	EB LT/U-Turn	B	17.6	26	80	B	16.2	61	80	E	79.7	70	170	E	78.8	#175	**170**
	EB Thru/RT	C	25.4	95	-	C	32.6	283	-	D	36.2	225	-	E	61.1	#778	-
	WB LT/U-Turn	C	22.6	93	95	C	31	#99	95	E	68.6	#200	220	F	93.3	#256	**220**
	WB Thru/RT	C	30.6	193	-	C	27.3	226	-	D	39.9	420	-	D	37.6	508	-
	NB LT	C	20.6	99	385	C	24.9	93	385	D	49.5	118	385	E	60.7	#133	385
	NB Thru	C	23.5	227	-	C	32.8	292	-	D	45.7	297	-	E	64.4	#399	-
	NB RT	A	2.3	10	-	A	9	72	-	A	0.3	0	-	A	7.8	44	-
	SB LT	B	15.8	34	215	C	28.8	69	215	C	31.5	42	215	F	82.9	#81	215
	SB Thru/RT	C	26.9	187	-	C	27.9	184	-	E	57.1	248	-	D	45.5	231	-
38th & Hawthorne	Intersection	No analysis for No-Build (existing intersection is unsignalized)								A	6	-	-	B	12	-	-
	EB LT/U-Turn									D	46.4	16	80	D	50.5	44	80
	EB Thru/RT									A	6.1	100	-	B	10.3	329	-
	WB LT/U-Turn									E	60.5	m17	80	D	41.1	25	80
	WB Thru/RT									A	1	5	-	A	7.3	408	-
	NB LT/Thru/RT									C	32.7	6	-	C	27.1	9	-
	SB LT/Thru/RT									C	24.4	1	-	C	21	0	-
38th & Layman	Intersection	A	1.9	-	-	A	3.5	-	-	C	20.9	-	-	C	28.7	-	-
	EB LT/Thru	A	1.5	36	-	A	3.4	111	-	-	-	-	-	-	-	-	-
	EB LT/U-Turn	-	-	-	-	-	-	-	-	D	39.4	13	220	E	55.1	34	220
	EB Thru	-	-	-	-	-	-	-	-	B	15.5	251	-	C	28.6	#781	-
	WB U-Turn	-	-	-	-	-	-	-	-	D	44.1	29	110	D	44.4	29	110
	WB Thru/RT	A	1.7	70	-	A	2.8	82	-	C	24.1	#547	-	C	29.6	#628	-
	NB LT/Thru/RT									A	0	0	-	A	0	0	
	SB LT/RT	B	12.5	2	-	B	12.9	8	-	A	0.2	0	-	A	0.3	0	-
38th & Arlington	Intersection	C	20.2	-	-	C	29.2	-	-	D	39.8	-	-	D	53.8	-	-
	EB LT/U-Turn	C	27	52	265	F	129.5	#184	265	E	73.8	113	240	F	105.4	#266	**240**
	EB Thru/RT	C	20.6	123	-	C	26.2	255	-	C	28.6	305	-	D	35.7	#678	-
	WB LT/U-Turn	B	19.9	41	225	C	24.2	41	225	E	67.5	84	240	E	76.4	91	240
	WB Thru/RT	C	24.6	221	-	C	28.9	271	-	D	38.5	#607	-	E	66.1	#797	-
	NB LT	B	15.2	35	220	B	16.1	55	220	C	33.2	53	220	D	39.4	86	220
	NB Thru/RT	B	17.2	79	-	B	19.2	145	-	D	393	13	-	D	48.7	252	-
	SB LT	B	14.4	47	600	C	20.3	84	600	C	32	72	600	E	62.5	#160	600
	SB Thru/RT	B	15.4	94	-	B	16.3	115	-	D	40.2	173	-	D	45	211	-
38th & Sheridan	Intersection	No analysis for No-Build (existing intersection is unsignalized)								A	6.9	-	-	B	13.5	-	-
	EB LT/U-Turn									D	41.5	29	70	D	44.2	53	70
	EB Thru									A	4.3	86	-	A	7.2	310	-
	WB U-Turn									D	40	m12	90	D	40.4	21	90
	WB Thru/RT									A	5	119	-	B	13.8	385	-
	NB LT/Thru/RT									A	0.4	0	-	A	0.4	0	-
	SB LT/RT									B	16	43	-	C	22.6	67	-
