REF: MAX-2017041.05

DATE: September 5, 2024

TO: Mr. Jeffrey Alexis, Principal Civil Engineer

FROM: Timothy Letton, P.E.
Steve Babalis, P.E., PTOE
Kyle Yuan, P.E., PTOE

RE: State Street Corridor Evaluation

In March 2022, **Greenman-Pedersen, Inc. (GPI)** completed an evaluation of the State Street corridor's operational performance from J.F.F Surface Road to Congress Street. The study estimated the vehicle design saturation flow rate (theoretical) and limiting flow rate (practical) at both the Congress Street signal and the pinch point along the State Street corridor. The study also evaluated the travel time of the existing condition and a proposed one-lane alternative using the SIDRA network analysis tool. This memorandum summarizes and builds upon the previous study's findings and evaluates a second alternative, which includes a two-lane reconfiguration and signalization of the State Street corridor. The memorandum will first discuss the SIDRA model development and calibration of pre-pilot conditions, followed by a comparison of the two design alternatives.

PRE-PILOT CONDITIONS

GPI performed a traffic analysis using the SIDRA 9.1 network analysis tool which uses Highway Capacity Manual (HCM) 6 methodology and considers network impacts based on both signalized and unsignalized operations. The model also includes mid-block crosswalk locations, which are a major factor in vehicle capacity along State Street. GPI built a network model including five signalized intersections, six unsignalized locations, and one signal-controlled pedestrian crossing.

Prior to the pilot project, State Street was not striped as a two-lane roadway, but its excessive width allowed for two lanes to form at the discretion of motorists to stack side by side. The majority of the day vehicles traveled State Street as a single vehicle lane, but often during peak commuting hours, drivers would form two lanes for queuing purposes. The analysis considered pre-pilot conditions of the wide single-lane configuration, which in some segments of the corridor was utilized as two travel lanes during congested periods. The PM peak hour was assessed since State Street experiences both high vehicle and pedestrian usage during this period and would reflect the worst-case scenario for vehicle operations.

The traffic model for the pre-pilot scenario was calibrated to reflect the traffic operations observed during the pre-pandemic data collection (June 2018). Three calibration parameters were utilized to simulate observed operations and are as follows:

- Pedestrian Crossing Volumes
- Two-Lane Configuration with low Lane Utilization Factor on the right lane
- Signal Approach Capacity

State Street is heavily traveled by pedestrians who cross State Street at multiple formal and informal pedestrian crossings. The high pedestrian volume was found to be a critical factor influencing vehicle capacity along the corridor. Pedestrian crossing behavior along State Street is such that the pedestrians often cross in platoons impacting vehicle traffic differently if the same number of pedestrians within the

platoon cross individually. The traffic model was calibrated by reducing pedestrian crossing volumes from the actual crossing count to a 'pedestrian platoon' volume to reflect pedestrian crossing influence on vehicle operations more realistically.

The corridor was modeled as two vehicular lanes with modified lane utilization factors to best simulate the real-world conditions. The purpose of the lane utilization factor is to account for the asymmetrical utilization that occurs when the wide single lane was being used as two lanes during congested periods. Multiple factors contribute to how much a second lane will be utilized, including the length of the second lane, lane delineation, turning movements upstream and downstream of the intersection, and roadside features. Based on field observations, the likelihood of vehicles stacking two abreast diminishes for intersections that are further away from the Congress Street intersection and during less congested periods. The lane utilization along State Street was adjusted at the various intersections to reflect the likelihood of establishing a two-lane section based on the pre-pandemic field observations.

In addition to the pedestrian volume and lane utilization calibrations, the Congress Street operations were also calibrated to reflect observed operations. Congress Street was observed during the PM Peak hour to be just overcapacity, with queues building during the peak hour influx and subsiding as the vehicle demand relaxes exiting the peak hour. As a result, the State Street westbound approach capacity was decreased by 15%, resulting in a volume to capacity (v/c) ratio of just over 1.0. The modified capacity on the westbound approach resulted in average queues similar to the queues observed during the PM peak hour. The reduced capacity for the approach is likely attributed to the informality of the approach lanes and high curbside disruption common in downtown environments. The model estimates the average travel time on State Street from J.F.F Surface Road to Congress Street is 3.8 minutes.

ALTERNATIVE EVALUATION

Based on GPI collected traffic data in 2020, 2021, and 2024, it was concluded that the vehicular traffic pattern on State Street has stabilized, and peak hour traffic volumes are approximately 75% to 80% of pre-pandemic levels. As such, a 20% reduction factor in vehicle volumes was used for the proposed alternative analysis.

Alternative 1 (Single Lane) carries the same calibration factors presented in the pre-pilot scenario, with single lane configuration, modified signal phasing and timing at Congress Street and Surface Road intersections and additional crosswalks at Merchants Row and India Street intersections as presented in the proposed design plans. Alternative 2 (Two Lane Signalized) would reconfigure the corridor to two fully functional travel lanes and signalize all cross streets where pedestrian crossings exist to maintain efficient and safe operations along State Street.

The traffic model for Alternative 2 was developed from the pre-pilot condition by adding traffic signals and adjusting lane utilization factors. The capacity calibration at Congress Street was restored to its default value, assuming the factors that reduced capacity in the pre-pilot condition will no longer be present. Due to the proximity of Chatham Row and India Street, the two intersections will be operated as a cluster intersection under a single controller. The signal phasing and timing were developed using Synchro 11 software and incorporated into the corridor model in Sidra software. All new signals on State Street are coordinated with the Congress Street intersection, operating at half-cycle length (55 seconds) for optimum operation and all pedestrian phases are set on recall mode.

The average travel time performance measure was used to assess the vehicle experience navigating State Street. The travel time was evaluated for State Street from the Surface Road intersection to the Congress Street intersection. The analysis indicates that during peak afternoon periods, Alternative One (single lane) has the potential to add approximately a minute to the average travel time. Alternative 2 has the potential to reduce travel time along State Street by just under two minutes. The change of travel time between Alternative One and Two is around three minutes, as shown in Table 1 below:

Table 1 – Travel Time Analysis Summary

Route	Pre-Pilot (Unsignalized)		Alternative One (Single Lane)		Alternative Two (Two Lane Signalized)		Difference Between Alt. One & Two	
State Street (Surface to Congress)	(s)	(min)	(s)	(min.)	(s)	(min.)	(s)	(min.)
	225.7	3.8	281.1	4.7	110.0	1.8	171.1	2.9

This analysis is intended to gain a general understanding of the traveling experience along State Street with the proposed improvements. While not included in this analysis, other important factors should be considered when reviewing the results.

- High pedestrian usage and busy curbside disruptions make State Street unique compared to other roads. Traffic modeling relies on the operational patterns of similar intersections to forecast the operations for the study intersections and is bounded by the available inputs used. The uniqueness of this corridor requires traffic model calibration to best reflect actual operations, but the corridor has intangibles outside of traditional calibration methods that influence operations.
- Vehicle demands were assumed to be consistent with the proposed two-lane alternative. However, in city grid environments, as capacity increases, the demand typically increases in tandem, particularly in today's era of navigation apps.
- Alternative 2 (Two-lane signalized) traffic model assumes perfect pedestrian compliance, which may not be realistic given the characteristics of State Street.

See Appendix A for the Sidra Network Layout and Performance reports, and Appendix B for Synchro reports presenting the proposed signal timing and phasing for Alternative Two.

CONCLUSION

The State Street project will be transformative for the city, creating more adequate space and safer conditions for both pedestrians and bicyclists, who are underserved in the pre-pilot configuration. Vehicle congestion during peak hours is an inherent trait of urban transportation, and State Street is no exception. Whether State Street has one or two travel lanes, the network will adjust accordingly. The difference between one and two travel lanes in terms of pedestrian and bicyclist safety is significant, and this project aims to create a street that better serves the public at all hours of the day. This project focuses on furthering the city's framework to build a safe, connected multi-modal network and is not solely focused on vehicle capacity.

