

TRAFFIC IMPACT STUDY

Prepared for:

Eden Property Company

**Proposed Mixed-Use Building
803 South Avenue (NJ Route 28)
Block 645 – Lot 12
City of Plainfield, Union County, NJ**

Prepared by:



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A handwritten signature in black ink, appearing to read 'CWP', written over a horizontal line.

Craig W. Peregoy, PE
NJ PE License #45880

A handwritten signature in black ink, appearing to read 'CMA', written over a horizontal line.

Corey M. Chase, PE
NJ PE License #47470

February 18, 2020

0404-99-041T

INTRODUCTION

It is proposed to construct a 5 story building with one hundred four (104) residential units and 870 SF of ground floor retail space (The Project) on a parcel of land currently developed with an auto repair facility known as “Nerpac Auto Body”, located along the north side of South Avenue just east its intersection with Central Street, in the City of Plainfield, Union County, New Jersey as shown on Figure 1 contained in Appendix A. The site is designated as Block 645 – Lot 12 on the City Tax Maps. Access to the site is currently provided via two (2) full movement driveways along South Avenue. It is proposed to close the existing access points and provide one (1) full movement driveway along South Avenue. Parking will be provided via one hundred fifteen (115) parking stalls on the ground floor of the building in addition to six (6) on-street parking stalls along South Avenue in front of the site for a total parking supply of one hundred twenty-one (121) spaces.

Dynamic Traffic, LLC has been retained to prepare this study to assess the traffic impact associated with the construction of The Project on the adjacent roadway network. This study documents the methodology, analyses, findings and conclusions of our study and includes:

- A detailed field inspection was conducted to obtain an inventory of existing roadway geometry, traffic control, and location and geometry of existing driveways and intersections.
- Existing traffic volume data was collected via manual turning movement (MTM) counts during the weekday AM and weekday PM peak periods at the intersections of South Avenue with Berckman Street and South Avenue with Central Street.
- Projections of traffic to be generated by the proposed development were prepared utilizing trip generation data as published by the Institute of Transportation Engineers. Site traffic was then assigned to the adjacent street system based upon the anticipated directional distribution.
- Capacity analyses were conducted for the Existing, No Build and Build conditions for the study intersections and the site driveways.
- The proposed points of ingress and egress were inspected for adequacy of geometric design, spacing and/or alignment to streets and driveways on the opposite side of the street, relationship to other driveways adjacent to the development, and conformance with accepted design standards.
- The site plan as designed was reviewed for sufficiency in accommodating large wheel base vehicles such as delivery trucks, refuse trucks, and emergency vehicles.
- The parking layout and supply was assessed based on accepted design standards and demand experienced at similar developments.

EXISTING CONDITIONS

A review of the existing roadway conditions near the subject site was conducted to provide the basis for assessing the traffic impact of the development. This included field investigations of the surrounding roadways and intersections, collection of traffic volume data, and extensive analyses.

Existing Roadway Conditions

The following are descriptions of the roadways in the study area:

South Avenue (NJ Route 28) is an urban principal arterial roadway under the jurisdiction of Union County. In the vicinity of the site the posted speed limit is 25 MPH and the roadway provides one travel lane in each direction with a general east/west orientation. On-street parking is permitted along both sides of the roadway with curb and sidewalk provided along both sides of the roadway. South Avenue provides a straight horizontal alignment and a relatively flat vertical alignment. The land uses along South Avenue in the vicinity of The Project are a mix of commercial and residential.

Berckman Street is an urban major collector roadway under the jurisdiction of the City of Plainfield. In the vicinity of the site the speed limit is not posted and the roadway provides one travel lane in each direction with a general north/south orientation. On-street parking is permitted along both sides of the roadway with curb and sidewalk provided along both sides of the roadway. Berckman Street provides a straight horizontal alignment and a relatively flat vertical alignment. The land uses along Berckman Street in the vicinity of The Project are a mix of commercial and residential.

Central Street is a local roadway under the jurisdiction of the City of Plainfield. In the vicinity of the site the posted speed limit is 25 MPH and the roadway provides one travel lane in each direction with a general north/south orientation. On-street parking is permitted along both sides of the roadway with curb and sidewalk provided along both sides of the roadway. Central Street provides a straight horizontal alignment and a relatively flat vertical alignment. The land uses along Central Street in the vicinity of The Project are primarily residential.

Existing Traffic Volumes

Manual turning movement (MTM) counts were conducted between 7:00 AM and 9:00 AM and between 4:30 PM and 6:30 PM on Wednesday, November 14, 2018 at the intersections of South Avenue with Berckman Street and South Avenue with Central Street. Review of the collected traffic data reveals that the weekday morning peak street hour (PSH) of the network occurs between 7:15 – 8:15 AM and the evening PSH occurs between 4:30 – 5:30 PM. Note that the 2018 counts were increased to better represent existing 2020 traffic volumes by applying a growth rate of 1% per year obtained from the NJDOT Annual Background Growth Rate Table for a period of two (2) years. Figure 2 in Appendix A shows the existing peak hour traffic volumes at the study intersections. All MTM counts are contained in Appendix B.

Existing Capacity Analysis

The methodology utilized in the capacity analyses is described in the *Highway Capacity Manual 2010*, published by the Transportation Research Board. In general, the term Level of Service (LOS) is used to provide a “qualitative” evaluation of capacity based upon certain “quantitative” calculations related to empirical values, such as traffic volume and intersection control.

At the signalized intersections, factors that affect the various approach capacities include width of approach, number of lanes, signal “green time”, turning percentages, truck volumes, etc. However, delays cannot be related to capacity in a simple one-to-one fashion. For example, it is possible to have delays in the Level of Service “F” range without exceeding roadway capacity. Substantial delays can exist without exceeding capacity if one or more of the following conditions exist: long signal cycle lengths; a particular traffic movement experiences a long red time; or progressive movement for a particular lane group is poor. Table II describes the Level of Service ranges for signalized intersections.

An unsignalized (STOP sign controlled) driveway or side street along a through route is seldom critical from an overall capacity standpoint, however, it may be of great significance to the capacity of the minor cross-route, and it may influence the quality of traffic flow on both. When analyzing an unsignalized intersection, it is assumed that both the major street through and right turn movements are unimpeded and have the right-of-way over all side street traffic and left turns from the major street. All other turning movements in the intersection cross, merge with, or are otherwise impeded by major street movements. Traffic delays at unsignalized intersections are determined by sequentially processing these impeded movements. Table III describes the Level of Service ranges for unsignalized (stop controlled) intersections.

**Table I
Level of Service Criteria
for Signalized Intersections**

Level of Service	Average Control Delay (seconds per vehicle)
A	0.0 to 10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	greater than 80.0

**Table II
Level of Service Criteria
for Unsignalized Intersections**

Level of Service	Average Control Delay (seconds per vehicle)
a	0.0 to 10.0
b	10.1 to 15.0
c	15.1 to 25.0
d	25.1 to 35.0
e	35.1 to 50.0
f	greater than 50.0

All Capacity analyses were performed utilizing the Synchro software package. Table III summarizes the existing levels of service (LOS) and delay in seconds per vehicle. All Capacity analysis calculation worksheets are contained in Appendix C.

**Table III
Existing Levels of Service**

Intersection	Direction/ Movement		AM PSH	PM PSH
South Avenue & Berckman Street	EB	LTR	B (12)	B (12)
	WB	LTR	B (12)	B (12)
	NB	LTR	B (17)	B (16)
	SB	LTR	B (18)	B (16)
	Overall		B (15)	B (14)
South Avenue & Central Street	WB	LT	a (8)	a (8)
	NB	LR	b (15)	b (13)

A (#) - Signalized Intersection Level of Service (seconds of delay per vehicle)
a (#) - Unsignalized Intersection Level of Service (seconds of delay per vehicle)

The following are discussions pertaining to each of the existing intersections analyzed. It should be noted that the existing percentage of trucks and peak hour factors were used in the existing analysis.

South Avenue and Berckman Street

South Avenue intersects Berckman Street to form a signalized four-leg intersection. The eastbound and westbound approaches of South Avenue each provide one shared left turn/through/right turn lane. The northbound and southbound approaches of Berckman Street each provide one shared left turn/through/right turn lane.