38th & Pendleton Pike	Intersection	B	17	-	-	C	25.4	-	-	C	25.7	-	-	D	41.9	-	-
	EB LT/U-Turn	D	39.9	109	320	D	45.7	232	320	D	42.5	31	280	D	53.8	#319	**280**
	EB Thru/RT	C	28.3	114	-	C	30.5	219	-	C	26	242	-	D	35.1	495	-
	WB LT/U-Turn	B	18.4	m76	225	C	27.7	178	225	D	48.3	143	380	E	56.7	m#213	380
	WB Thru/RT	B	13.5	62	-	B	19.1	190	-	-	-	-	-	-	-	-	-
	WB Thru	-	-	-	-	-	-	-	-	B	15.2	251	-	C	33.8	401	-
	NEB Thru/RT	B	17.7	84	-	C	27.3	213	-	C	26.7	103	-	E	55.3	#307	-
	SWB Thru	B	17	116	-	B	16	m81	-	D	36.9	203	-	D	41.2	149	-
	SWB RT	A	2.4	1	300	A	6.2	m106	300	A	6.8	47	300	A	7.6	62	300
38th & Shadeland	Intersection	B	18.3	-	-	C	25.3	-	-	D	49.5	-	-	D	50.5	-	-
	EB LT	A	8	3	140	B	12.3	m15	140	-	-	-	-	-	-	-	-
	EB Thru/RT	A	8.8	21	-	B	18.4	#105	-	D	39.1	279	-	E	55.3	m#733	-
	WB LT	C	24.4	102	175	C	27.7	83	175	F	91.5	#197	230	F	98	#175	230
	WB Thru/RT	C	21	180	-	C	20.9	202	-	C	27.5	447	-	B	12.1	154	-
	NB LT	B	19.7	49	450	B	16.2	71	450	E	58.3	#78	450	D	35.7	97	450
	NB Thru/RT	C	20.8	115	-	C	33.9	264	-	D	37.7	183	-	E	64.8	#383	-
	SB LT	A	8.3	24	120	C	34.1	m125	120	C	29.3	75	120	E	65.1	#210	**120**
	SB Thru/RT	B	18.4	191	-	C	21.3	m174	-	E	66.1	#454	-	D	43	300	-

Intersection	Approach/ Movement	No-Build								Proposed Alternative							
		AM Peak				PM Peak				AM Peak				PM Peak			
		LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)
38th & Richardt	Intersection	B	10.8	-	-	A	9.9	-	-	D	54.5	-	-	B	19	-	-
	EB LT	B	10.8	8	100	A	9	5	100	D	44.6	13	70	E	75.5	m0	70
	EB Thru/RT	A	8.3	123	-	A	9	269	-	C	24.8	319	-	C	23.6	m701	-
	WB LT	B	10.8	37	100	B	13.4	72	100	E	64.2	60	170	E	61.2	m63	170
	WB Thru/RT	B	11	221	-	A	8.2	216	-	E	77	#693	-	A	7.8	m184	-
	NB LT/Thru	C	22	42	-	C	21.1	21	-	C	26.8	58	-	D	39.7	36	-
	NB RT	A	5.5	13	-	B	16.7	48	-	A	0.4	0	-	A	6.7	18	-
	SB LT/Thru/RT	B	11.6	20	-	B	15.6	29	-	B	17.4	28	-	C	32	57	-
38th & Franklin	Intersection	C	25.1	-	-	E	61.3	-	-	D	49.3	-	-	E	70.7	-	-
	EB LT	B	16.5	83	240	D	49.6	#286	240	F	89.8	#128	240	F	103.4	m#234	240
	EB Thru	B	12.3	126	-	C	20	293	-	D	37.8	338	-	E	75.6	m#721	-
	EB RT	A	3.2	17	550	A	2.8	27	550	A	0.3	0	430	A	1.7	m10	430
	WB LT	B	13	75	115	C	31.8	#155	115	E	67.8	120	350	F	135.9	#197	350
	WB Thru	B	13.8	186	-	B	18.6	232	-	E	68.7	#551	-	F	91.5	#714	-
	WB RT	A	2.6	17	435	A	6.9	96	435	A	4.2	25	450	A	5.4	48	450
	NB LT	E	61.7	129	125	F	85.1	105	125	E	55.5	#132	**125**	F	102.3	#154	125
	NB Thru/RT	C	22.3	101	-	C	31.1	226	-	D	38.2	161	-	D	48.4	317	-