Appendix A – Sidra Reports

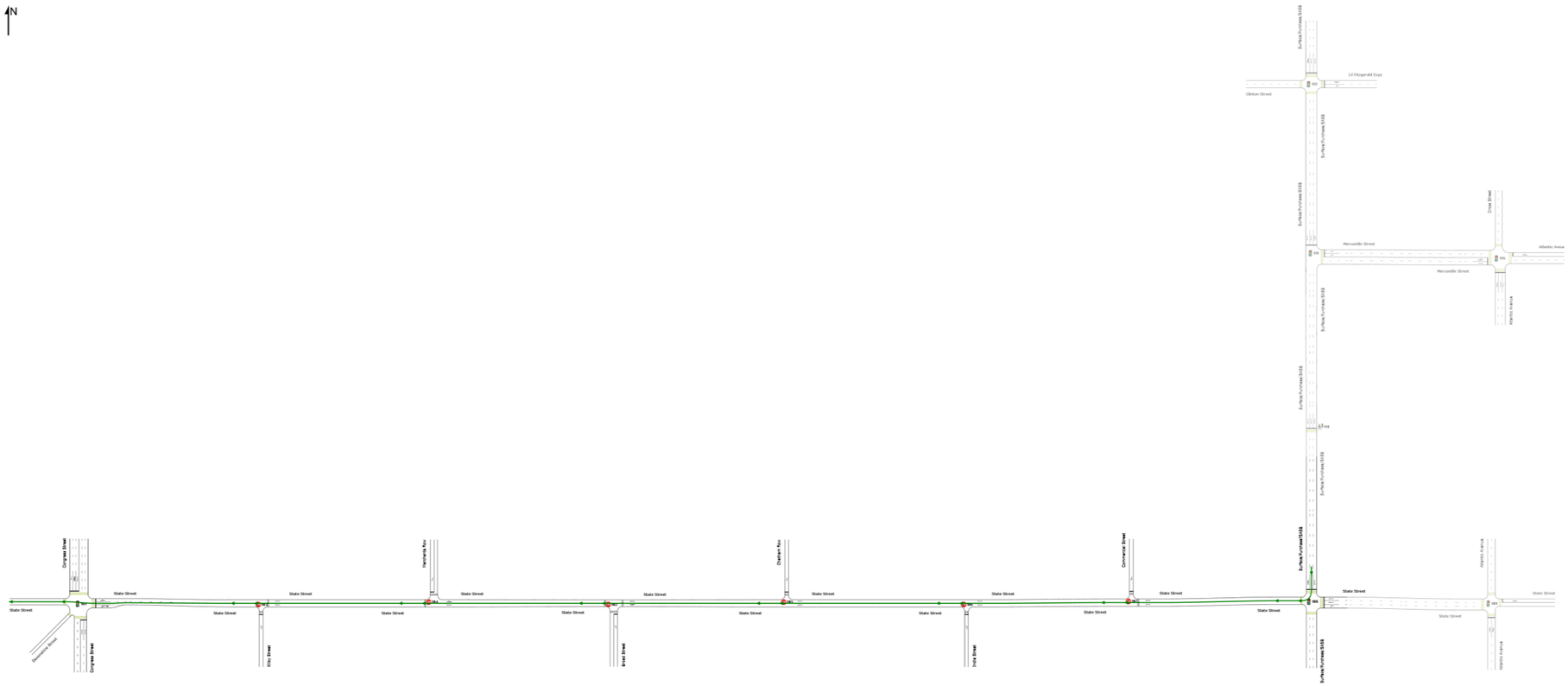
ROUTE LAYOUT

Route: R101 [State Street (Surface to Congress)]

Network: N101 [Surface Road - State Street (Network Folder: General)]

New Route
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Route line positions do not imply specific lane use.

SITES ON ROUTE		
Site ID	**CCG ID**	**Site Name**
108	NA	State Street @ Surface Road_Existing
107	NA	State Street @ Commercial Street_Existing
106	NA	State Street @ India Street_Existing
105	NA	State Street @ Chatham Row_Existing
102	NA	State Street @ Broad Street_Existing
104	NA	State Street @ Merchants Row_Existing
103	NA	State Street @ Kilby Street_Existing
101	NA	State Street @ Congress Street_Existing

DEGREE OF SATURATION FOR MOVEMENTS ON ROUTE

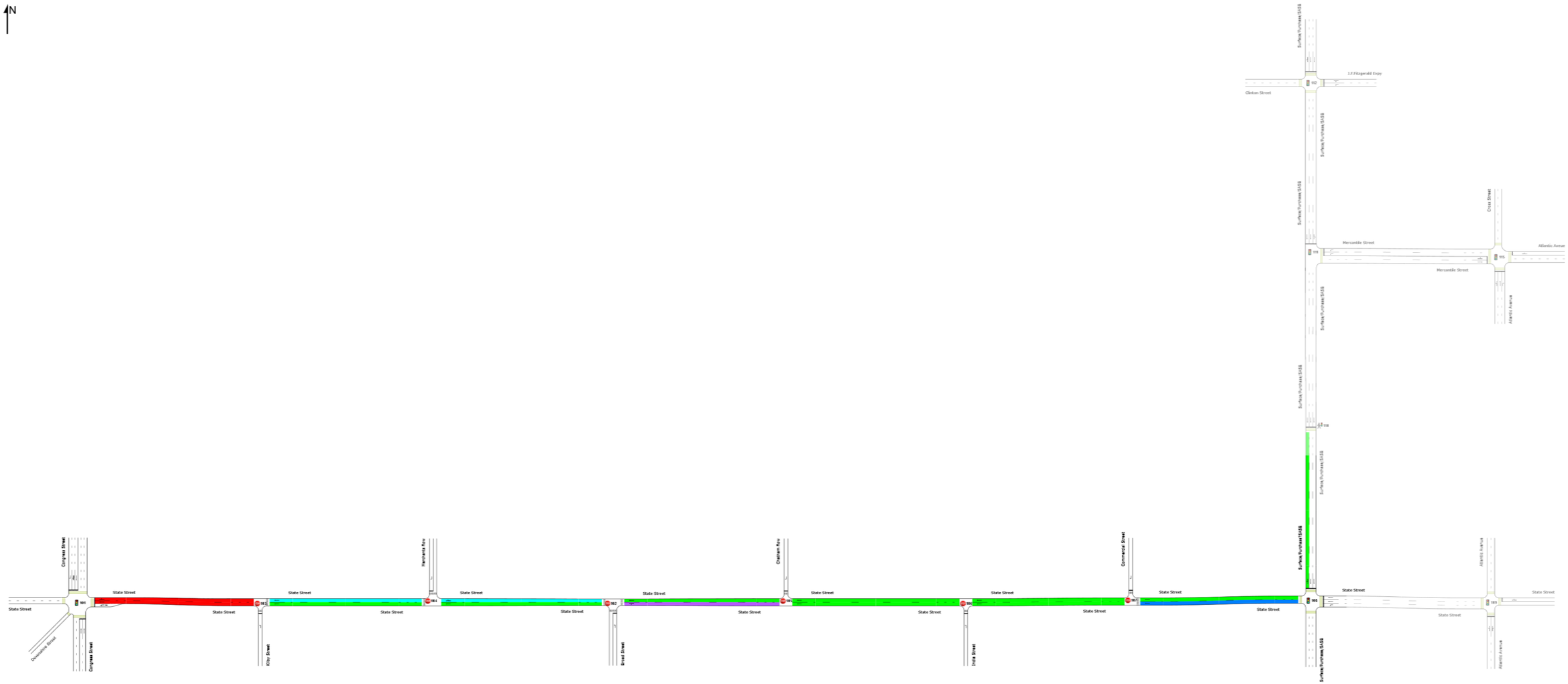
Ratio of Arrival Flow to Capacity, v/c ratio per lane

Route: R101 [State Street (Surface to Congress)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [Surface Road - State Street (Network Folder: General)]

New Route
Network Category: (None)
Network Cycle Time = 110 seconds (Network User-Given Cycle Time)



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Organisation: GREENMAN-PEDERSEN, INC. | Licence: NETWORK / 1PC | Processed: Tuesday, July 9, 2024 12:32:37 PM
Project: V:\MAX-2017041.00 - Boston, MA - Various Streets\Task 05 - State Street\Traffic Study\Analysis\Sidra\2024 Updated Analysis\State Street Pre-Pilot Model.sip9

ROUTE TRAVEL PERFORMANCE

Route: R101 [State Street (Surface to Congress)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [Surface Road - State Street (Network Folder: General)]

New Route
Network Category: (None)
Network Cycle Time = 110 seconds (Network User-Given Cycle Time)

The results for All MCs are for the MCs that travel the whole Route.