A review of the existing analysis reveals that the intersection operates at overall Level of Service “B” during the analyzed peak periods. See Table III for the individual movement levels of service and delays.

South Avenue and Central Street

South Avenue intersects Central Street to form an unsignalized T-intersection with Central Street under stop control. The eastbound and westbound approaches of South Avenue provide a shared through/right turn lane and a shared left turn/through lane, respectively. The northbound approach of Central Street provides a shared lane for left and right turns.

A review of the existing analysis reveals that the individual intersection movements operate at Level of Service “B” or better during the analyzed peak periods. See Table III for the individual movement levels of service and delays.

FUTURE CONDITIONS

Traffic volumes and operational analyses were developed for both the Future No Build and Build conditions. The No Build conditions provide a baseline for assessing the impact of site development traffic on the roadway system. The process of developing the No Build and Build traffic volumes and the subsequent analyses is outlined below.

Regardless of whether the subject site is developed or not, traffic volumes on the surrounding roadways are expected to increase as a result of developments throughout the region. A growth rate for roadways within the study area was obtained from the NJDOT Annual Background Growth Rate Table, which indicates a growth rate of 1% per year.

Additionally, it should be noted that there are numerous developments in the vicinity of the site that are in various stages of development and are identified as potential significant traffic generators, shown below. It was assumed that the background growth rate was adequate to account for the traffic associated with all developments not listed hereafter.

- A HOPES Early Start School with a full enrollment of 362 students located at 1201-1223 East Seventh Street, is currently under construction. Projections of the associated traffic volumes were gathered from the *Traffic Impact Study*, last revised September 20, 2018 prepared by this firm.
- A mixed-use building consisting of 120 residential units located at 926-1018 North Avenue, has been approved. Projections of the associated traffic volumes were gathered from the *Traffic Impact Statement*, dated October 15, 2019 prepared by this firm.
- A residential building consisting of 212 units located along the south side of South Avenue between Leland Avenue and Terrill Road, is currently under construction. Projections of the associated traffic volumes were gathered from the *Traffic Impact Study*, dated June 2, 2015 prepared by this firm.
- A Wawa convenience store with fueling stations located along the south side of South Avenue just west of its intersection with Terrill Road, has been approved. Projections of the associated traffic volumes were gathered from the *Traffic Impact Study*, dated February 8, 2019 prepared by this firm.
- A residential building consisting of 12 units located at 820 South Avenue, has been approved. Projections of the associated traffic volumes were developed utilizing ITE data for LUC 220 – Multifamily Housing (Low-Rise).
- A mixed-use building consisting of 70 units with ground floor commercial space located at 829 South Avenue, has been approved. Projections of the associated traffic volumes were developed utilizing ITE data for LUC 231 – Mid-Rise Residential with 1st-Floor Commercial.

Future No Build traffic volumes were developed by applying the background growth rate of 1% for two (2) years to the study area roadways existing traffic volumes and adding the traffic volumes associated with the Adjacent Developments. Figure 3, in Appendix A, shows the Total Adjacent Development traffic volumes and Figure 4 shows the No Build traffic volumes.

Traffic Generation

Projections of future traffic volumes were developed utilizing data as published in the Institute of Transportation Engineers (ITE) publication *Trip Generation, 10th Edition* for Land Use Code (LUC) 231 – Mid-Rise Residential with 1st-Floor Commercial. Table IV summarizes the projected trips generated by the proposed development utilizing the ITE data.

**Table IV
Trip Generation**

Land Use	AM PSH			PM PSH		
	In	Out	Total	In	Out	Total
104 Residential Units with 1 st -Floor Commercial	9	22	31	26	11	37

It should be noted that within half a mile of the site is New Jersey Transit bus lines 59, 113, and 822 as well as the Netherwood Train Station. However, no adjustments are made to the ITE trip rate data to account for the likely utilization of mass transit for daily commutation purposes for future tenants of the proposed building. Additionally, no credit was taken for the existing use of the property and all trip generation is considered an increase over vacant land. This allows for a conservative projection of a “worst case” scenario from a traffic impact perspective.

Once the magnitude of traffic to be generated by the site is known, it is necessary to assign that traffic to the adjacent street system. The distribution of site traffic to the surrounding roadways is based on the location of primary arterial roadways, major signalized intersections, and existing traffic patterns. Located in Appendix A, Figure 5 illustrates the site generated traffic volumes. The site generated volumes were added to the Future No Build traffic volumes to generate the Future Build traffic volumes, which are shown in Figure 6.

Future Capacity Analysis

Operational conditions at the study intersections were analyzed under the No Build and Build conditions and are summarized in Table V below.

**Table V
Future Levels of Service**

Intersection	Direction/ Movement		AM PSH		PM PSH	
			No Build	Build	No Build	Build
South Avenue and Berckman Street	EB	LTR	B (12)	B (12)	B (13)	B (14)
	WB	LTR	B (14)	B (14)	B (13)	B (13)
	NB	LTR	B (17)	B (17)	B (16)	B (16)
	SB	LTR	B (19)	B (19)	B (16)	B (17)
	Overall		B (15)	B (16)	B (15)	B (15)
South Avenue and Central Street	WB	LTR	a (8)	a (8)	a (8)	a (8)
	NB	LTR	c (17)	c (18)	b (15)	c (15)
South Avenue and Site Driveway	EB	LT	-	a (8)	-	a (8)
	SB	LR	-	b (15)	-	b (13)

A (#) - Signalized Intersection Level of Service (seconds of delay per vehicle)
a (#) - Unsignalized Intersection Level of Service (seconds of delay per vehicle)

South Avenue and Berckman Street

With the addition of the site traffic the intersection will continue to operate at overall Level of Service “B” during the analyzed peak periods, maintaining the No Build Level of Service. See Table V for the individual movement levels of service and delays.

South Avenue and Central Street

With the addition of the site traffic the individual intersection movements will continue to operate at Level of Service “C” or better during the analyzed peak periods, maintaining the No Build Level of Service. See Table V for the individual movement levels of service and delays.

South Avenue and Site Driveway

The site driveway is proposed to intersect South Avenue to form an unsignalized T-intersection with the site driveway under stop control. The eastbound and westbound approaches of South Avenue will provide a shared left turn/through lane and a shared through/right turn lane, respectively. The southbound approach of the site driveway will provide a shared lane for left and right turns.

As designed, the individual intersection movements will operate at Level of Service “B” or better during the analyzed peak periods. See Table V for the individual movement levels of service and delays.

SITE PLAN

Site Access and Circulation

The site plan was reviewed with respect to the site access and on-site circulation design. As noted previously, access to The Project will be provided via one (1) full movement driveway along South Avenue.

The newly constructed parking garage will be serviced by parking aisles with widths of 24', which meets the Ordinance requirements. These aisles will allow for two-way circulation and 90-degree parking. This access configuration is sufficient to accommodate the traffic volumes anticipated for The Project.

Parking

The City of Plainfield sets forth a parking requirement of 1 parking space per unit for residential uses and 1 parking space per 300 square feet of gross floor area for retail uses. With 104 residential units and 870 square feet of retail area proposed this equates to a parking requirement of 107 spaces. The site as proposed provides 115 on-site parking spaces plus an additional 6 on-street parking spaces in front of the site for a total parking supply of 121 spaces, which exceeds the Ordinance requirements and is expected to be more than sufficient to accommodate the maximum anticipated demand.

It is proposed to provide parking stalls with dimensions of 9'x18', which meets the Ordinance requirements. Therefore, it is expected that the proposed parking stall dimensions will adequately accommodate site.