	SB LT	F	91.5	217	175	F	460.1	#303	175	E	75.3	#254	**175**	F	141.8	#297	**175**
	SB Thru/RT	C	25.8	150	-	C	25.8	189	-	D	44.3	242	-	D	41.6	271	-
38th & Alsace	Intersection	No analysis for No-Build (existing intersection is unsignalized)								B	17.3	-	-	B	13.4	-	-
	EB LT									D	42.5	48	110	D	42.8	43	110
	EB Thru									A	5.1	173	-	A	7.2	322	-
	WB Thru/RT									C	24	#867	-	B	17.1	549	-
	SB LT/RT									C	23.2	28	-	C	28.1	38	-
38th & Post	Intersection	C	23.9	-	-	D	49	-	-	D	42.1	-	-	E	61.1	-	-
	EB LT	C	32.4	86	180	F	182.2	#336	180	E	68	110	240	E	71.7	#364	**240**
	EB Thru	C	23.2	135	-	D	37.4	264	-	-	-	-	-	-	-	-	-
	EB RT	A	9.6	43	700	A	8.1	71	700	-	-	-	-	-	-	-	-
	EB Thru/RT	-	-	-	-	-	-	-	-	D	39.1	231	-	D	40.8	314	-
	WB LT	C	28.4	105	225	F	190.7	#200	225	E	61.5	71	175	E	69.9	85	175
	WB Thru	C	23.7	149	-	C	33	220	-	-	-	-	-	-	-	-	-
	WB RT	A	5	11	150	A	4	10	150	-	-	-	-	-	-	-	-
	WB Thru/RT	-	-	-	-	-	-	-	-	D	50.2	237	-	D	48.9	267	-
	NB LT	F	87.1	#234	175	F	121.7	#277	175	E	60.2	110	240	F	85	#163	240
	NB Thru	B	19.7	127	-	C	28.4	276	-	C	32.6	351	-	F	105	#769	-
	NB RT	A	4.3	14	160	A	2.2	17	160	A	0.6	0	-	A	1.7	13	-
	SB LT	B	17.6	50	160	C	33.1	m#71	160	E	60.6	73	170	F	122.6	m#88	170
	SB Thru	B	14.7	83	-	B	18.8	135	-	-	-	-	-	-	-	-	-
	SB RT	A	5	20	575	A	2.9	m11	575	-	-	-	-	-	-	-	-
	SB Thru/RT	-	-	-	-	-	-	-	-	C	31.9	274	-	C	30.9	m234	-
Post & 42nd	Intersection	B	16.7	-	-	C	23.2	-	-	D	36.4	-	-	D	48.9	-	-
	EB LT	C	26.5	55	140	C	23.5	78	140	C	27.8	64	140	D	39.1	101	140
	EB Thru/RT	B	14.4	63	-	D	35.1	201	-	C	20.8	83	-	D	52.3	264	-
	WB LT	C	27	82	130	C	33.2	114	130	C	29.4	94	130	F	81.5	#167	**130**
	WB Thru/RT	C	28.6	125	-	C	29.3	140	-	D	36.8	167	-	D	43.9	192	-
	NB LT	B	10.5	39	250	B	10.6	m50	250	E	76.3	#142	170	E	73.7	m115	170
	NB Thru	A	9.6	66	-	B	16.5	m242	-	-	-	-	-	-	-	-	-
	NB RT	A	0.6	0	150	A	2	m12	150	-	-	-	-	-	-	-	-
	NB Thru/RT	-	-	-	-	-	-	-	-	C	22.1	271	-	D	47.6	m#130	-
	SB LT	A	9.8	26	200	B	17.3	90	200	D	52.4	48	190	F	90.8	#167	190
	SB Thru	B	14.7	111	-	C	27.4	258	-	-	-	-	-	-	-	-	-
	SB RT	A	2.6	10	165	A	2.7	5	165	-	-	-	-	-	-	-	-
	SB Thru/RT	-	-	-	-	-	-	-	-	D	47.3	#428	-	C	30.3	#598	-
Post & 46th	Intersection	A	10	-	-	A	9.5	-	-	B	15.7	-	-	B	18.2	-	-
	EB LT	C	29	16	145	D	42.7	39	145	C	31.8	15	145	D	50	39	145
	EB Thru/RT	B	17.2	41	-	C	22.1	76	-	C	20.3	44	-	C	28.5	85	-
	WB LT	D	44.8	73	130	E	73.3	74	130	D	48.2	68	130	F	84.7	73	130