Route Travel Performance

Performance Measure	Vehicles:	All MCs (Route)	Persons
Travel Speed (Average)	mph	5.3	5.3
Travel Distance (Average)	ft	1753.2	1753.2
Travel Time (Average)	sec	225.7	225.7
Desired Speed	mph	25.0	
Route Delay (Average)	sec	181.9	181.9
Route Stop Rate		5.87	5.87
Route Level of Service (LOS)		LOS F	
Speed Efficiency		0.21	
Travel Time Index		1.24	
Congestion Coefficient		4.72	

Route Travel Movement Performance

Mov ID	Turn	Mov Class	Trav Dist ft	Midbl. Delay sec	Trav Time sec	Aver. Speed mph	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. of Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 108 Site Name: State Street @ Surface Road_Existing													
North Approach													
14	R2	All MCs	281.5	0.0	11.4	16.8	0.3	0.04	0.04	0.04	456	456	0.386
Site ID: 107 Site Name: State Street @ Commercial Street_Existing													
East Approach													
6	T1	All MCs	307.8	0.0	25.2	8.3	16.8	0.62	1.07	1.57	653	653	0.714
Site ID: 106 Site Name: State Street @ India Street_Existing													
East Approach													
6	T1	All MCs	157.8	0.0	4.3	25.0	0.0	0.00	0.00	0.00	687	687	0.269
Site ID: 105 Site Name: State Street @ Chatham Row_Existing													
East Approach													
6	T1	All MCs	72.8	0.0	2.0	24.8	0.0	0.00	0.00	0.00	780	780	0.449
Site ID: 102 Site Name: State Street @ Broad Street_Existing													
East Approach													
6	T1	All MCs	110.2	0.0	26.4	2.9	24.7	0.80	1.56	2.39	578	578	0.829
Site ID: 104 Site Name: State Street @ Merchants Row_Existing													
East Approach													
6	T1	All MCs	226.9	0.0	23.4	6.6	17.0	0.66	1.05	1.57	649	649	0.693
Site ID: 103 Site Name: State Street @ Kilby Street_Existing													
East Approach													

6	T1	All MCs	127.8	0.0	17.2	5.1	13.7	0.55	0.78	1.14	730	730	0.602
Site ID: 101 Site Name: State Street @ Congress Street_Existing													
East Approach													
6	T1	All MCs	468.3	0.0	115.8	2.8	109.4	1.00	1.38	1.63	528	511	1.063

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

DEGREE OF SATURATION FOR MOVEMENTS ON ROUTE

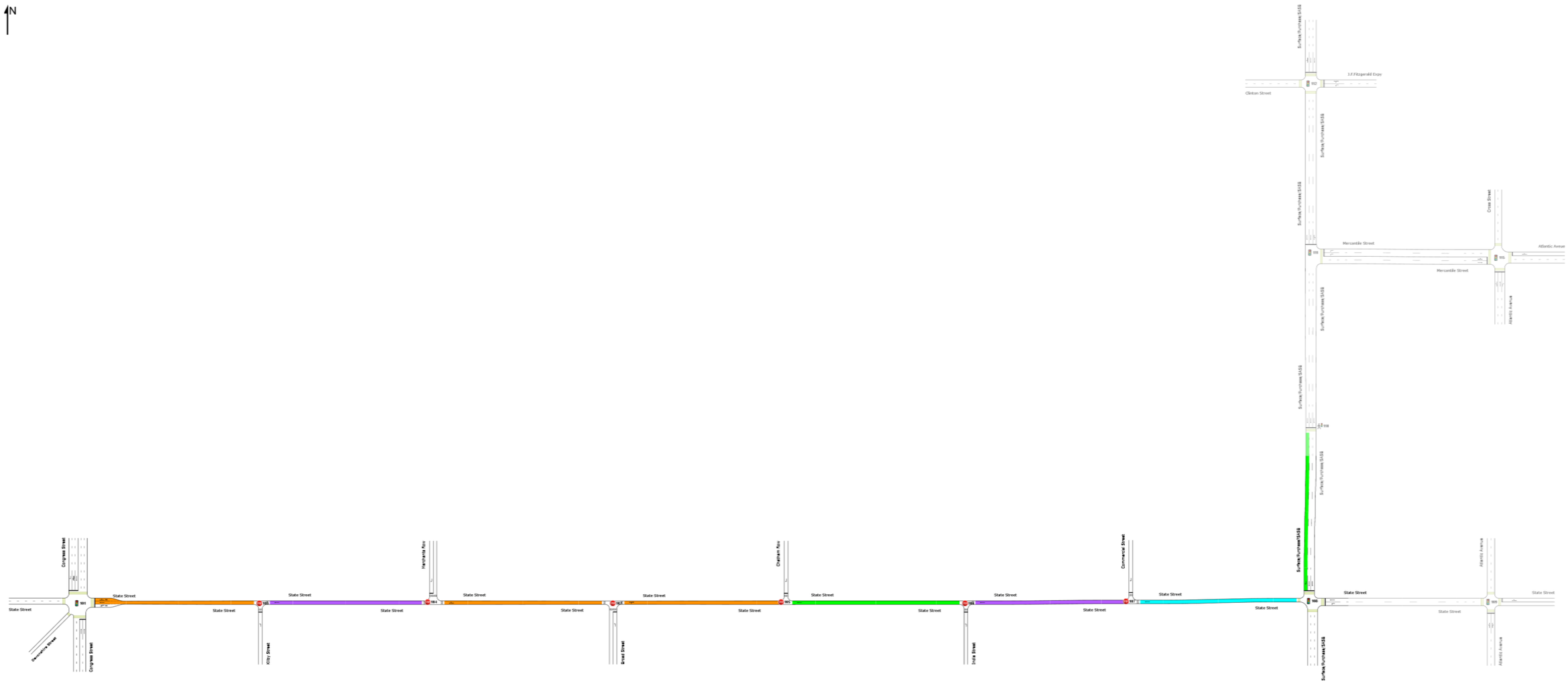
Ratio of Arrival Flow to Capacity, v/c ratio per lane

Route: R101 [State Street (Surface to Congress)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [Surface Road - State Street (Network Folder: General)]

New Route
Network Category: (None)
Network Cycle Time = 110 seconds (Network User-Given Cycle Time)



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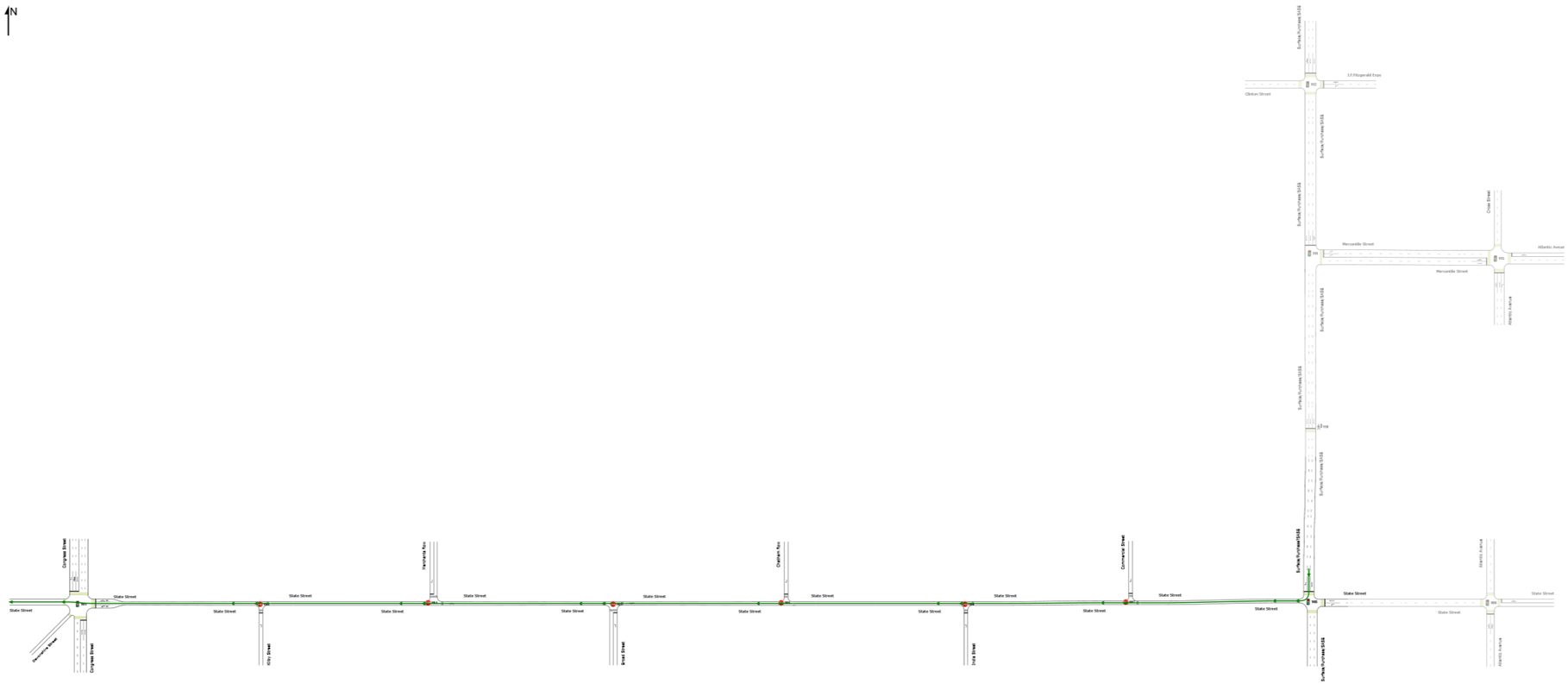
ROUTE LAYOUT

Route: R101 [State Street (Surface to Congress)]

Network: N101 [Surface Road - State Street (Network Folder: General)]

New Route
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Route line positions do not imply specific lane use.