FINDINGS & CONCLUSIONS

Findings

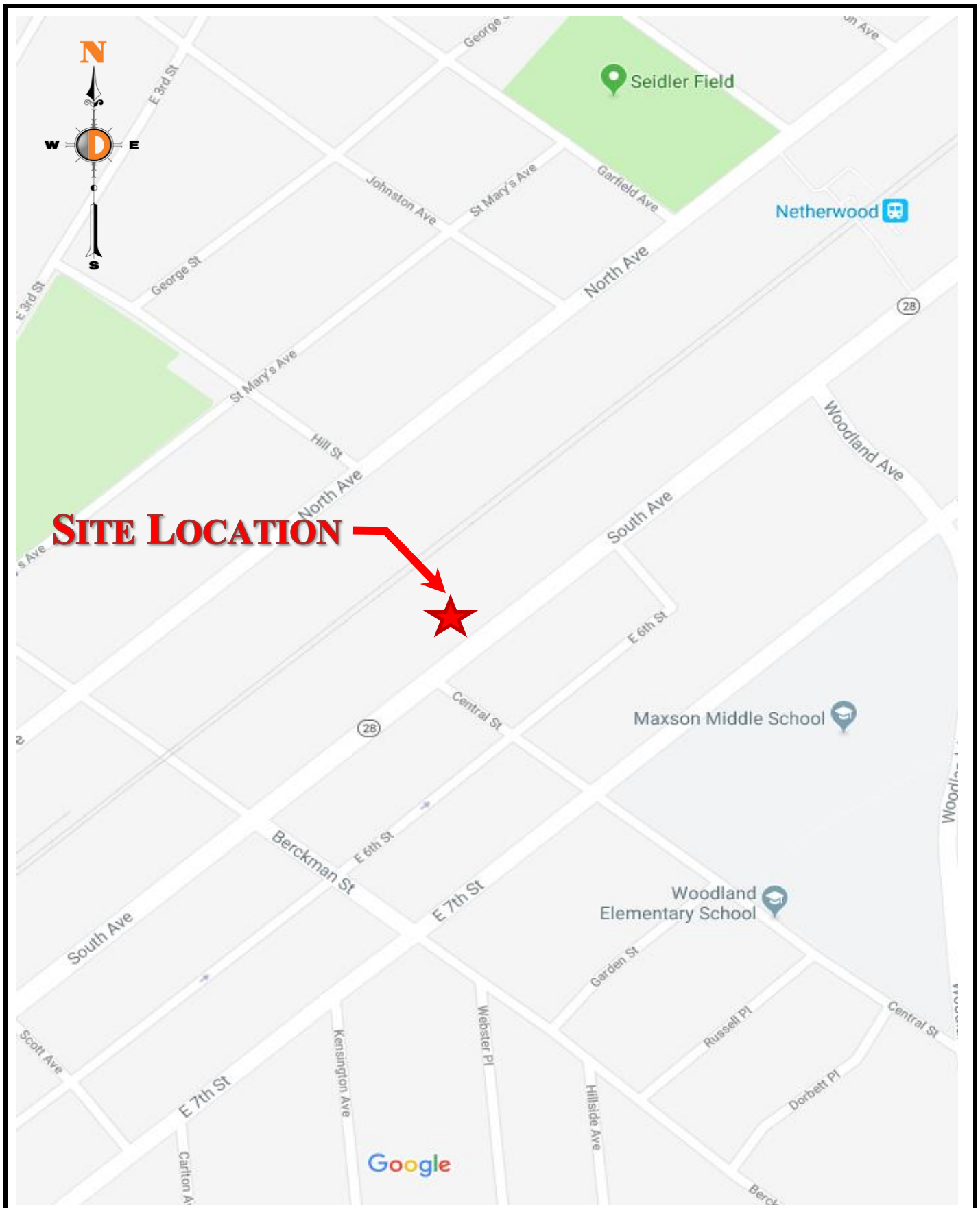
Based upon the detailed analyses as documented herein, the following findings are noted:

- The proposed 104 residential units and 870 square feet of retail space will generate 9 entering trips and 22 exiting trips during the morning peak hour and 26 entering trips and 11 exiting trips during the evening peak hour. This is based on a conservative assessment of trip generation with no credit for the existing use of the site or mass transit usage.
- Access to the site will be provided via one (1) full movement driveway along South Avenue.
- With the addition of the site generated traffic, the intersection of South Avenue and Berckman Street will continue to operate at overall Level of Service “B” during the studied peak hours, maintaining the No Build levels of service.
- With the addition of the site generated traffic, the individual intersection movements of South Avenue and Central Street will continue to operate at Level of Service “C” or better during the studied peak hours, maintaining the No Build levels of service.
- As designed, the individual intersection movements of South Avenue and the site driveway will operate at Level of Service “B” or better during the studied peak hours.
- As proposed, The Project’s site driveway and internal circulation have been designed to provide for safe and efficient movement of vehicles on-site.
- The proposed parking supply and design is sufficient to support the maximum anticipated demand and is consistent with past experience at similar developments.

Conclusions

Based upon our Traffic Impact Study as detailed in the body of this report, it is the professional opinion of Dynamic Traffic, LLC that the adjacent street system of the City of Plainfield and Union County will not experience any significant degradation in operating conditions with the construction of The Project. The site driveway is located to provide safe and efficient access to the adjacent roadway system. The site plan as proposed provides for good circulation throughout the site and provides adequate parking to accommodate The Project’s needs.

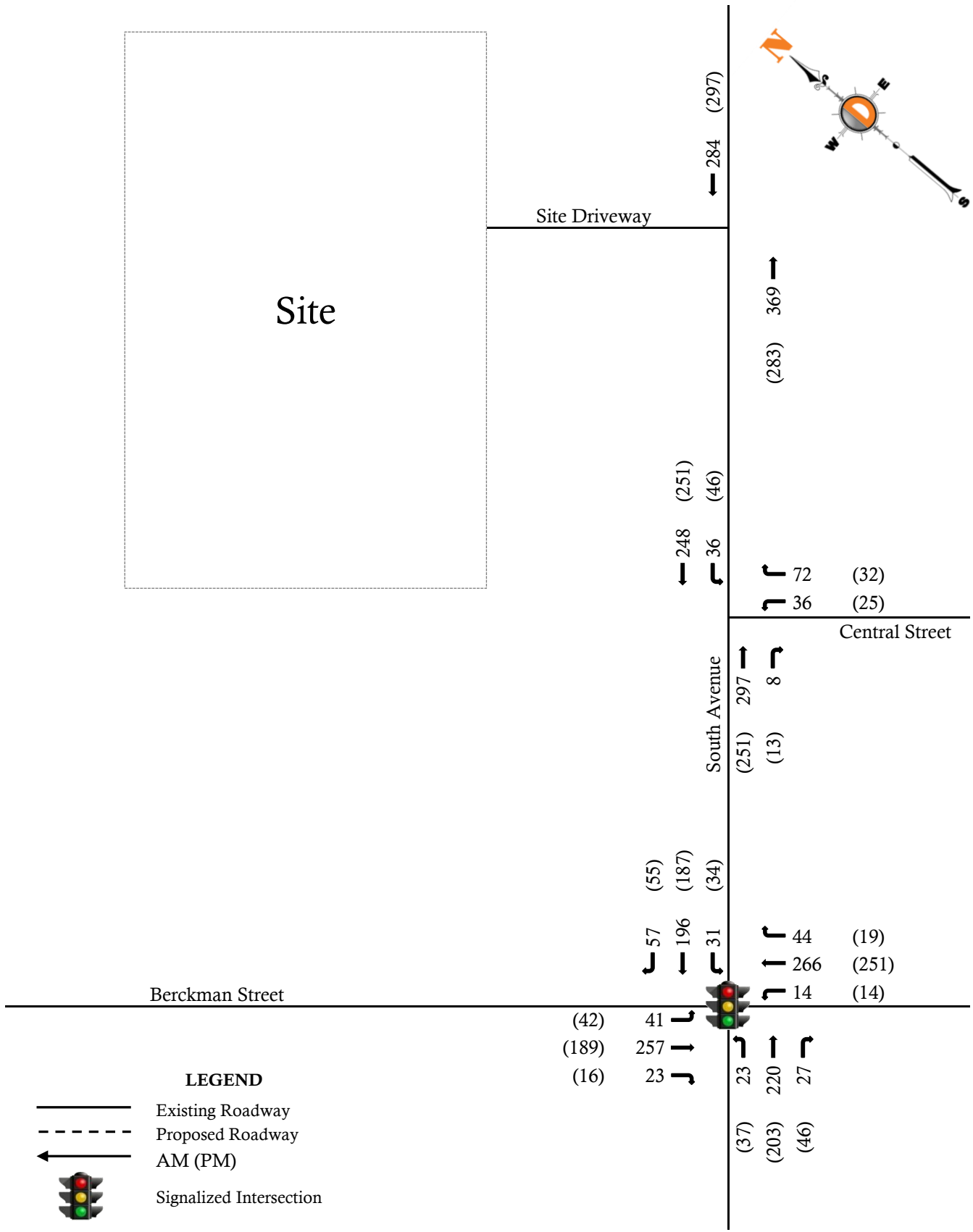
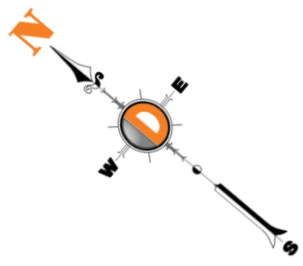
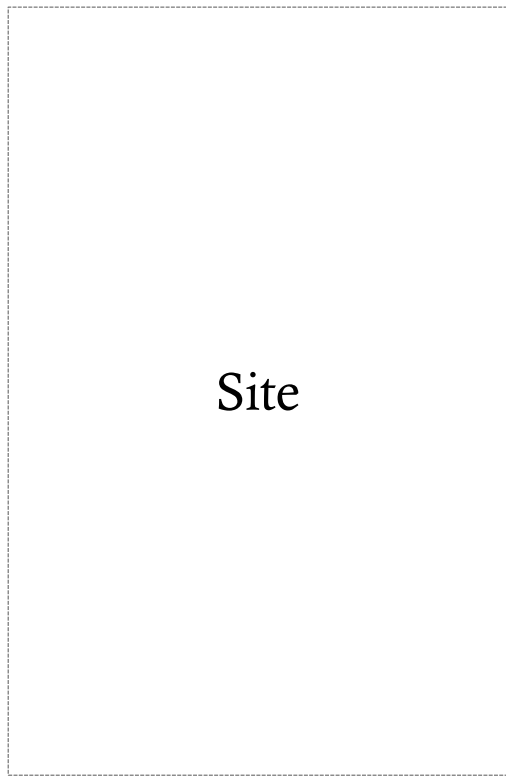
Appendix A
Traffic Volume Figures