	WB Thru/RT	B	11	30	-	B	16.9	22	-	B	13.4	32	-	C	21.5	26	-
	NB LT	A	2.8	m5	190	A	0.9	2	190	C	34.4	m34	150	D	43.4	m32	150
	NB Thru	A	3.4	44	-	A	1	12	-	-	-	-	-	-	-	-	-
	NB RT	A	0.5	0	170	A	0.1	0	170	-	-	-	-	-	-	-	-
	NB Thru/RT	-	-	-	-	-	-	-	-	A	7.1	138	-	A	7.5	m167	-
	SB LT	A	6.9	22	210	A	5.9	41	210	D	43.5	46	120	D	50.7	m80	120
	SB Thru	A	6.3	67	-	A	4.1	78	-	-	-	-	-	-	-	-	-
	SB RT	A	0	0	175	A	0.8	3	175	-	-	-	-	-	-	-	-
	SB Thru/RT	-	-	-	-	-	-	-	-	B	12.5	177	-	A	5.5	m330	-

Intersection	Approach/ Movement	No-Build								Proposed Alternative							
		AM Peak				PM Peak				AM Peak				PM Peak			
		LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)	LOS	Delay (s)	Queue (ft)	Storage (ft)
Post & Pendleton Pike	Intersection	D	52.2	-	-	D	35.6	-	-	E	65.9	-	-	D	48	-	-
	EB LT	F	152.8	#476	430	D	39.7	#197	430	E	64	#527	**430**	E	73.7	#281	430
	EB Thru	C	21.3	161	-	C	30.9	376	-	C	28.4	223	-	E	58.9	#537	-
	EB RT	A	1.2	0	430	A	2.6	24	430	A	0.1	0	430	A	0.3	0	430
	WB LT	B	16.5	98	460	F	91.3	#231	460	C	25.2	141	460	E	61.4	#186	460
	WB Thru	E	58.3	#496	-	C	32.5	277	-	F	94.1	#740	-	D	46.2	332	-
	WB RT	A	4.7	21	630	A	0.2	0	630	A	0.4	0	630	A	0.3	0	630
	NB LT	E	58.8	#226	160	E	57.5	#188	160	F	115.5	#328	**160**	F	98.8	#264	**160**
	NB Thru	E	56.9	#198	-	D	42.7	131	-	E	77.2	418	-	C	32.2	201	-
	NB RT	A	8.9	59	430	C	20.7	180	430	A	5.1	38	360	A	9.8	75	360
	SB LT	C	34.8	58	135	C	34.1	103	135	F	88	#100	180	E	69.4	m126	180
	SB Thru	D	47.4	104	-	E	58.5	#192	-	E	71.8	238	-	D	44.3	m304	-
	SB RT	B	13.8	105	175	C	22.8	196	175	B	15.6	111	130	B	15.2	m167	**130**
Post & 56th	Intersection	F	89.3	-	-	E	66.3	-	-	E	75.1	-	-	D	51.1	-	-
	EB LT	F	431.8	#212	215	F	300	#235	215	F	165.1	#172	215	F	132.6	#201	215
	EB Thru	C	27.4	175	-	D	37.5	372	-	D	40.6	231	-	E	63.9	#535	-
	EB RT	A	3.4	21	450	A	3.2	32	450	A	2.4	12	450	A	2.6	22	450
	WB LT	F	395.9	#318	315	F	310.6	#287	315	F	102.7	#257	315	F	113.4	#243	315
	WB Thru	D	47.3	#513	-	C	31.8	281	-	F	98.7	#673	-	D	45.3	365	-
	WB RT	A	0.1	0	120	A	4.5	0	120	A	0.1	0	120	A	2.1	0	120
	NB LT	F	241.1	#141	365	F	202.9	#186	365	F	201.7	#269	320	F	110.1	m#264	**320**
	NB Thru	C	21.6	60	-	C	22.1	59	-	C	28.8	126	-	C	27	m90	-
	NB RT	A	3.4	18	365	B	12.4	93	365	A	1.5	3	320	A	8.2	m46	320
	SB LT	D	47.8	11	190	F	146.8	#104	190	E	58.5	12	220	E	59.7	78	220
	SB Thru	C	22.9	58	-	C	22.3	61	-	-	-	-	-	-	-	-	-
	SB RT	B	14.4	121	250	B	14.2	130	250	-	-	-	-	-	-	-	-
	SB Thru/RT	-	-	-	-	-	-	-	-	B	13.9	75	-	B	14.8	74	-