SITES ON ROUTE		
Site ID	**CCG ID**	**Site Name**
108	NA	State Street @ Surface Road_Prop_No Mit
107	NA	State Street @ Commercial Street_Prop_no Mit
106	NA	State Street @ India Street_Prop_no Mit
105	NA	State Street @ Chatham Row_Prop_no Mit
102	NA	State Street @ Broad Street_Prop_no Mit
104	NA	State Street @ Merchants Row_Prop_no Mit
103	NA	State Street @ Kilby Street_Prop_no Mit
101	NA	State Street @ Congress Street_Prop_no Mit

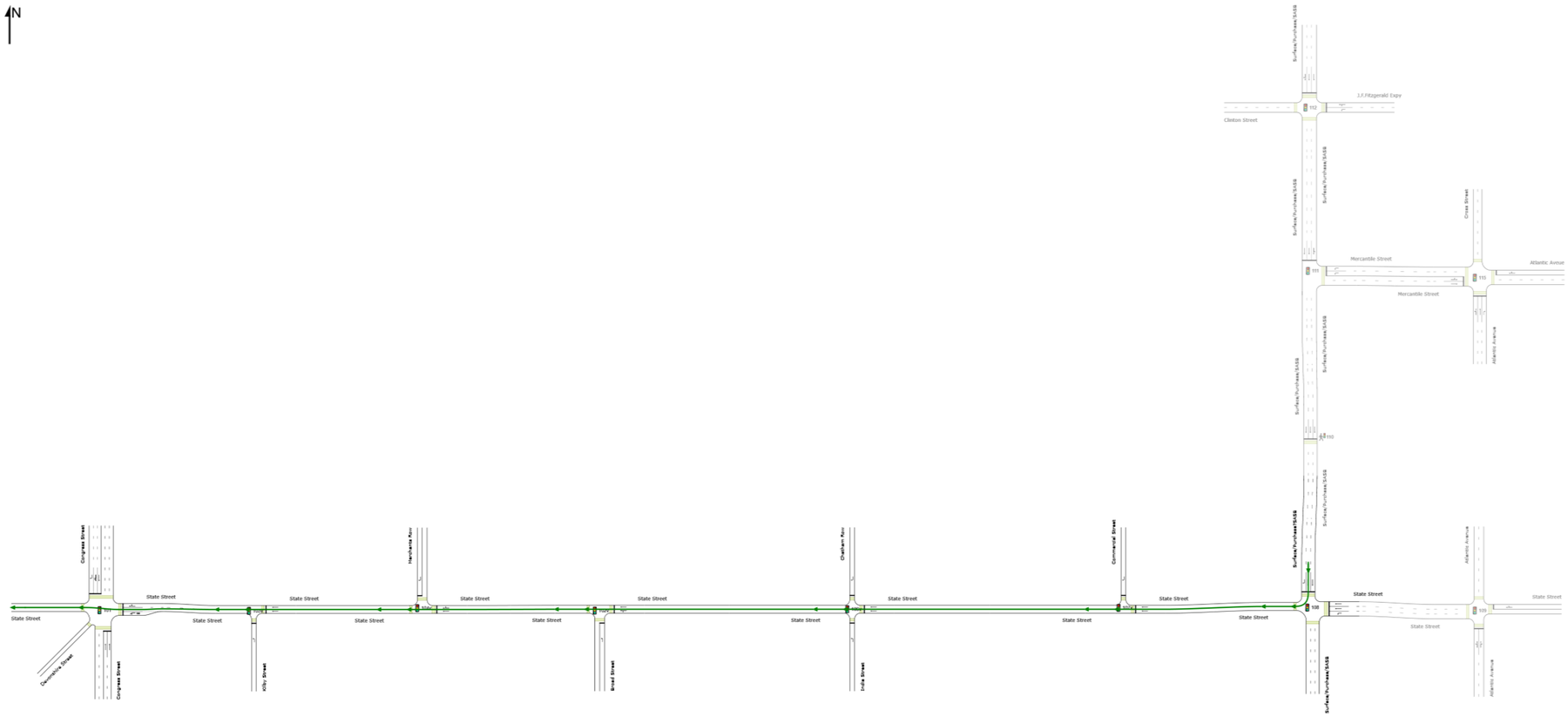
ROUTE LAYOUT

Route: R101 [State Street]

Network: N101 [Stage Street 2 Lane Siganalized (Network Folder: General)]

New Route
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Route line positions do not imply specific lane use.

SITES ON ROUTE		
Site ID	**CCG ID**	**Site Name**
108	NA	State Street @ Surface Road_Existing
107v	NA	State Street @ Commercial Street_Existing - Conversion
106v	NA	State Street @ India Street_Existing - Conversion
102v	NA	State Street @ Broad Street_Existing - Conversion
104v	NA	State Street @ Merchants Row_Existing - Conversion
103v	NA	State Street @ Kilby Street_Existing - Conversion
101	NA	State Street @ Congress Street_Existing

ROUTE TRAVEL PERFORMANCE

Route: R101 [State Street (Surface to Congress)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [Surface Road - State Street (Network Folder: General)]

New Route
Network Category: (None)
Network Cycle Time = 110 seconds (Network User-Given Cycle Time)

The results for All MCs are for the MCs that travel the whole Route.

Route Travel Performance

Performance Measure	Vehicles:	All MCs (Route)	Persons
Travel Speed (Average)	mph	4.3	4.3
Travel Distance (Average)	ft	1753.6	1753.6
Travel Time (Average)	sec	281.1	281.1
Desired Speed	mph	25.0	
Route Delay (Average)	sec	266.5	266.5
Route Stop Rate		11.29	11.29
Route Level of Service (LOS)		LOS F	
Speed Efficiency		0.17	
Travel Time Index		0.78	
Congestion Coefficient		5.88	

Route Travel Movement Performance

Mov ID	Turn	Mov Class	Trav Dist ft	Midbl. Delay sec	Trav Time sec	Aver. Speed mph	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. of Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 108 Site Name: State Street @ Surface Road_Prop_No Mit													
North Approach													
14	R2	All MCs	281.5	0.0	13.0	14.7	1.8	0.26	0.23	0.26	360	360	0.456
Site ID: 107 Site Name: State Street @ Commercial Street_Prop_no Mit													
East Approach													
6	T1	All MCs	307.8	0.0	24.2	8.7	15.8	0.53	0.74	1.11	534	534	0.677
Site ID: 106 Site Name: State Street @ India Street_Prop_no Mit													
East Approach													
6	T1	All MCs	157.8	0.0	31.5	3.4	27.2	0.88	1.84	2.75	562	562	0.820
Site ID: 105 Site Name: State Street @ Chatham Row_Prop_no Mit													
East Approach													
6	T1	All MCs	72.8	0.0	2.0	24.9	0.0	0.00	0.00	0.00	637	637	0.349
Site ID: 102 Site Name: State Street @ Broad Street_Prop_no Mit													
East Approach													
6	T1	All MCs	110.1	0.0	49.3	1.5	47.9	1.00	2.78	4.26	477	477	0.953
Site ID: 104 Site Name: State Street @ Merchants Row_Prop_no Mit													
East Approach													
6	T1	All MCs	227.0	0.0	54.5	2.8	47.8	1.00	2.61	4.04	531	531	0.946
Site ID: 103 Site Name: State Street @ Kilby Street_Prop_no Mit													
East Approach													