Proposed Mixed-Use Development
Traffic Impact Study
0404-99-041T
2/18/2020

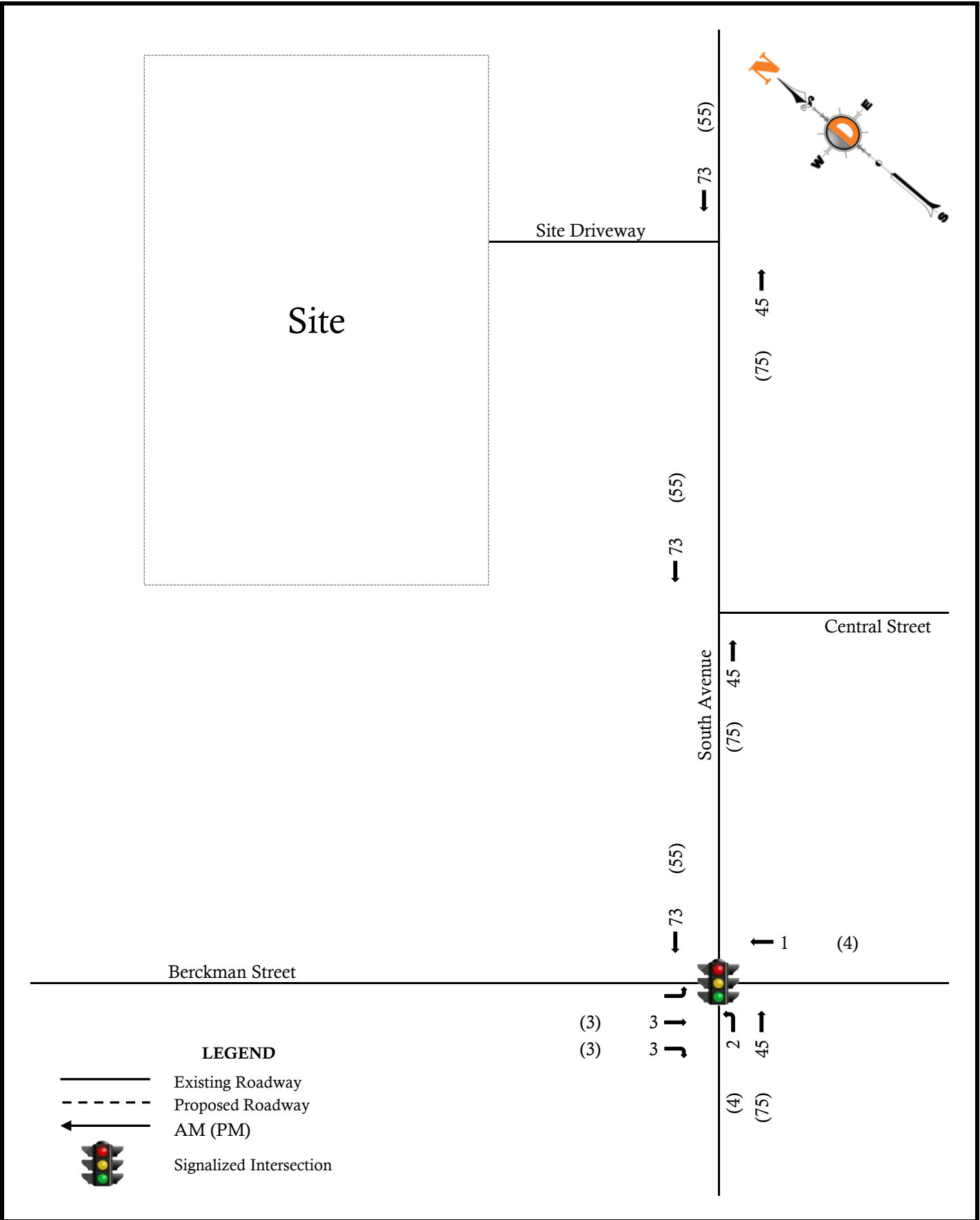
Figure 1

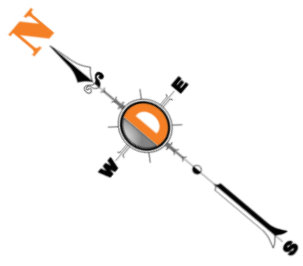
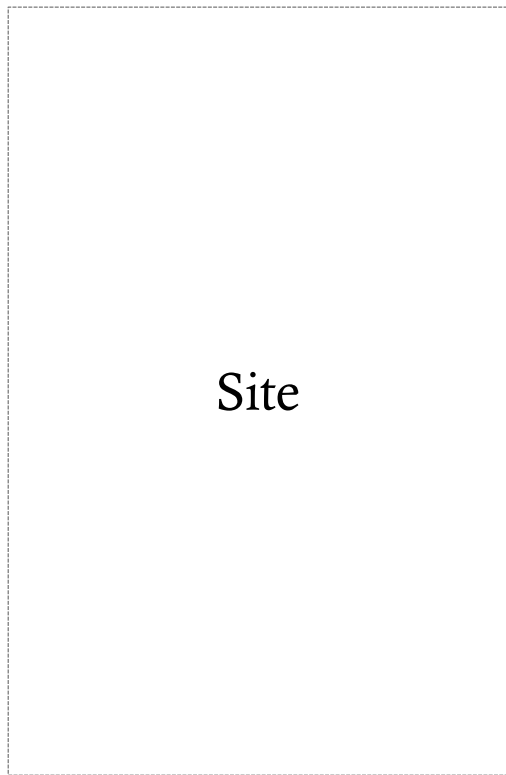
Site Location Map



LEGEND

- Existing Roadway
- - - Proposed Roadway
- ← AM (PM)
- Signalized Intersection





Site Driveway

← 363 (358)

Site

← 326 (311)
 ↙ 37 (47)

↔ 421 ↔
 (364)

↙ 73 (33)
 ↘ 37 (26)

Central Street

South Avenue

↔ 348 ↔
 (331) (13)

↘ 58 (56)
 ↙ 273 (246)
 ↘ 32 (35)

↙ 45 (19)
 ↔ 272 (260)
 ↘ 14 (14)

Berckman Street

(43) 42 ↘
 (196) 265 ↔
 (19) 26 ↘

↘ 25 (42)
 ↔ 269 (282)
 ↘ 28 (47)