6	T1	All MCs	127.8	0.0	33.1	2.6	29.7	0.93	1.98	2.96	584	584	0.848
Site ID: 101 Site Name: State Street @ Congress Street_Prop_no Mit													
East Approach													
6	T1	All MCs	468.8	0.0	73.4	4.4	96.2	1.00	1.10	1.28	432	432	0.907

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

DEGREE OF SATURATION FOR MOVEMENTS ON ROUTE

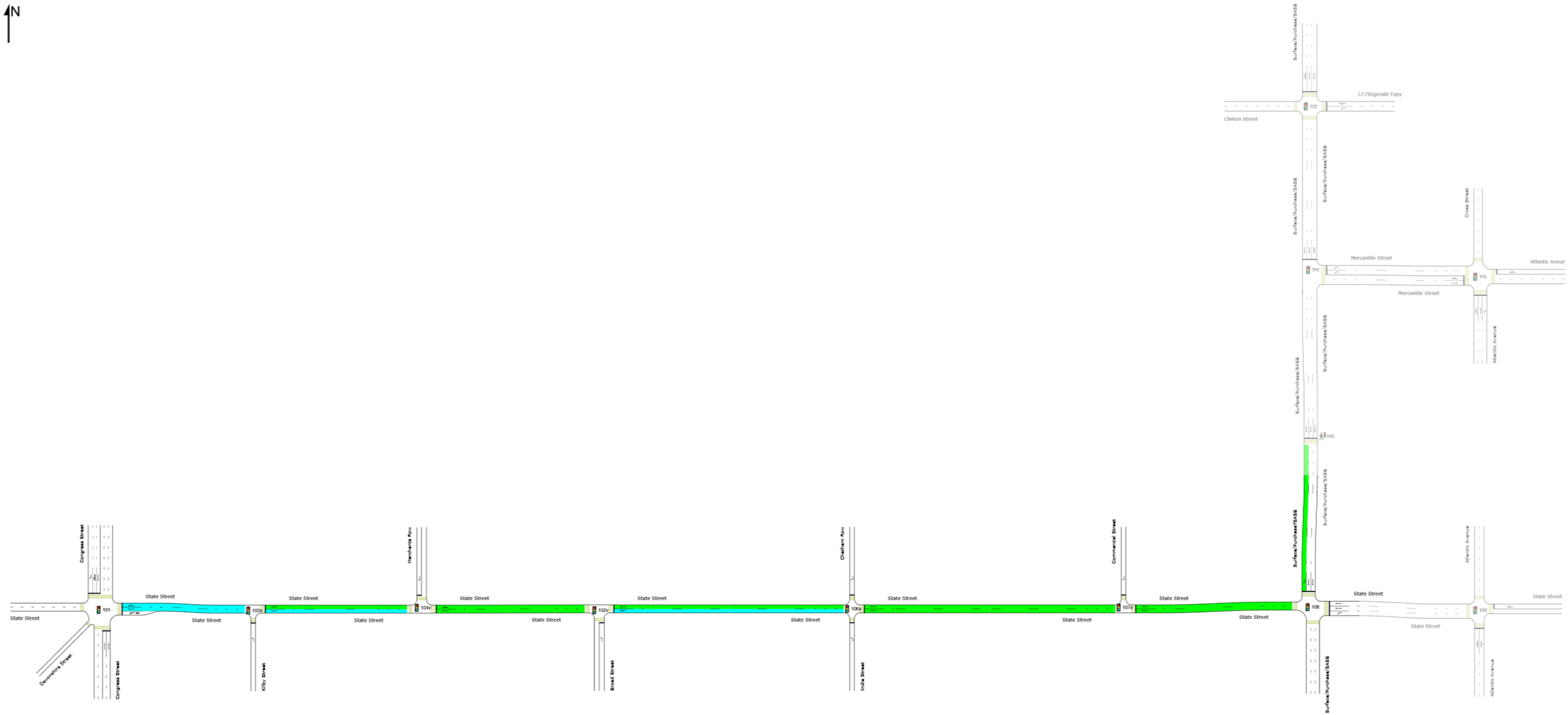
Ratio of Arrival Flow to Capacity, v/c ratio per lane

Route: R101 [State Street]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [Stage Street 2 Lane Siganalized (Network Folder: General)]

New Route
Network Category: (None)
Network Cycle Time = 110 seconds (Network User-Given Cycle Time)



Colour code based on Degree of Saturation

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 1.0]	[> 1.0]

ROUTE TRAVEL PERFORMANCE

Route: R101 [State Street]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [Stage Street 2 Lane Siganalized (Network Folder: General)]

New Route
Network Category: (None)
Network Cycle Time = 110 seconds (Network User-Given Cycle Time)

The results for All MCs are for the MCs that travel the whole Route.

Route Travel Performance

Performance Measure	Vehicles:	All MCs (Route)	Persons
Travel Speed (Average)	mph	10.9	10.9
Travel Distance (Average)	ft	1753.3	1753.3
Travel Time (Average)	sec	110.0	110.0
Desired Speed	mph	25.0	
Route Delay (Average)	sec	69.1	69.1
Route Stop Rate		2.27	2.27
Route Level of Service (LOS)		LOS D	
Speed Efficiency		0.43	
Travel Time Index		3.72	
Congestion Coefficient		2.30	

Route Travel Movement Performance

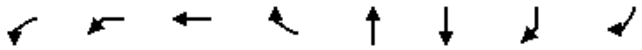
Mov ID	Turn	Mov Class	Trav Dist ft	Midbl. Delay sec	Trav Time sec	Aver. Speed mph	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. of Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 108 Site Name: State Street @ Surface Road_Existing													
North Approach													
14	R2	All MCs	281.5	0.0	11.4	16.8	0.3	0.06	0.05	0.06	364	364	0.300
Site ID: 107v Site Name: State Street @ Commercial Street_Existing - Conversion													
East Approach													
6	T1	All MCs	307.8	0.0	18.3	11.5	9.9	0.80	0.52	0.80	522	522	0.325
Site ID: 106v Site Name: State Street @ India Street_Existing - Conversion													
East Approach													
6	T1	All MCs	157.8	0.0	5.1	21.1	0.8	0.07	0.06	0.07	550	550	0.254
Site ID: 102v Site Name: State Street @ Broad Street_Existing - Conversion													
East Approach													
6	T1	All MCs	182.5	0.0	11.4	10.9	5.8	0.41	0.35	0.41	422	422	0.608
Site ID: 104v Site Name: State Street @ Merchants Row_Existing - Conversion													
East Approach													
6	T1	All MCs	226.9	0.0	11.6	13.3	5.2	0.39	0.33	0.39	520	520	0.546
Site ID: 103v Site Name: State Street @ Kilby Street_Existing - Conversion													
East Approach													
6	T1	All MCs	127.8	0.0	5.5	15.9	2.0	0.18	0.16	0.18	584	584	0.523
Site ID: 101 Site Name: State Street @ Congress Street_Existing													

East Approach													
6	T1	All MCs	469.0	0.0	46.7	6.8	45.1	0.91	0.80	0.93	422	422	0.708