LEGEND


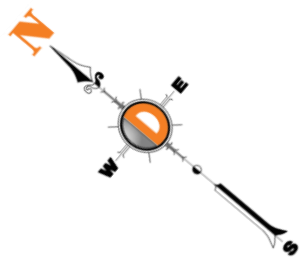
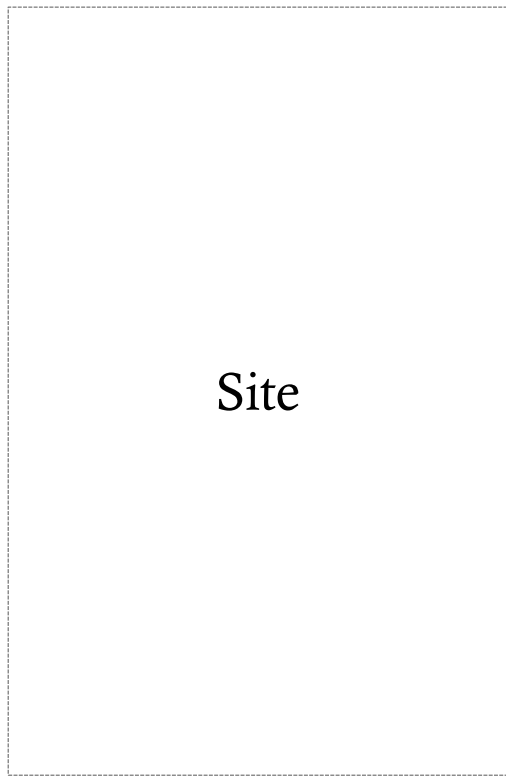
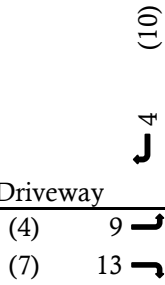
- Existing Roadway
- - - Proposed Roadway
- ← AM (PM)
-  Signalized Intersection

Figure 4

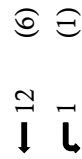
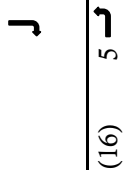
No Build Traffic Volumes



Site Driveway



Site

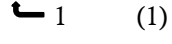


Central Street

South Avenue



Berckman Street



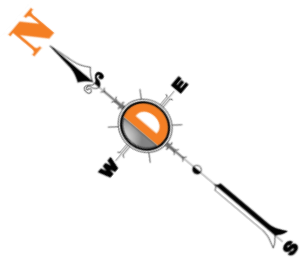
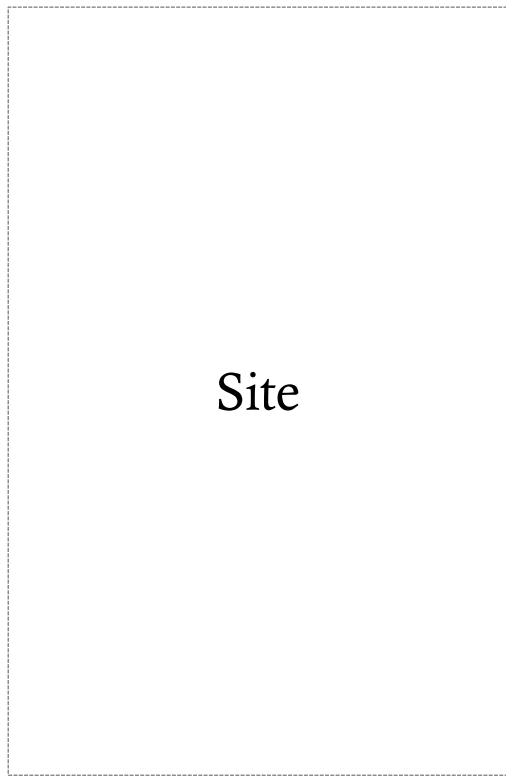
(3)



- LEGEND**
- Existing Roadway
 - - - Proposed Roadway
 - ← AM (PM)
 - Signalized Intersection



Figure 5
Site Generated Trips



Site Driveway

(4) 9
(7) 13

4 (10)
363 (358)

5
(16) (364) 421

338 (317)
38 (48)

73 (34)
37 (26)

Central Street

South Avenue

353
(346) (13) 8

59 (57)
282 (250)
34 (36)

46 (20)
272 (260)
14 (14)

Berckman Street

(46) 43
(196) 265
(19) 26

25
(42) (293) 272
(47) 28

LEGEND


- Existing Roadway
- - - Proposed Roadway
- ← AM (PM)
-  Signalized Intersection

Figure 6

Build Traffic Volumes

Appendix B
Traffic Counts

Dynamic Traffic, LLC

1904 Main Street, Lake Como, NJ 07719
 245 Main Street - Suite 110, Chester, NJ 07930
 732-681-0760

















E/W: South Ave (Rt 28)
 N/S: Berckman St
 Town/County: Plainfield/Union
 Job #: 0404-99-041T

File Name : South Ave & Berckman St - AM & PM
 Site Code : 00000000
 Start Date : 11/14/2018
 Page No : 1

Groups Printed- Cars - Single Unit Trucks - Tractor Trailers

Start Time	South Avenue (Route 28) Eastbound					South Avenue (Route 28) Westbound					Berckman Street Northbound					Berckman Street Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	4	34	3	0	41	4	16	9	2	31	0	47	8	0	55	8	36	4	1	49	176
07:15 AM	3	46	3	0	52	5	43	8	3	59	1	59	9	1	70	7	69	10	0	86	267
07:30 AM	4	48	8	3	63	7	38	12	1	58	3	62	11	0	76	12	56	6	1	75	272
07:45 AM	4	62	6	0	72	8	41	17	7	73	7	69	10	2	88	7	74	6	2	89	322
Total	15	190	20	3	228	24	138	46	13	221	11	237	38	3	289	34	235	26	4	299	1037
08:00 AM	12	51	9	1	73	7	55	16	0	78	3	71	11	0	85	12	53	1	1	67	303
08:15 AM	3	38	4	0	45	7	57	23	1	88	3	50	10	0	63	5	31	3	1	40	236
08:30 AM	3	32	6	1	42	6	33	4	1	44	2	47	3	2	54	9	32	3	0	44	184
08:45 AM	2	20	0	0	22	6	29	9	0	44	3	40	7	0	50	10	23	3	0	36	152
Total	20	141	19	2	182	26	174	52	2	254	11	208	31	2	252	36	139	10	2	187	875
*** BREAK ***																					
04:30 PM	6	58	14	0	78	4	50	8	0	62	2	60	0	0	62	10	44	2	0	56	258
04:45 PM	10	43	12	0	65	7	31	10	0	48	2	59	7	0	68	11	46	4	0	61	242
Total	16	101	26	0	143	11	81	18	0	110	4	119	7	0	130	21	90	6	0	117	500
05:00 PM	6	48	9	0	63	13	60	18	0	91	5	66	3	1	75	11	47	7	0	65	294
05:15 PM	14	45	10	0	69	7	38	16	3	64	5	61	8	1	75	8	48	3	1	60	268
05:30 PM	10	36	2	0	48	5	31	16	0	52	0	47	8	0	55	12	46	6	0	64	219
05:45 PM	6	31	3	0	40	6	48	11	2	67	2	39	6	0	47	6	55	3	0	64	218
Total	36	160	24	0	220	31	177	61	5	274	12	213	25	2	252	37	196	19	1	253	999
06:00 PM	4	34	9	0	47	6	49	19	3	77	4	33	6	0	43	5	44	3	0	52	219
06:15 PM	12	48	4	0	64	10	33	17	0	60	1	57	8	0	66	12	37	4	0	53	243
Grand Total	103	674	102	5	884	108	652	213	23	996	43	867	115	7	1032	145	741	68	7	961	3873
Apprch %	11.7	76.2	11.5	0.6		10.8	65.5	21.4	2.3		4.2	84	11.1	0.7		15.1	77.1	7.1	0.7		
Total %	2.7	17.4	2.6	0.1	22.8	2.8	16.8	5.5	0.6	25.7	1.1	22.4	3	0.2	26.6	3.7	19.1	1.8	0.2	24.8	
Cars	103	659	101	5	868	106	644	210	23	983	43	862	113	7	1025	145	734	68	7	954	3830
% Cars	100	97.8	99	100	98.2	98.1	98.8	98.6	100	98.7	100	99.4	98.3	100	99.3	100	99.1	100	100	99.3	98.9
Single Unit Trucks	0	15	1	0	16	2	8	3	0	13	0	5	2	0	7	0	7	0	0	7	43
% Single Unit Trucks	0	2.2	1	0	1.8	1.9	1.2	1.4	0	1.3	0	0.6	1.7	0	0.7	0	0.9	0	0	0.7	1.1
Tractor Trailers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Tractor Trailers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix C
Capacity Analysis