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

APPENDIX B – Synchro Reports

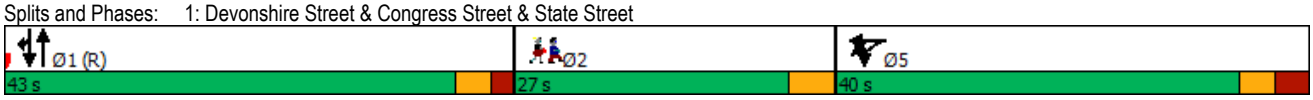
Lane Group	WBL2	WBL	WBT	WBR	NBT	SBT	SBR	SBR2	Ø2
Lane Configurations									
Traffic Volume (vph)	114	50	491	159	637	562	133	258	
Future Volume (vph)	114	50	491	159	637	562	133	258	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	11	11	11	11	10	11	11	11	
Lane Util. Factor	0.95	1.00	0.95	0.95	0.95	0.91	0.91	0.91	
Ped Bike Factor			0.87			0.92			
Frt			0.963			0.967		0.850	
Flt Protected		0.950							
Satd. Flow (prot)	0	1507	2508	0	2916	2543	0	1218	
Flt Permitted		0.950							
Satd. Flow (perm)	0	1507	2508	0	2916	2543	0	1218	
Right Turn on Red				Yes				No	
Satd. Flow (RTOR)			43						
Link Speed (mph)			25		25	25			
Link Distance (ft)			233		244	739			
Travel Time (s)			6.4		6.7	20.2			
Confl. Peds. (#/hr)				1598			290	384	
Confl. Bikes (#/hr)							2	30	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.91	0.92	0.92	0.92	
Growth Factor	80%	80%	80%	80%	80%	80%	80%	80%	
Heavy Vehicles (%)	3%	7%	6%	2%	4%	4%	10%	5%	
Adj. Flow (vph)	98	43	422	137	560	489	116	224	
Shared Lane Traffic (%)								10%	
Lane Group Flow (vph)	0	141	559	0	560	627	0	202	
Turn Type	Split	Split	NA		NA	NA		Prot	
Protected Phases	5	5	5		1	1		1	2
Permitted Phases									
Detector Phase	5	5	5		1	1		1	
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0		8.0	8.0		8.0	7.0
Minimum Split (s)	33.0	33.0	33.0		13.0	13.0		13.0	27.0
Total Split (s)	40.0	40.0	40.0		43.0	43.0		43.0	27.0
Total Split (%)	36.4%	36.4%	36.4%		39.1%	39.1%		39.1%	25%
Maximum Green (s)	34.0	34.0	34.0		38.0	38.0		38.0	23.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0		3.0	4.0
All-Red Time (s)	3.0	3.0	3.0		2.0	2.0		2.0	0.0
Lost Time Adjust (s)		-3.0	-3.0		-1.0	-1.0		-1.0	
Total Lost Time (s)		3.0	3.0		4.0	4.0		4.0	
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0
Recall Mode	None	None	None		C-Max	C-Max		C-Max	Ped
Walk Time (s)									7.0
Flash Dont Walk (s)									16.0
Pedestrian Calls (#/hr)									35
Act Effct Green (s)		30.4	30.4		45.6	45.6		45.6	
Actuated g/C Ratio		0.28	0.28		0.41	0.41		0.41	
v/c Ratio		0.34	0.77		0.46	0.60		0.40	
Control Delay		24.8	30.5		26.0	29.1		27.3	
Queue Delay		0.8	1.1		0.0	0.0		0.0	
Total Delay		25.6	31.5		26.0	29.1		27.3	
LOS		C	C		C	C		C	
Approach Delay			30.3		26.0	28.7			
Approach LOS			C		C	C			
Queue Length 50th (ft)		63	121		148	186		108	
Queue Length 95th (ft)		94	144		221	277		198	
Internal Link Dist (ft)			153		164	659			
Turn Bay Length (ft)									
Base Capacity (vph)		506	872		1207	1053		504	



Lane Group	WBL2	WBL	WBT	WBR	NBT	SBT	SBR	SBR2	Ø2
Starvation Cap Reductn		178	128		0	0		0	
Spillback Cap Reductn		0	0		0	0		0	
Storage Cap Reductn		0	0		0	0		0	
Reduced v/c Ratio		0.43	0.75		0.46	0.60		0.40	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 40 (36%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 28.5		Intersection LOS: C	
Intersection Capacity Utilization 49.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Devonshire Street & Congress Street & State Street



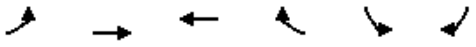
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	664	150	0
Future Volume (vph)	0	0	0	664	150	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	*0.75	*0.75	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	2466	1805	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	2466	1805	0
Right Turn on Red		Yes			Yes	Yes
Satd. Flow (RTOR)					283	
Link Speed (mph)	25			25	25	
Link Distance (ft)	233			135	638	
Travel Time (s)	6.4			3.7	17.4	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	80%	80%	80%	80%	80%	80%
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%
Parking (#/hr)				20		
Adj. Flow (vph)	0	0	0	584	132	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	584	132	0
Turn Type				NA	Prot	
Protected Phases				1	2	
Permitted Phases						
Detector Phase				1	2	
Switch Phase						
Minimum Initial (s)				6.0	6.0	
Minimum Split (s)				35.0	20.0	
Total Split (s)				35.0	20.0	
Total Split (%)				63.6%	36.4%	
Maximum Green (s)				31.0	16.0	
Yellow Time (s)				3.0	3.0	
All-Red Time (s)				1.0	1.0	
Lost Time Adjust (s)				0.0	0.0	
Total Lost Time (s)				4.0	4.0	
Lead/Lag				Lead	Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)				2.0	2.0	
Recall Mode				C-Max	Ped	
Walk Time (s)				21.0	10.0	
Flash Dont Walk (s)				4.0	4.0	
Pedestrian Calls (#/hr)				500	500	
Act Effct Green (s)				33.0	14.0	
Actuated g/C Ratio				0.60	0.25	
v/c Ratio				0.39	0.20	
Control Delay				1.3	0.7	
Queue Delay				0.2	0.0	
Total Delay				1.5	0.7	
LOS				A	A	
Approach Delay				1.5	0.7	
Approach LOS				A	A	
Queue Length 50th (ft)				5	0	
Queue Length 95th (ft)				7	0	
Internal Link Dist (ft)	153			55	558	
Turn Bay Length (ft)						
Base Capacity (vph)				1479	725	
Starvation Cap Reductn				316	0	
Spillback Cap Reductn				29	3	
Storage Cap Reductn				0	0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Reduced v/c Ratio				0.50	0.18	

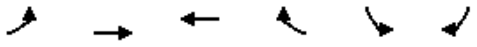
Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 6 (11%), Referenced to phase 1:WBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 1.4		Intersection LOS: A	
Intersection Capacity Utilization 28.0%		ICU Level of Service A	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 2: Kilby Street & State Street



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	604	56	0	60	
Future Volume (vph)	0	0	604	56	0	60	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	*0.75	*0.75	1.00	1.00	
Frt			0.987			0.865	
Flt Protected							
Satd. Flow (prot)	0	0	2698	0	0	1611	
Flt Permitted							
Satd. Flow (perm)	0	0	2698	0	0	1611	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			16			493	
Link Speed (mph)		25	25		25		
Link Distance (ft)		135	209		392		
Travel Time (s)		3.7	5.7		10.7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	80%	80%	80%	80%	80%	80%	
Heavy Vehicles (%)	0%	0%	4%	7%	0%	2%	
Parking (#/hr)				20			
Adj. Flow (vph)	0	0	525	49	0	52	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	574	0	0	52	
Turn Type			NA			Prot	
Protected Phases			1			5	3
Permitted Phases							
Detector Phase			1			5	
Switch Phase							
Minimum Initial (s)			6.0			4.0	4.0
Minimum Split (s)			23.0			15.0	15.0
Total Split (s)			25.0			15.0	15.0
Total Split (%)			45.5%			27.3%	27%
Maximum Green (s)			21.0			11.0	11.0
Yellow Time (s)			3.0			3.0	4.0
All-Red Time (s)			1.0			1.0	0.0
Lost Time Adjust (s)			0.0			0.0	
Total Lost Time (s)			4.0			4.0	
Lead/Lag			Lead				Lag
Lead-Lag Optimize?							
Vehicle Extension (s)			2.0			2.0	2.0
Recall Mode			C-Max			Max	Max
Walk Time (s)			7.0			7.0	7.0
Flash Dont Walk (s)			4.0			3.0	3.0
Pedestrian Calls (#/hr)			500			500	500
Act Effct Green (s)			21.0			11.0	
Actuated g/C Ratio			0.38			0.20	
v/c Ratio			0.55			0.07	
Control Delay			4.1			0.2	
Queue Delay			0.4			0.0	
Total Delay			4.5			0.2	
LOS			A			A	
Approach Delay			4.5		0.2		
Approach LOS			A		A		
Queue Length 50th (ft)			20			0	
Queue Length 95th (ft)			31			0	
Internal Link Dist (ft)		55	129		312		
Turn Bay Length (ft)							
Base Capacity (vph)			1040			716	
Starvation Cap Reductn			134			0	
Spillback Cap Reductn			0			0	
Storage Cap Reductn			0			0	

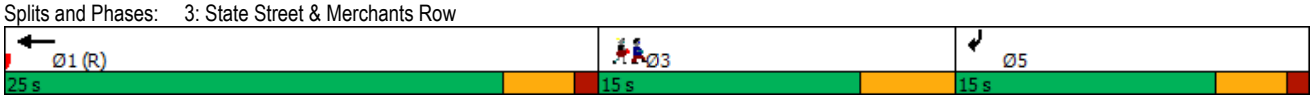


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3
Reduced v/c Ratio			0.63			0.07	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 5 (9%), Referenced to phase 1:WBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 4.1		Intersection LOS: A	
Intersection Capacity Utilization 24.8%		ICU Level of Service A	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: State Street & Merchants Row



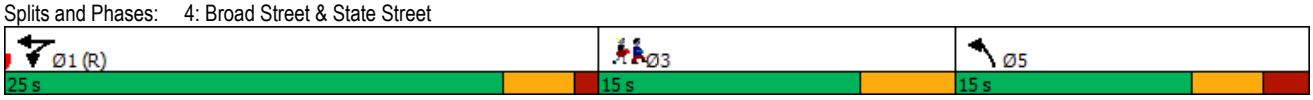
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	201	558	102	0	
Future Volume (vph)	0	0	201	558	102	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	*0.75	*0.75	1.00	1.00	
Frt							
Flt Protected				0.987	0.950		
Satd. Flow (prot)	0	0	0	2440	1752	0	
Flt Permitted				0.987	0.950		
Satd. Flow (perm)	0	0	0	2440	1752	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)							
Link Speed (mph)	25			25	25		
Link Distance (ft)	209			112	424		
Travel Time (s)	5.7			3.1	11.6		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Growth Factor	80%	80%	80%	80%	80%	80%	
Heavy Vehicles (%)	0%	0%	3%	4%	3%	0%	
Parking (#/hr)				20			
Adj. Flow (vph)	0	0	171	475	87	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	0	646	87	0	
Turn Type			Split	NA	Prot		
Protected Phases			1	1	5		3
Permitted Phases							
Detector Phase			1	1	5		
Switch Phase							
Minimum Initial (s)			6.0	6.0	6.0		4.0
Minimum Split (s)			16.0	16.0	15.0		15.0
Total Split (s)			25.0	25.0	15.0		15.0
Total Split (%)			45.5%	45.5%	27.3%		27%
Maximum Green (s)			21.0	21.0	10.0		11.0
Yellow Time (s)			3.0	3.0	3.0		4.0
All-Red Time (s)			1.0	1.0	2.0		0.0
Lost Time Adjust (s)				0.0	0.0		
Total Lost Time (s)				4.0	5.0		
Lead/Lag			Lead	Lead			Lag
Lead-Lag Optimize?							
Vehicle Extension (s)			2.0	2.0	2.0		2.0
Recall Mode			C-Max	C-Max	Ped		Ped
Walk Time (s)					7.0		7.0
Flash Dont Walk (s)					3.0		4.0
Pedestrian Calls (#/hr)					500		500
Act Effct Green (s)				21.0	10.0		
Actuated g/C Ratio				0.38	0.18		
v/c Ratio				0.69	0.27		
Control Delay				6.2	22.0		
Queue Delay				1.9	0.0		
Total Delay				8.0	22.0		
LOS				A	C		
Approach Delay				8.0	22.0		
Approach LOS				A	C		
Queue Length 50th (ft)				7	25		
Queue Length 95th (ft)				10	58		
Internal Link Dist (ft)	129			32	344		
Turn Bay Length (ft)							
Base Capacity (vph)				931	318		
Starvation Cap Reductn				149	0		
Spillback Cap Reductn				0	0		
Storage Cap Reductn				0	0		

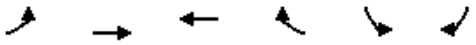
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Reduced v/c Ratio				0.83	0.27		

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 54 (98%), Referenced to phase 1:WBTL, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 9.7		Intersection LOS: A	
Intersection Capacity Utilization 29.5%		ICU Level of Service A	
Analysis Period (min) 15			

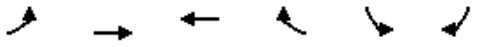
* User Entered Value

Splits and Phases: 4: Broad Street & State Street





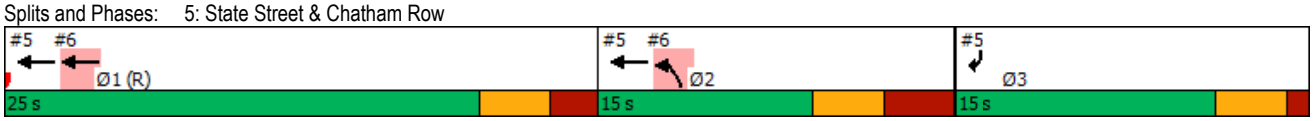
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1	Ø2
Lane Configurations								
Traffic Volume (vph)	0	0	740	0	0	19		
Future Volume (vph)	0	0	740	0	0	19		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	1.00	1.00	*0.75	*0.75	1.00	1.00		
Ped Bike Factor								
Frt						0.865		
Flt Protected								
Satd. Flow (prot)	0	0	2740	0	0	1565		
Flt Permitted								
Satd. Flow (perm)	0	0	2740	0	0	1565		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)						32		
Link Speed (mph)		25	25		25			
Link Distance (ft)		112	61		396			
Travel Time (s)		3.1	1.7		10.8			
Confl. Peds. (#/hr)				500				
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Growth Factor	80%	80%	80%	80%	80%	80%		
Heavy Vehicles (%)	0%	0%	4%	7%	0%	5%		
Adj. Flow (vph)	0	0	637	0	0	16		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	0	637	0	0	16		
Turn Type			NA			Prot		
Protected Phases			1 2			3	1	2
Permitted Phases								
Detector Phase			1 2			3		
Switch Phase								
Minimum Initial (s)						4.0	4.0	4.0
Minimum Split (s)						15.0	25.0	15.0
Total Split (s)						15.0	25.0	15.0
Total Split (%)						27.3%	45%	27%
Maximum Green (s)						11.0	20.0	9.0
Yellow Time (s)						3.0	3.0	3.0
All-Red Time (s)						1.0	2.0	3.0
Lost Time Adjust (s)						0.0		
Total Lost Time (s)						4.0		
Lead/Lag							Lead	Lag
Lead-Lag Optimize?								
Vehicle Extension (s)						2.0	2.0	2.0
Recall Mode						Ped	C-Max	Ped
Walk Time (s)						7.0	7.0	7.0
Flash Dont Walk (s)						4.0	4.0	2.0
Pedestrian Calls (#/hr)						500	500	500
Act Effct Green (s)			35.0			11.0		
Actuated g/C Ratio			0.64			0.20		
v/c Ratio			0.37			0.05		
Control Delay			1.7			4.7		
Queue Delay			0.0			0.0		
Total Delay			1.7			4.7		
LOS			A			A		
Approach Delay			1.7		4.7			
Approach LOS			A		A			
Queue Length 50th (ft)			11			0		
Queue Length 95th (ft)			7			8		
Internal Link Dist (ft)		32	1		316			
Turn Bay Length (ft)								
Base Capacity (vph)			1743			338		
Starvation Cap Reductn			0			0		
Spillback Cap Reductn			44			0		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1	Ø2
Storage Cap Reductn			0			0		
Reduced v/c Ratio			0.37			0.05		

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 50 (91%), Referenced to phase 1:WBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 1.8		Intersection LOS: A	
Intersection Capacity Utilization 34.4%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 5: State Street & Chatham Row