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	220	27	31	196	57	14	266	44	41	257	23
Future Volume (vph)	23	220	27	31	196	57	14	266	44	41	257	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	13	13	13	16	16	16	15	15	15
Grade (%)		1%			-1%			1%			1%	
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		478			607			435			538	
Travel Time (s)		13.0			16.6			11.9			14.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	0%	4%	1%	4%	0%	1%	2%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	300	0	0	315	0	0	361	0	0	358	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Minimum Split (s)	31.0	31.0		31.0	31.0		26.0	26.0		26.0	26.0	
Total Split (s)	31.0	31.0		31.0	31.0		26.0	26.0		26.0	26.0	
Total Split (%)	54.4%	54.4%		54.4%	54.4%		45.6%	45.6%		45.6%	45.6%	
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)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		25.0			25.0			20.0			20.0	
Actuated g/C Ratio		0.44			0.44			0.35			0.35	
v/c Ratio		0.34			0.40			0.50			0.54	
Control Delay		11.5			11.7			16.9			18.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.5			11.7			16.9			18.3	
LOS		B			B			B			B	
Approach Delay		11.5			11.7			16.9			18.3	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		61			62			90			93	
Queue Length 95th (ft)		109			114			157			163	
Internal Link Dist (ft)		398			527			355			458	
Turn Bay Length (ft)												
Base Capacity (vph)		876			793			720			659	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.34			0.40			0.50			0.54	
Intersection Summary												
Area Type:	Other											
Cycle Length:	57											
Actuated Cycle Length:	57											

Offset: 51 (89%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow

Natural Cycle: 60

Control Type: Pretimed

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 14.8

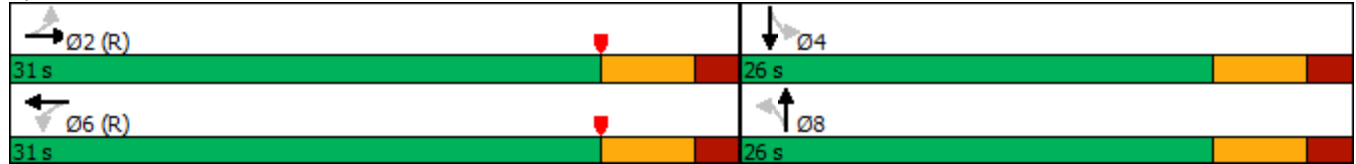
Intersection LOS: B

Intersection Capacity Utilization 63.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 10: Berckman Street & South Avenue



















Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	297	8	36	248	36	72
Future Vol, veh/h	297	8	36	248	36	72
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	-	-	0	0	-
Grade, %	1	-	-	0	1	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	5	0	3	4	6	0
Mvmt Flow	362	10	44	302	44	88

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	372	0	757
Stage 1	-	-	-	-	367
Stage 2	-	-	-	-	390
Critical Hdwy	-	-	4.13	-	6.66
Critical Hdwy Stg 1	-	-	-	-	5.66
Critical Hdwy Stg 2	-	-	-	-	5.66
Follow-up Hdwy	-	-	2.227	-	3.554
Pot Cap-1 Maneuver	-	-	1181	-	354
Stage 1	-	-	-	-	678
Stage 2	-	-	-	-	661
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1181	-	338
Mov Cap-2 Maneuver	-	-	-	-	338
Stage 1	-	-	-	-	678
Stage 2	-	-	-	-	631

Approach	EB	WB	NB
HCM Control Delay, s	0	1	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	507	-	-	1181	-
HCM Lane V/C Ratio	0.26	-	-	0.037	-
HCM Control Delay (s)	14.6	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0.1	-

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	203	46	34	187	55	14	251	19	42	189	16
Future Volume (vph)	37	203	46	34	187	55	14	251	19	42	189	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	13	13	13	16	16	16	15	15	15
Grade (%)		1%			-1%			1%			1%	
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		478			607			435			538	
Travel Time (s)		13.0			16.6			11.9			14.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	318	0	0	307	0	0	316	0	0	275	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Minimum Split (s)	31.0	31.0		31.0	31.0		26.0	26.0		26.0	26.0	
Total Split (s)	31.0	31.0		31.0	31.0		26.0	26.0		26.0	26.0	
Total Split (%)	54.4%	54.4%		54.4%	54.4%		45.6%	45.6%		45.6%	45.6%	
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)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		25.0			25.0			20.0			20.0	
Actuated g/C Ratio		0.44			0.44			0.35			0.35	
v/c Ratio		0.37			0.39			0.44			0.42	
Control Delay		11.6			11.6			16.2			16.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.6			11.6			16.2			16.2	
LOS		B			B			B			B	
Approach Delay		11.6			11.6			16.2			16.2	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		63			60			78			68	
Queue Length 95th (ft)		115			111			137			123	
Internal Link Dist (ft)		398			527			355			458	
Turn Bay Length (ft)												
Base Capacity (vph)		856			792			725			651	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.37			0.39			0.44			0.42	
Intersection Summary												
Area Type:	Other											
Cycle Length:	57											
Actuated Cycle Length:	57											

Offset: 51 (89%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow

Natural Cycle: 60

Control Type: Pretimed

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 13.8

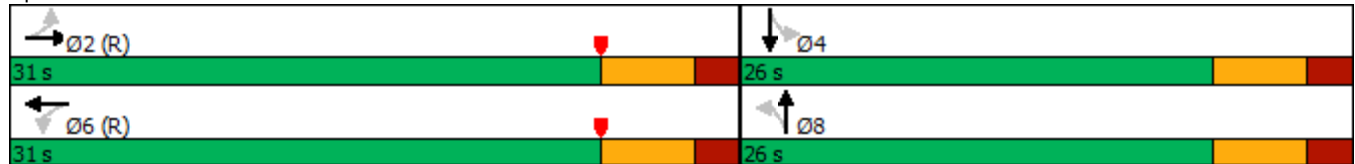
Intersection LOS: B

Intersection Capacity Utilization 58.0%

















ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 10: Berckman Street & South Avenue



Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	251	13	46	251	25	32
Future Vol, veh/h	251	13	46	251	25	32
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	-	-	0	0	-
Grade, %	1	-	-	0	1	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	0	0	1	4	3
Mvmt Flow	279	14	51	279	28	36
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	293	0	667	286
Stage 1	-	-	-	-	286	-
Stage 2	-	-	-	-	381	-
Critical Hdwy	-	-	4.1	-	6.64	6.33
Critical Hdwy Stg 1	-	-	-	-	5.64	-
Critical Hdwy Stg 2	-	-	-	-	5.64	-
Follow-up Hdwy	-	-	2.2	-	3.536	3.327
Pot Cap-1 Maneuver	-	-	1280	-	406	745
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	672	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1280	-	387	745
Mov Cap-2 Maneuver	-	-	-	-	387	-
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	640	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	1.2	12.7			
HCM LOS			B			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	530	-	-	1280	-	
HCM Lane V/C Ratio	0.119	-	-	0.04	-	
HCM Control Delay (s)	12.7	-	-	7.9	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	269	28	32	273	58	14	272	45	42	265	26
Future Volume (vph)	25	269	28	32	273	58	14	272	45	42	265	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	13	13	13	16	16	16	15	15	15
Grade (%)		1%			-1%			1%			1%	
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		478			607			435			538	
Travel Time (s)		13.0			16.6			11.9			14.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	0%	4%	1%	4%	0%	1%	2%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	358	0	0	403	0	0	368	0	0	370	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Minimum Split (s)	31.0	31.0		31.0	31.0		26.0	26.0		26.0	26.0	
Total Split (s)	31.0	31.0		31.0	31.0		26.0	26.0		26.0	26.0	
Total Split (%)	54.4%	54.4%		54.4%	54.4%		45.6%	45.6%		45.6%	45.6%	
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)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		25.0			25.0			20.0			20.0	
Actuated g/C Ratio		0.44			0.44			0.35			0.35	
v/c Ratio		0.41			0.51			0.51			0.56	
Control Delay		12.4			13.7			17.1			18.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		12.4			13.7			17.1			18.6	
LOS		B			B			B			B	
Approach Delay		12.4			13.7			17.1			18.6	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		76			88			92			97	
Queue Length 95th (ft)		133			156			160			169	
Internal Link Dist (ft)		398			527			355			458	
Turn Bay Length (ft)												
Base Capacity (vph)		873			796			720			658	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.41			0.51			0.51			0.56	
Intersection Summary												
Area Type:	Other											
Cycle Length:	57											
Actuated Cycle Length:	57											

Offset: 51 (89%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow

Natural Cycle: 60

Control Type: Pretimed

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 15.4

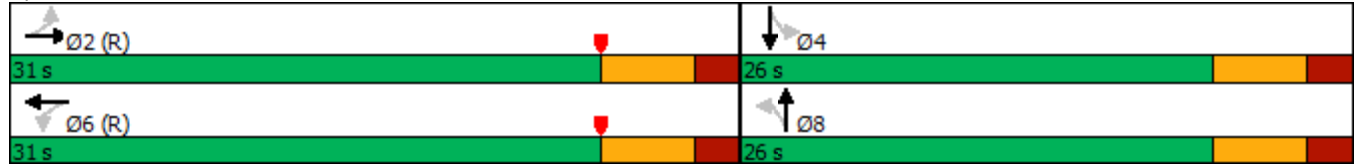
Intersection LOS: B

Intersection Capacity Utilization 69.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Berckman Street & South Avenue



Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	348	8	37	326	37	73
Future Vol, veh/h	348	8	37	326	37	73
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	-	-	0	0	-
Grade, %	1	-	-	0	1	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	5	0	3	4	6	0
Mvmt Flow	424	10	45	398	45	89
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	434	0	917	429
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	488	-
Critical Hdwy	-	-	4.13	-	6.66	6.3
Critical Hdwy Stg 1	-	-	-	-	5.66	-
Critical Hdwy Stg 2	-	-	-	-	5.66	-
Follow-up Hdwy	-	-	2.227	-	3.554	3.3
Pot Cap-1 Maneuver	-	-	1120	-	282	623
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	593	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1120	-	267	623
Mov Cap-2 Maneuver	-	-	-	-	267	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	562	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0.9	17.1			
HCM LOS			C			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	430	-	-	1120	-	
HCM Lane V/C Ratio	0.312	-	-	0.04	-	
HCM Control Delay (s)	17.1	-	-	8.3	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	42	282	47	35	246	56	14	260	19	43	196	19
Future Volume (vph)	42	282	47	35	246	56	14	260	19	43	196	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	13	13	13	16	16	16	15	15	15
Grade (%)		1%			-1%			1%			1%	
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		478			607			435			538	
Travel Time (s)		13.0			16.6			11.9			14.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	412	0	0	374	0	0	326	0	0	287	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Minimum Split (s)	31.0	31.0		31.0	31.0		26.0	26.0		26.0	26.0	
Total Split (s)	31.0	31.0		31.0	31.0		26.0	26.0		26.0	26.0	
Total Split (%)	54.4%	54.4%		54.4%	54.4%		45.6%	45.6%		45.6%	45.6%	
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)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		25.0			25.0			20.0			20.0	
Actuated g/C Ratio		0.44			0.44			0.35			0.35	
v/c Ratio		0.48			0.47			0.45			0.44	
Control Delay		13.3			13.1			16.4			16.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.3			13.1			16.4			16.4	
LOS		B			B			B			B	
Approach Delay		13.3			13.1			16.4			16.4	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		90			79			81			71	
Queue Length 95th (ft)		156			142			142			128	
Internal Link Dist (ft)		398			527			355			458	
Turn Bay Length (ft)												
Base Capacity (vph)		853			791			725			651	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.48			0.47			0.45			0.44	

Intersection Summary

Area Type: Other

Cycle Length: 57

Actuated Cycle Length: 57

Offset: 51 (89%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow

Natural Cycle: 60

Control Type: Pretimed

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 14.6

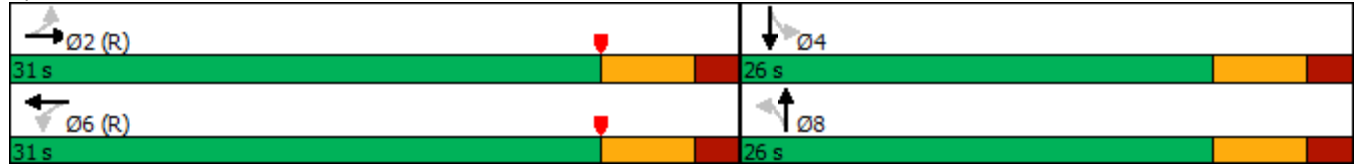
Intersection LOS: B

Intersection Capacity Utilization 65.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Berckman Street & South Avenue



Intersection

Int Delay, s/veh 1.6

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations

Traffic Vol, veh/h 331 13 47 311 26 33

Future Vol, veh/h 331 13 47 311 26 33

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 - - 0 0 -

Grade, % 1 - - 0 1 -

Peak Hour Factor 90 90 90 90 90 90

Heavy Vehicles, % 1 0 0 1 4 3

Mvmt Flow 368 14 52 346 29 37

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 382 0 825 375

Stage 1 - - - - 375 -

Stage 2 - - - - 450 -

Critical Hdwy - - 4.1 - 6.64 6.33

Critical Hdwy Stg 1 - - - - 5.64 -

Critical Hdwy Stg 2 - - - - 5.64 -

Follow-up Hdwy - - 2.2 - 3.536 3.327

Pot Cap-1 Maneuver - - 1188 - 324 662

Stage 1 - - - - 676 -

Stage 2 - - - - 622 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver - - 1188 - 307 662

Mov Cap-2 Maneuver - - - - 307 -

Stage 1 - - - - 676 -

Stage 2 - - - - 588 -

Approach EB WB NB

HCM Control Delay, s 0 1.1 14.6

HCM LOS B

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

















Capacity (veh/h) 439 - - 1188 -

HCM Lane V/C Ratio 0.149 - - 0.044 -

HCM Control Delay (s) 14.6 - - 8.2 0

HCM Lane LOS B - - A A

HCM 95th %tile Q(veh) 0.5 - - 0.1 -

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	272	28	34	282	59	14	272	46	43	265	26
Future Volume (vph)	25	272	28	34	282	59	14	272	46	43	265	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	13	13	13	16	16	16	15	15	15
Grade (%)		1%			-1%			1%			1%	
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		478			607			435			538	
Travel Time (s)		13.0			16.6			11.9			14.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	0%	4%	1%	4%	0%	1%	2%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	361	0	0	417	0	0	369	0	0	371	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Minimum Split (s)	31.0	31.0		31.0	31.0		26.0	26.0		26.0	26.0	
Total Split (s)	31.0	31.0		31.0	31.0		26.0	26.0		26.0	26.0	
Total Split (%)	54.4%	54.4%		54.4%	54.4%		45.6%	45.6%		45.6%	45.6%	
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)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		25.0			25.0			20.0			20.0	
Actuated g/C Ratio		0.44			0.44			0.35			0.35	
v/c Ratio		0.41			0.52			0.51			0.57	
Control Delay		12.4			14.0			17.0			18.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		12.4			14.0			17.0			18.7	
LOS		B			B			B			B	
Approach Delay		12.4			14.0			17.0			18.7	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		77			92			92			97	
Queue Length 95th (ft)		134			163			160			170	
Internal Link Dist (ft)		398			527			355			458	
Turn Bay Length (ft)												
Base Capacity (vph)		872			795			720			656	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.41			0.52			0.51			0.57	
Intersection Summary												
Area Type:	Other											
Cycle Length:	57											
Actuated Cycle Length:	57											

Offset: 51 (89%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow

Natural Cycle: 60

Control Type: Pretimed

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 15.5

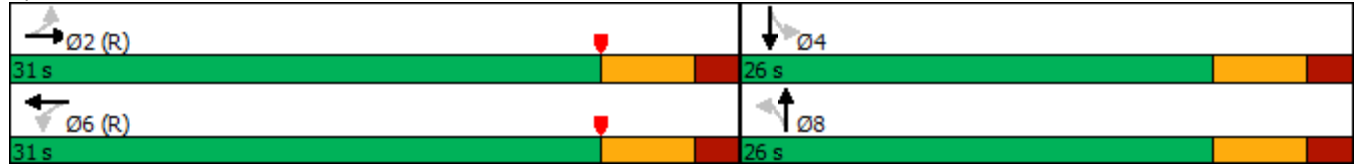
Intersection LOS: B

Intersection Capacity Utilization 70.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Berckman Street & South Avenue



Intersection

Int Delay, s/veh 2.6

Movement EBT EBR WBL WBT NBL NBRLane Configurations 

Traffic Vol, veh/h 353 8 38 338 37 73

Future Vol, veh/h 353 8 38 338 37 73

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 - - 0 0 -

Grade, % 1 - - 0 1 -

Peak Hour Factor 82 82 82 82 82 82

Heavy Vehicles, % 5 0 3 4 6 0

Mvmt Flow 430 10 46 412 45 89

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 440 0 939 435

Stage 1 - - - - 435 -

Stage 2 - - - - 504 -

Critical Hdwy - - 4.13 - 6.66 6.3

Critical Hdwy Stg 1 - - - - 5.66 -

Critical Hdwy Stg 2 - - - - 5.66 -

Follow-up Hdwy - - 2.227 - 3.554 3.3

Pot Cap-1 Maneuver - - 1115 - 274 618

Stage 1 - - - - 629 -

Stage 2 - - - - 582 -

Platoon blocked, % - - - - -

Mov Cap-1 Maneuver - - 1115 - 259 618

Mov Cap-2 Maneuver - - - - 259 -

Stage 1 - - - - 629 -

Stage 2 - - - - 551 -

Approach EB WB NB

HCM Control Delay, s 0 0.8 17.5

HCM LOS C

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h) 421 - - 1115 -

HCM Lane V/C Ratio 0.319 - - 0.042 -

HCM Control Delay (s) 17.5 - - 8.4 0

HCM Lane LOS C - - A A

HCM 95th %tile Q(veh) 1.4 - - 0.1 -

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	5	421	363	4	9	13
Future Vol, veh/h	5	421	363	4	9	13
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	0	-	0	-
Grade, %	-	0	-1	-	1	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	4	4	2	2	2
Mvmt Flow	6	513	443	5	11	16

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	448	0	-	0	971
Stage 1	-	-	-	-	446
Stage 2	-	-	-	-	525
Critical Hdwy	4.12	-	-	-	6.62
Critical Hdwy Stg 1	-	-	-	-	5.62
Critical Hdwy Stg 2	-	-	-	-	5.62
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1112	-	-	-	266
Stage 1	-	-	-	-	629
Stage 2	-	-	-	-	576
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1112	-	-	-	264
Mov Cap-2 Maneuver	-	-	-	-	264
Stage 1	-	-	-	-	624
Stage 2	-	-	-	-	576

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	14.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1112	-	-	-	396
HCM Lane V/C Ratio	0.005	-	-	-	0.068
HCM Control Delay (s)	8.3	0	-	-	14.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	42	293	47	36	250	57	14	260	20	46	196	19
Future Volume (vph)	42	293	47	36	250	57	14	260	20	46	196	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	13	13	13	16	16	16	15	15	15
Grade (%)		1%			-1%			1%			1%	
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		478			607			435			538	
Travel Time (s)		13.0			16.6			11.9			14.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	425	0	0	381	0	0	327	0	0	290	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Minimum Split (s)	31.0	31.0		31.0	31.0		26.0	26.0		26.0	26.0	
Total Split (s)	31.0	31.0		31.0	31.0		26.0	26.0		26.0	26.0	
Total Split (%)	54.4%	54.4%		54.4%	54.4%		45.6%	45.6%		45.6%	45.6%	
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)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		25.0			25.0			20.0			20.0	
Actuated g/C Ratio		0.44			0.44			0.35			0.35	
v/c Ratio		0.50			0.48			0.45			0.45	
Control Delay		13.5			13.3			16.4			16.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.5			13.3			16.4			16.6	
LOS		B			B			B			B	
Approach Delay		13.5			13.3			16.4			16.6	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		94			82			82			72	
Queue Length 95th (ft)		162			145			143			130	
Internal Link Dist (ft)		398			527			355			458	
Turn Bay Length (ft)												
Base Capacity (vph)		854			788			725			648	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.50			0.48			0.45			0.45	

Intersection Summary

Area Type:	Other
Cycle Length:	57
Actuated Cycle Length:	57

Offset: 51 (89%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow

Natural Cycle: 60

Control Type: Pretimed

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 14.7

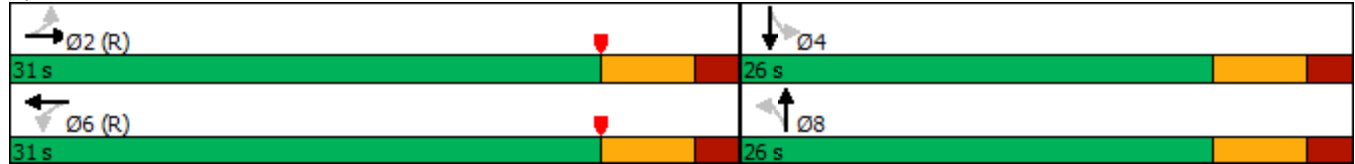
Intersection LOS: B

Intersection Capacity Utilization 67.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Berckman Street & South Avenue



Intersection

Int Delay, s/veh 1.7

Movement EBT EBR WBL WBT NBL NBRLane Configurations 

Traffic Vol, veh/h 346 13 48 317 26 34

Future Vol, veh/h 346 13 48 317 26 34

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 - - 0 0 -

Grade, % 1 - - 0 1 -

Peak Hour Factor 90 90 90 90 90 90

Heavy Vehicles, % 1 0 0 1 4 3

Mvmt Flow 384 14 53 352 29 38

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 398 0 849 391

Stage 1 - - - - 391 -

Stage 2 - - - - 458 -

Critical Hdwy - - 4.1 - 6.64 6.33

Critical Hdwy Stg 1 - - - - 5.64 -

Critical Hdwy Stg 2 - - - - 5.64 -

Follow-up Hdwy - - 2.2 - 3.536 3.327

Pot Cap-1 Maneuver - - 1172 - 314 648

Stage 1 - - - - 664 -

Stage 2 - - - - 617 -

Platoon blocked, % - - - - -

Mov Cap-1 Maneuver - - 1172 - 296 648

Mov Cap-2 Maneuver - - - - 296 -

Stage 1 - - - - 664 -

Stage 2 - - - - 582 -

Approach EB WB NB

HCM Control Delay, s 0 1.1 15

HCM LOS C

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h) 428 - - 1172 -

HCM Lane V/C Ratio 0.156 - - 0.046 -

HCM Control Delay (s) 15 - - 8.2 0

HCM Lane LOS C - - A A

HCM 95th %tile Q(veh) 0.5 - - 0.1 -

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	16	364	358	10	4	7
Future Vol, veh/h	16	364	358	10	4	7
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	0	-	0	-
Grade, %	-	0	-1	-	1	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	1	1	2	2	2
Mvmt Flow	18	404	398	11	4	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	409	0	-	0	844 404
Stage 1	-	-	-	-	404 -
Stage 2	-	-	-	-	440 -
Critical Hdwy	4.12	-	-	-	6.62 6.32
Critical Hdwy Stg 1	-	-	-	-	5.62 -
Critical Hdwy Stg 2	-	-	-	-	5.62 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1150	-	-	-	318 639
Stage 1	-	-	-	-	659 -
Stage 2	-	-	-	-	633 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1150	-	-	-	312 639
Mov Cap-2 Maneuver	-	-	-	-	312 -
Stage 1	-	-	-	-	646 -
Stage 2	-	-	-	-	633 -

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	13
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1150	-	-	-	463
HCM Lane V/C Ratio	0.015	-	-	-	0.026
HCM Control Delay (s)	8.2	0	-	-	13
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1