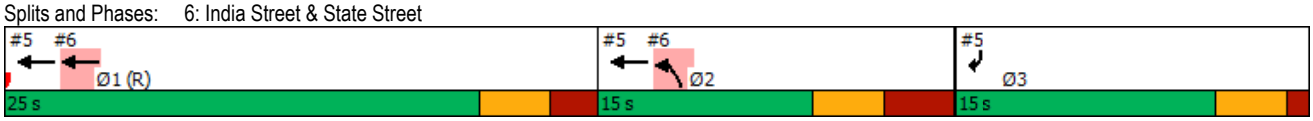


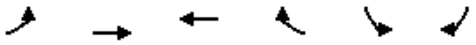
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	0	639	101	0	
Future Volume (vph)	0	0	0	639	101	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	
Frt							
Flt Protected					0.950		
Satd. Flow (prot)	0	0	0	3124	1787	0	
Flt Permitted					0.950		
Satd. Flow (perm)	0	0	0	3124	1787	0	
Right Turn on Red		Yes			Yes	Yes	
Satd. Flow (RTOR)					483		
Link Speed (mph)	25			25	25		
Link Distance (ft)	61			143	405		
Travel Time (s)	1.7			3.9	11.0		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	
Growth Factor	80%	80%	80%	80%	80%	80%	
Heavy Vehicles (%)	0%	0%	0%	4%	1%	0%	
Parking (#/hr)				20			
Adj. Flow (vph)	0	0	0	550	87	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	0	550	87	0	
Turn Type				NA	Prot		
Protected Phases				1	2		3
Permitted Phases							
Detector Phase				1	2		
Switch Phase							
Minimum Initial (s)				4.0	4.0		4.0
Minimum Split (s)				25.0	15.0		15.0
Total Split (s)				25.0	15.0		15.0
Total Split (%)				45.5%	27.3%		27%
Maximum Green (s)				20.0	9.0		11.0
Yellow Time (s)				3.0	3.0		3.0
All-Red Time (s)				2.0	3.0		1.0
Lost Time Adjust (s)				0.0	0.0		
Total Lost Time (s)				5.0	6.0		
Lead/Lag				Lead	Lag		
Lead-Lag Optimize?							
Vehicle Extension (s)				2.0	2.0		2.0
Recall Mode				C-Max	Ped		Ped
Walk Time (s)				7.0	7.0		7.0
Flash Dont Walk (s)				4.0	2.0		4.0
Pedestrian Calls (#/hr)				500	500		500
Act Effct Green (s)				20.0	9.0		
Actuated g/C Ratio				0.36	0.16		
v/c Ratio				0.48	0.12		
Control Delay				9.8	0.4		
Queue Delay				1.1	0.0		
Total Delay				11.0	0.4		
LOS				B	A		
Approach Delay				11.0	0.4		
Approach LOS				B	A		
Queue Length 50th (ft)				35	0		
Queue Length 95th (ft)				33	0		
Internal Link Dist (ft)	1			63	325		
Turn Bay Length (ft)							
Base Capacity (vph)				1136	696		
Starvation Cap Reductn				350	0		
Spillback Cap Reductn				0	0		
Storage Cap Reductn				0	0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Reduced v/c Ratio				0.70	0.13		

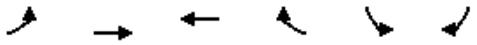
Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 50 (91%), Referenced to phase 1:WBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 9.5		Intersection LOS: A	
Intersection Capacity Utilization 31.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: India Street & State Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑			↱
Traffic Volume (vph)	0	0	607	0	0	32
Future Volume (vph)	0	0	607	0	0	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	*0.75	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	0	2545	0	0	1644
Flt Permitted						
Satd. Flow (perm)	0	0	2545	0	0	1644
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						329
Link Speed (mph)		25	25		25	
Link Distance (ft)		143	329		361	
Travel Time (s)		3.9	9.0		9.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	80%	80%	80%	80%	80%	80%
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%
Parking (#/hr)			5	20		
Adj. Flow (vph)	0	0	522	0	0	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	522	0	0	28
Turn Type			NA			Prot
Protected Phases			1			2
Permitted Phases						
Detector Phase			1			2
Switch Phase						
Minimum Initial (s)			6.0			6.0
Minimum Split (s)			35.0			20.0
Total Split (s)			35.0			20.0
Total Split (%)			63.6%			36.4%
Maximum Green (s)			31.0			16.0
Yellow Time (s)			3.0			3.0
All-Red Time (s)			1.0			1.0
Lost Time Adjust (s)			0.0			0.0
Total Lost Time (s)			4.0			4.0
Lead/Lag			Lead			Lag
Lead-Lag Optimize?						
Vehicle Extension (s)			2.0			2.0
Recall Mode			C-Max			Ped
Walk Time (s)			21.0			12.0
Flash Dont Walk (s)			4.0			4.0
Pedestrian Calls (#/hr)			500			500
Act Effct Green (s)			31.0			16.0
Actuated g/C Ratio			0.56			0.29
v/c Ratio			0.36			0.04
Control Delay			12.6			0.1
Queue Delay			0.0			0.0
Total Delay			12.6			0.1
LOS			B			A
Approach Delay			12.6		0.1	
Approach LOS			B		A	
Queue Length 50th (ft)			122			0
Queue Length 95th (ft)			106			0
Internal Link Dist (ft)		63	249		281	
Turn Bay Length (ft)						
Base Capacity (vph)			1434			711
Starvation Cap Reductn			0			0
Spillback Cap Reductn			91			11
Storage Cap Reductn			0			0

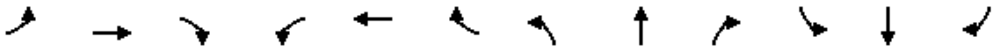


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Reduced v/c Ratio			0.39			0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 46 (84%), Referenced to phase 1:WBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 12.0		Intersection LOS: B	
Intersection Capacity Utilization 25.1%		ICU Level of Service A	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 7: State Street & Commercial Street



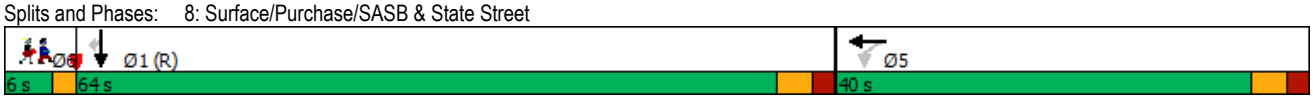
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	105	197	0	0	0	0	0	735	410
Future Volume (vph)	0	0	0	105	197	0	0	0	0	0	735	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Ped Bike Factor				0.51								0.68
Frt												0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	1518	1598	0	0	0	0	0	3124	1398
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	778	1598	0	0	0	0	0	3124	955
Right Turn on Red			Yes	No		Yes			Yes			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		329			161			166			240	
Travel Time (s)		9.0			4.4			4.5			6.5	
Confl. Peds. (#/hr)				600								578
Confl. Bikes (#/hr)												20
Peak Hour Factor	0.94	0.94	0.94	0.91	0.91	0.91	0.94	0.94	0.94	0.90	0.90	0.90
Growth Factor	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Heavy Vehicles (%)	0%	0%	0%	7%	7%	0%	0%	0%	0%	0%	4%	4%
Adj. Flow (vph)	0	0	0	92	173	0	0	0	0	0	653	364
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	92	173	0	0	0	0	0	653	364
Turn Type				Perm	NA						NA	Perm
Protected Phases					5						1	
Permitted Phases				5								1
Detector Phase				5	5						1	1
Switch Phase												
Minimum Initial (s)				8.0	8.0						8.0	8.0
Minimum Split (s)				23.0	23.0						64.0	64.0
Total Split (s)				40.0	40.0						64.0	64.0
Total Split (%)				36.4%	36.4%						58.2%	58.2%
Maximum Green (s)				35.0	35.0						59.0	59.0
Yellow Time (s)				3.0	3.0						3.0	3.0
All-Red Time (s)				2.0	2.0						2.0	2.0
Lost Time Adjust (s)				-1.0	-1.0						-1.0	0.0
Total Lost Time (s)				4.0	4.0						4.0	5.0
Lead/Lag											Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0						2.0	2.0
Recall Mode				Ped	Ped						C-Max	C-Max
Walk Time (s)				7.0	7.0						50.0	50.0
Flash Dont Walk (s)				9.0	9.0						7.0	7.0
Pedestrian Calls (#/hr)				30	30						30	30
Act Effct Green (s)				20.7	20.7						74.8	73.8
Actuated g/C Ratio				0.19	0.19						0.68	0.67
v/c Ratio				0.63	0.58						0.31	0.57
Control Delay				55.2	44.2						0.6	10.0
Queue Delay				0.7	1.0						0.2	0.0
Total Delay				55.9	45.2						0.8	10.0
LOS				E	D						A	A
Approach Delay					48.9						4.1	
Approach LOS					D						A	
Queue Length 50th (ft)				66	122						2	212
Queue Length 95th (ft)				116	182						3	314
Internal Link Dist (ft)		249			81			86			160	
Turn Bay Length (ft)												
Base Capacity (vph)				254	522						2123	640
Starvation Cap Reductn				41	173						596	0

Lane Group	Ø6
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Ped Bike 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)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	6
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	6.0
Total Split (s)	6.0
Total Split (%)	5%
Maximum Green (s)	4.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	
Vehicle Extension (s)	2.0
Recall Mode	Ped
Walk Time (s)	2.0
Flash Dont Walk (s)	0.0
Pedestrian Calls (#/hr)	30
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn				0	0						0	0
Storage Cap Reductn				0	0						0	0
Reduced v/c Ratio				0.43	0.50						0.43	0.57

Intersection Summary			
Area Type:	CBD		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 2 (2%), Referenced to phase 1:SBT, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 13.3		Intersection LOS: B	
Intersection Capacity Utilization 98.9%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 8: Surface/Purchase/SASB & State Street



Lane Group	Ø6
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary