



McDonough & Rea Associates, Inc.

Traffic and Transportation Consulting

Kevin P. McDonough (1953-1994)
John H. Rea, P.E.
Jay S. Troutman, Jr., P.E.
Scott T. Kennel

*Revised November 1, 2023
March 3, 2022*

Town of Clinton Land Use Board
Municipal Building
43 Leigh St.
P.O. Box 5194
Clinton, NJ 08809

Re: Clinton Commons
Lot 32 in Block 14
Town of Clinton, Hunterdon County
MRA File No. 17-182

Dear Board Members:

McDonough and Rea Associates (MRA) has been asked to prepare a *Traffic Statement* for plans prepared by E&LP, for construction of a mixed-use residential/commercial development on the noted property. The property is located along the southbound lanes of New Jersey State Route 31 south of its intersection with Halstead Street. *Figure 1, a Site Location Map in the Appendix*, shows the approximate location of the property.

Access is proposed from 2 right-in/right-out driveways from/to the southbound lanes of Route 31. According to the Site Plan, the following components are proposed:

- 56 Townhomes
- 2,558 SF fast food restaurant with drive-thru
- 21,980 SF supermarket
- 5,700 SF convenience store with gas

Since the subject property is proposing an access to New Jersey State Route 31, which is under the jurisdiction of the New Jersey Department of Transportation (NJDOT) a permit will be required from NJDOT and a more detailed, *Traffic Impact Analysis* will be required as part of the NJDOT application. The Town of Clinton will be copied on the NJDOT application and the NJDOT *Traffic Impact Analysis*.

This *Traffic Statement* will focus on projected levels of service at the site access to Route 31 as well as the Route 31/Georges Place intersection and Georges Place/Center Street intersection availability and accessibility of the parking supply.

Please reply to:

- 1431 Lakewood Road, Suite C, Manasquan, NJ 08736 • (732) 528-7076 • Fax (732) 528-6673
- 105 Elm Street, Lower Level, Westfield, NJ 07090 • (908) 789-7180 • Fax (908) 789-7181



McDonough & Rea Associates, Inc.

Traffic and Transportation Consulting

1431 Lakewood Road, Suite C, Manasquan, NJ 08736 • (732) 528-7076 • Fax (732) 528-6673
105 Elm Street, Lower Level, Westfield, NJ 07090 • (908) 789-7180 • Fax (908) 789-7181

Town of Clinton Land Use Board

-2-

November 1, 2023

SCOPE OF STUDY

In order to prepare this *Traffic Statement*, MRA has conducted the following tasks:

1. Made field visits to the site to establish existing roadway and traffic conditions in the area.
2. Conducted peak hour traffic counts for the critical weekday AM and PM peak hours at the intersection of Route 31/Georges Place.
3. Prepared estimates of site generated traffic to be generated by the residential and commercial uses based upon the *11th Edition* of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*.
4. Prepared estimates of future traffic volume demand for the design year of the project (2027) including historical background traffic growth rate data in the area from NJDOT *Historical Traffic Volume* data.
5. Conducted level of service capacity analyses for the Route 31 driveways.
6. Reviewed the site with respect to availability and accessibility of the parking supply and conformance with Town of Clinton ordinance requirements.

The following report sets forth the database accumulated and the conclusions reached with respect to the proposed mixed-use development.

EXISTING CONDITIONS

The subject property is located along the southbound lanes of Route 31 south of its intersection with Halstead Street and north of Georges Place. Along the property frontage, Route 31 provides for 2 southbound lanes and a full width shoulder.

The subject property contains 28 acres located north of Georges Place, bounded to the east by Route 31 and bounded to the west by the south branch of the Raritan River.



McDonough & Rea Associates, Inc.

Traffic and Transportation Consulting

1431 Lakewood Road, Suite C, Manasquan, NJ 08736 • (732) 528-7076 • Fax (732) 528-6673
 105 Elm Street, Lower Level, Westfield, NJ 07090 • (908) 789-7180 • Fax (908) 789-7181

Town of Clinton Land Use Board

-3-

November 1, 2023

EXISTING TRAFFIC VOLUMES

Traffic volume data was collected in September 2023 during the weekday AM peak street hour and weekday PM peak street hour at the intersection of Route 31 and Georges Place and Georges Place/Center Street. These are the timeframes when the combination of traffic on the adjacent roadway network and traffic generated by the commercial uses and the townhomes will be at a maximum. *Figure 2* in the *Appendix* illustrates weekday AM peak street hour and PM peak street hour traffic volumes.

TRIP GENERATION

Estimates of traffic to be generated by the commercial and residential uses were made after consulting the *11th Edition* of the *ITE Trip Generation* manual and trip generation rates published by the NJDOT in the *State Highway Management Code* that is mandated for preparation of traffic studies on the State highway system. *Table I* illustrates the anticipated peak hour traffic generation and includes *pass-by* traffic for the convenience store with gas and the fast food with drive-thru restaurant in accordance with ITE data. *Pass-by* traffic is traffic that is already on the adjacent roadway network and is therefore not *new* traffic generated to the area but is diverted into the site driveways as they are passing the site. *Pass-by* traffic tends to limit the impact of uses such as a convenience store with gas sales and fast-food restaurant on the adjacent roadway network.

**TABLE II
 TRIP GENERATION
 CLINTON COMMONS**

USE	AM PSH			PM PSH		
	IN	OUT	TOTAL	IN	OUT	TOTAL
56 Townhomes LUC 215	9	18	27	18	14	32
2,558 SF FF Rest. w/drive-thru LUC 934	59	58	117	46	42	88
Pass-by trips	-29	-29	-58	-23	-71	-44
21,988 Supermarket LUC 850	38	25	63	99	99	198
Pass-by trips	-	-	-	-35	-35	-70
5,700 SF Convenience Store w/gas LUC 945	154	154	308	154	154	308
Pass-by trips	-117	-117	-234	-117	-117	-234
Total Site Trips	260	255	515	317	309	626
Total Pass-by Trips	-146	-146	-292	-175	-173	-348
Total New Site Trips	114	109	223	142	136	278



ANALYSIS OF FUTURE TRAFFIC VOLUMES

A design year of 2027 was assumed for analysis after consultation with the client and in expectation of necessary approvals from the Town of Clinton, Hunterdon County and the NJDOT. The NJDOT's *Historical Growth Rate* data for the area was consulted with a finding that traffic volumes are anticipated to grow at a rate of 1.25 percent per year for Route 31. In order to prepare a conservative analysis, MRA assumed a 1.5 percent per year background traffic growth rate of 1.5 percent for 3 years and 0.5 percent for 2 years onto the 2022 adjusted traffic volumes for Route 31 in accordance with NJDOT protocol. *Figure 4* in the *Appendix* illustrates year 2027 post-development traffic volumes.

Traffic engineers calculate levels of service of unsignalized intersections which relate to the quality of traffic flow. Level of service is a measure of average control delay. Average control delay is the time lost due to deceleration and the amount of time from when a vehicle is stopped for a traffic control device (or at the end of the queue) to when the vehicle departs the intersection. Delay is a relative quantity of driver discomfort, frustration, fuel consumption, and loss in travel time.

Levels of service range from "A" to "F" with "A" being the highest or best attainable level of service. Level of service "E" with average control delays of not more than 50 seconds per vehicle at an unsignalized intersection indicates near to or at capacity conditions and is generally considered the limit of acceptable level of service and delay.

Full definitions of levels of service for unsignalized intersections as well as level of service summaries are included in the *Appendix*. The intersections studied by this report were analyzed according to the procedures set forth in the *Highway Capacity Manual 2010*, using the *Highway Capacity Software (HCS)*.

ROUTE 31 DRIVEWAYS

Findings at the Route 31 driveways were that exiting movements from the north driveway to Route 31 will do so at level of service "D" during both the AM and PM peak street hours for the 2027 design year. Exiting movements from the south driveway to Route 31 will operate at level of service "C" during both the AM and PM peak street hours for the 2027 design year.



McDonough & Rea Associates, Inc.

Traffic and Transportation Consulting

1431 Lakewood Road, Suite C, Manasquan, NJ 08736 • (732) 528-7076 • Fax (732) 528-6673
105 Elm Street, Lower Level, Westfield, NJ 07090 • (908) 789-7180 • Fax (908) 789-7181

Town of Clinton Land Use Board

-5-

November 1, 2023

ROUTE 31/GEORGES PLACE

Findings at this location were that exiting movements from Georges Place onto southbound Route 31 will do so at level of service “C” during both the AM and PM peak street hours for the 2027 design year.

GEORGES PLACE/CENTER STREET

Findings at this unsignalized intersection were that all movements would operate at level of service “A” during both the AM and PM peak street hours for the 2027 design year.

PARKING

Based on the Town of Clinton ordinance requirements, 216 parking spaces (including 40 banked spaces) are proposed to support the 3 commercial buildings. One hundred and seventy-seven (177) spaces are required by The Town of Clinton and 216 spaces are provided. Therefore, parking is deemed to be well distributed among the 3 commercial buildings and appropriate for the uses under consideration.

The parking supply for the townhomes exceeds the requirements of the New Jersey Residential Site Improvement Standards (RSIS) of 134 spaces where 233 garage, driveway and visitor parking spaces are provided.

CONCLUSIONS

It is concluded, based on the analysis set forth in this report, that exiting movements at the Route 31 driveways and at the offsite intersection of Route 31/Georges Place and Georges Place/Center Street will do so at acceptable levels of service for the 2027 design year.

The foregoing analyses assumes construction of a southbound right turn lane on Route 31 at the primary northerly driveway.

The 216 parking spaces provided for the 3 commercial buildings exceeds the Town of Clinton ordinance requirement of 177 spaces and parking is therefore deemed to be adequate for the commercial uses. The parking supply for the townhomes meets and exceeds the RSIS requirement.



McDonough & Rea Associates, Inc.

Traffic and Transportation Consulting

1431 Lakewood Road, Suite C, Manasquan, NJ 08736 • (732) 528-7076 • Fax (732) 528-6673
105 Elm Street, Lower Level, Westfield, NJ 07090 • (908) 789-7180 • Fax (908) 789-7181

Town of Clinton Land Use Board

-6-

November 1, 2023

A representative of MRA will be in attendance at an upcoming Town of Clinton public hearing to provide expert testimony and answer any questions board members, board experts or the public may have.

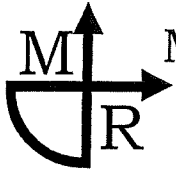
Very truly yours,

John H. Rea, PE
Principal

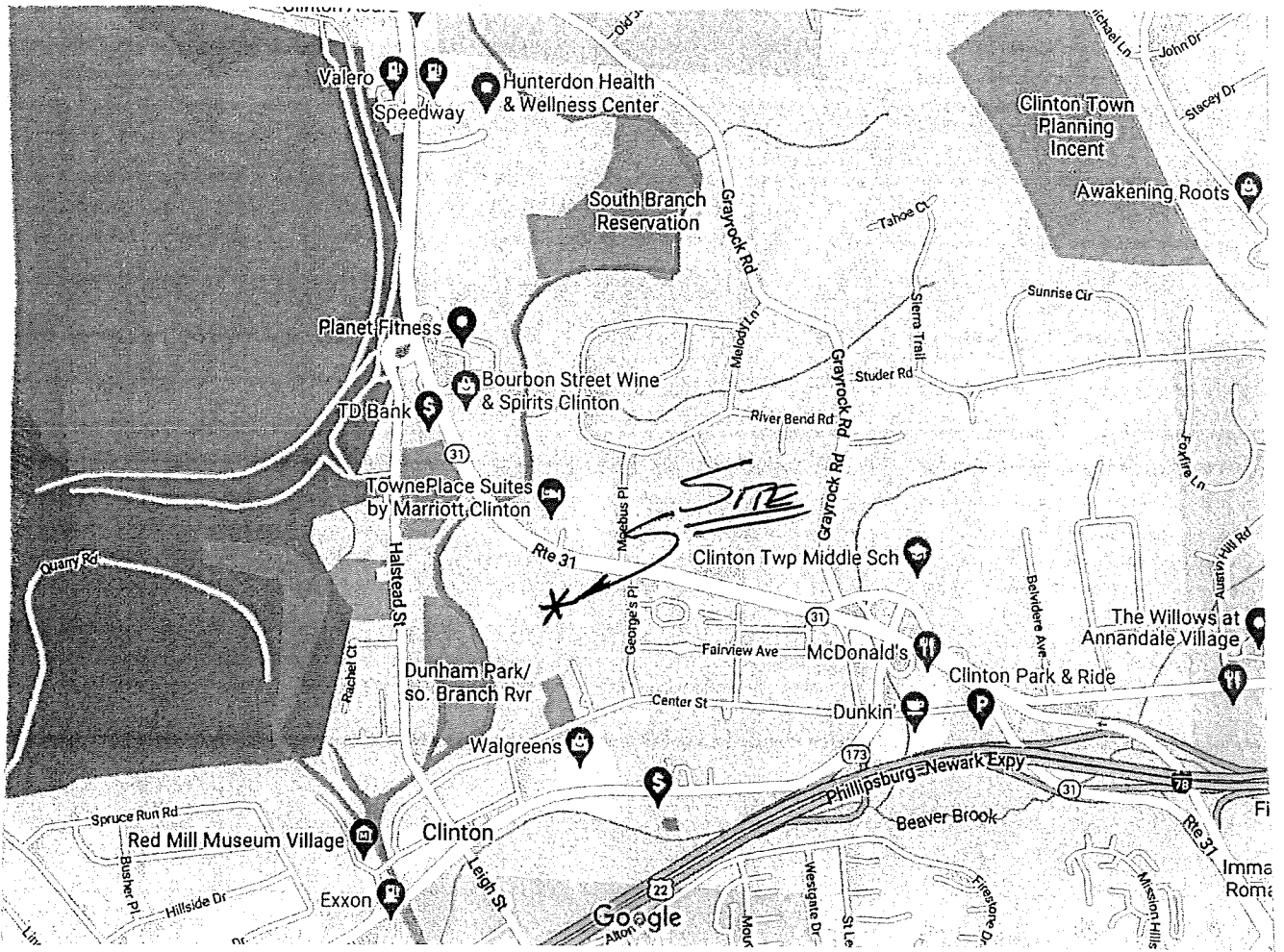
Scott T. Kennel
Sr. Associate

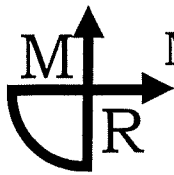
cc: Bhaskar Halari, PE

APPENDIX



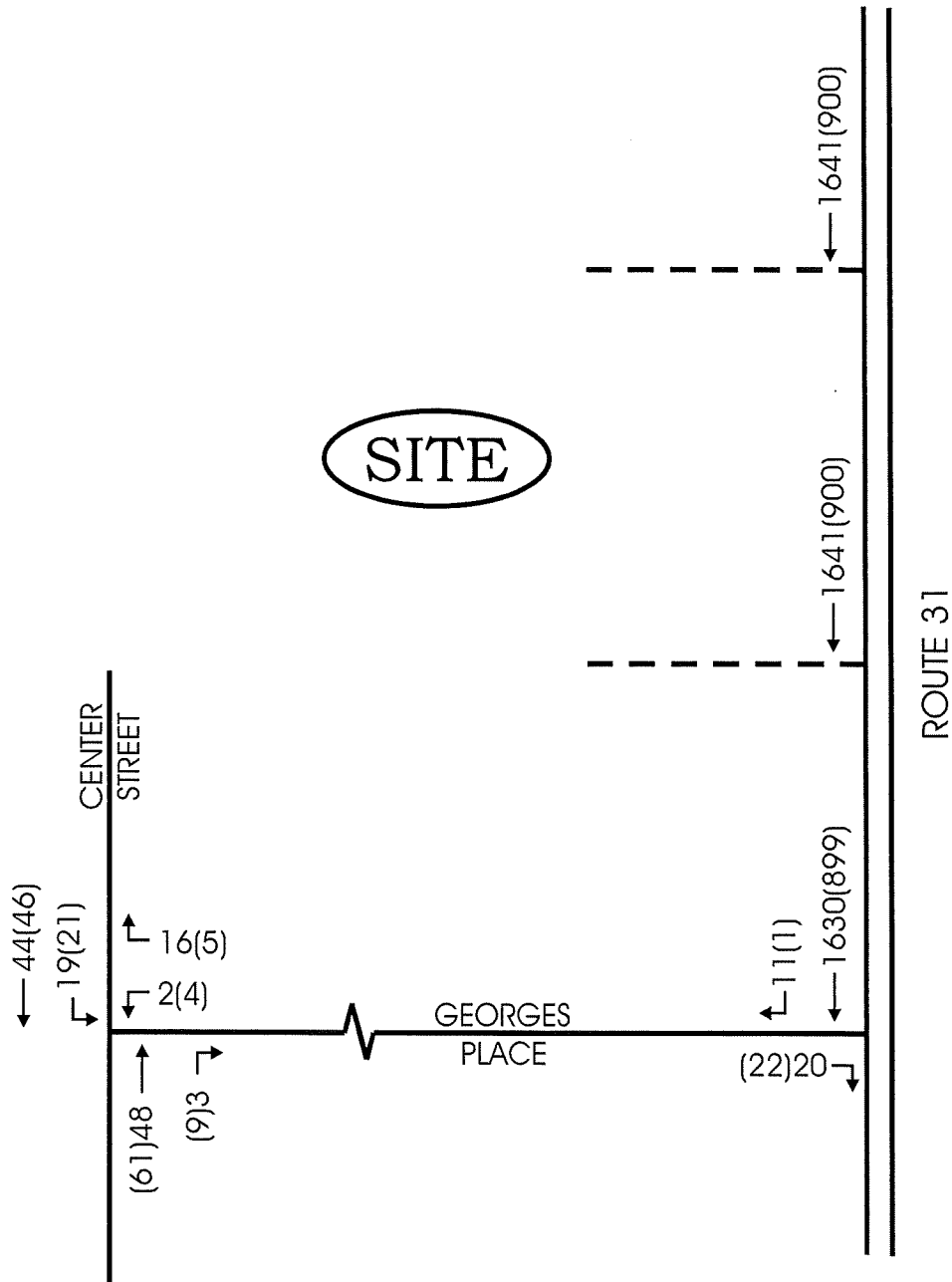
SUBJECT: CLINTON COMMONS - TOWN OF CLINTON, HUNTERDON CO.
SITE LOCATION MAP



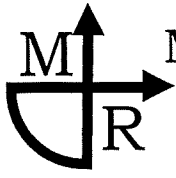


SUBJECT:

CLINTON COMMONS
EXISTING AM PSH(PM PSH) TRAFFIC VOLUMES

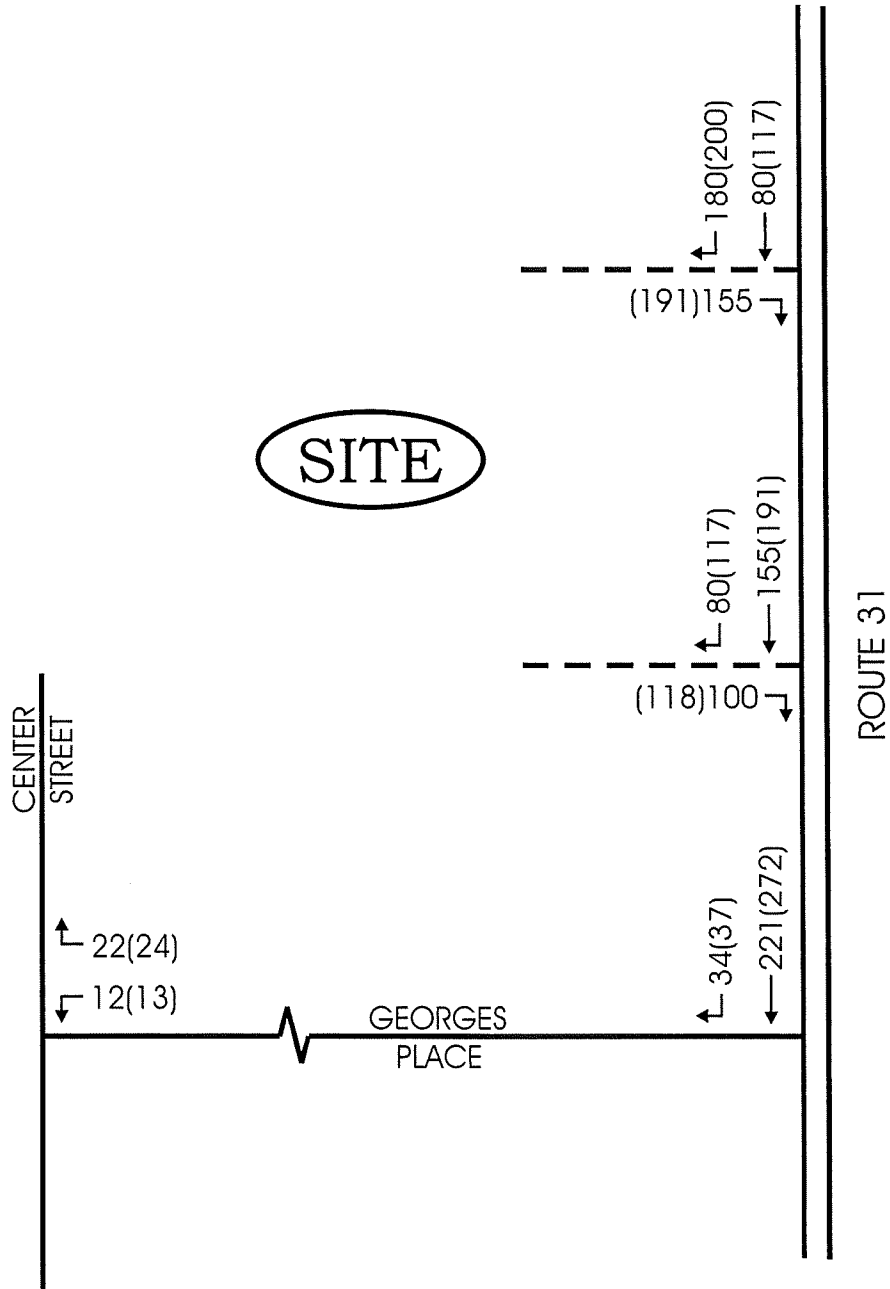


LEGEND: ← AM PSH(PM PSH)

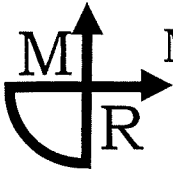


SUBJECT:

CLINTON COMMONS
SITE GENERATED TRAFFIC VOLUMES



LEGEND: ← AM PSH (PM PSH)

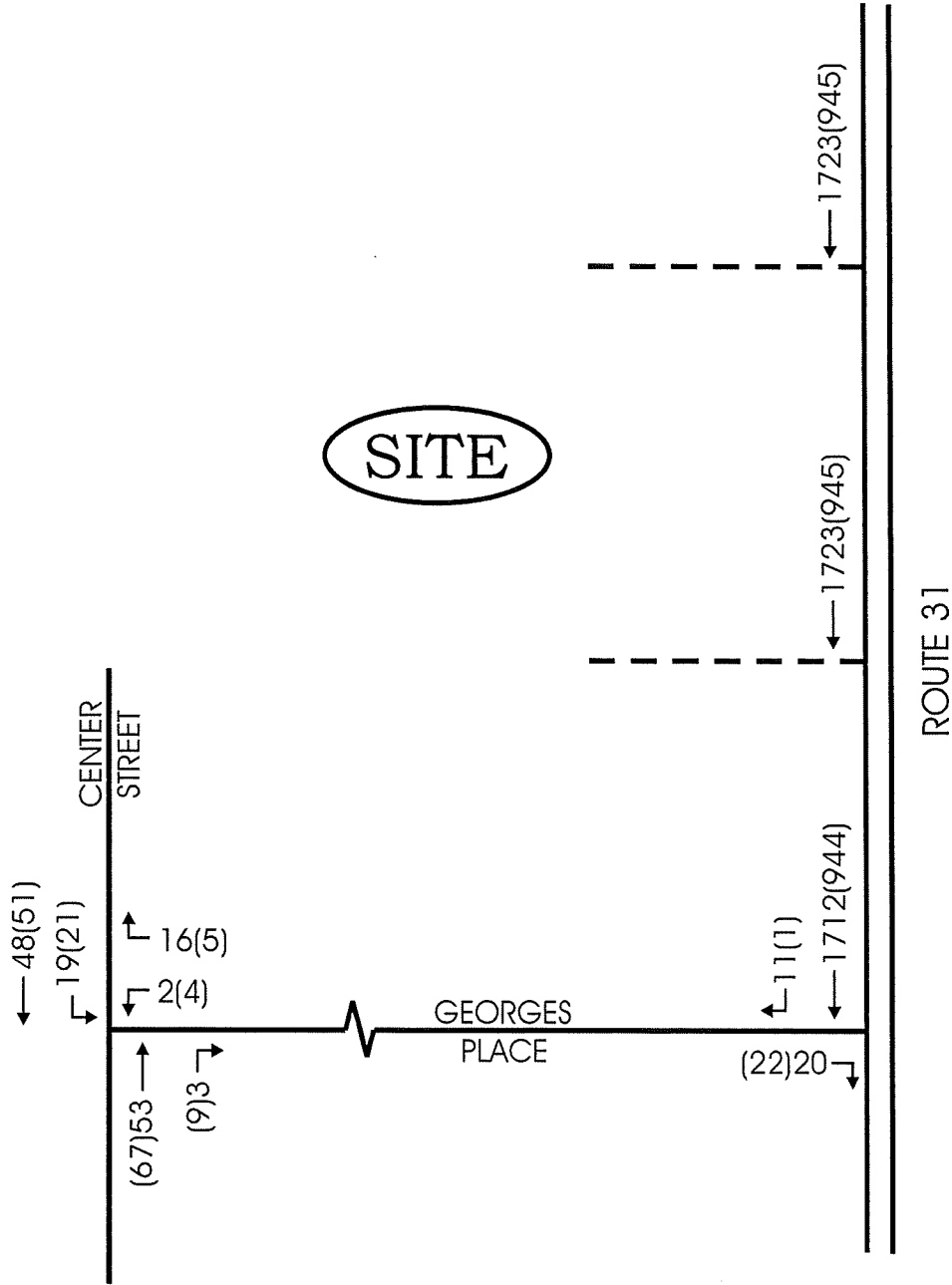


SUBJECT:

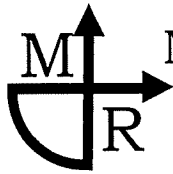
CLINTON COMMONS
2027 NO - BUILD TRAFFIC VOLUMES



SITE

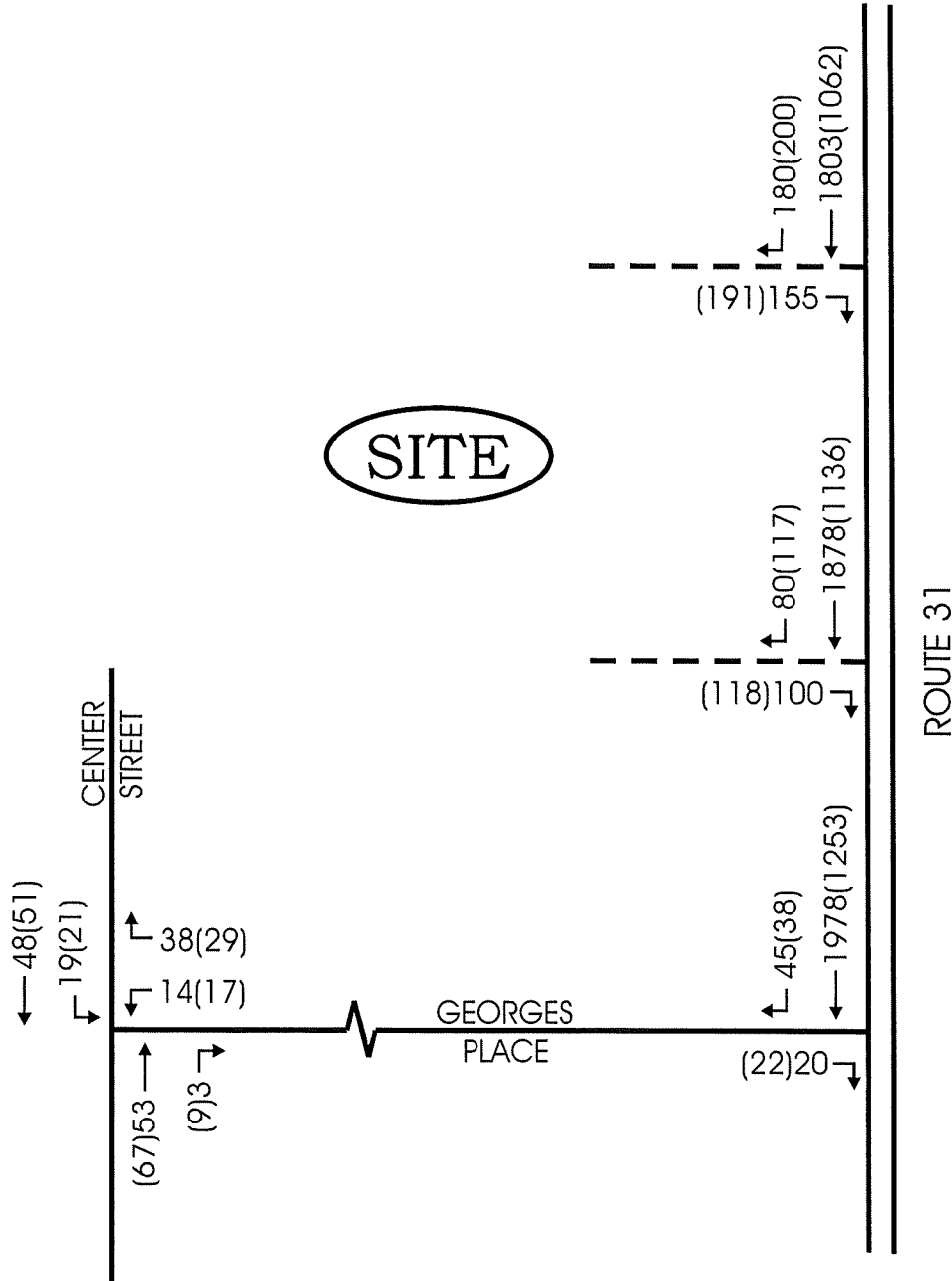


LEGEND: ← AM PSH(PM PSH)



SUBJECT:

CLINTON COMMONS
2027 BUILD TRAFFIC VOLUMES



LEGEND: ← AM PSH (PM PSH)

**LEVEL OF SERVICE CRITERIA
FOR
TWO-WAY STOP-CONTROLLED INTERSECTIONS¹**

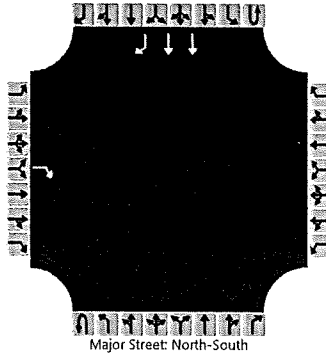
<u>Level of Service</u>	<u>Average Control Delay</u>
A	≤ 10.0 Seconds Per Vehicle
B	> 10.0 and ≤ 15.0 Seconds Per Vehicle
C	> 15.0 and ≤ 25.0 Seconds Per Vehicle
D	> 25.0 and ≤ 35.0 Seconds Per Vehicle
E	> 35.0 and ≤ 50.0 Seconds Per Vehicle
F	> 50.0 Seconds Per Vehicle

¹ Transportation Research Board, Highway Capacity Manual 2022, National Research Council, Washington, DC, 2022.

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	STK			Intersection	RT 31SB & NORTH ACCESS		
Agency/Co.	MRA			Jurisdiction			
Date Performed	10/23/23			East/West Street	NORTH ACCESS		
Analysis Year	2027			North/South Street	ROUTE 31		
Time Analyzed	AM			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	17-182AFB-1 BUILD						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	0	1		0	0	0	0	0	0	0	0	0	2	1	
Configuration				R											T	R	
Volume (veh/h)				155											1803	180	
Percent Heavy Vehicles (%)				3													
Proportion Time Blocked				0.700													
Percent Grade (%)	0																
Right Turn Channelized	No												No				
Median Type Storage	Undivided																

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9													
Critical Headway (sec)				6.96													
Base Follow-Up Headway (sec)				3.3													
Follow-Up Headway (sec)				3.33													

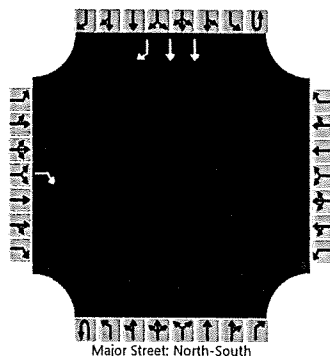
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				163													
Capacity, c (veh/h)				324													
v/c Ratio				0.50													
95% Queue Length, Q ₉₅ (veh)				2.7													
Control Delay (s/veh)				26.8													
Level of Service (LOS)				D													
Approach Delay (s/veh)	26.8																
Approach LOS	D																

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	STK	Intersection	RT 31SB & NORTH ACCESS				
Agency/Co.	MRA	Jurisdiction					
Date Performed	10/23/2023	East/West Street	NORTH ACCESS				
Analysis Year	2027	North/South Street	ROUTE 31				
Time Analyzed	PM	Peak Hour Factor	0.95				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	17-182PFB-1 BUILD						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	0	1		0	0	0	0	0	0	0	0	0	2	1	
Configuration				R											T	R	
Volume (veh/h)				191											1062	200	
Percent Heavy Vehicles (%)				3													
Proportion Time Blocked				0.700													
Percent Grade (%)	0																
Right Turn Channelized	No												No				
Median Type Storage	Undivided																

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9													
Critical Headway (sec)				6.96													
Base Follow-Up Headway (sec)				3.3													
Follow-Up Headway (sec)				3.33													

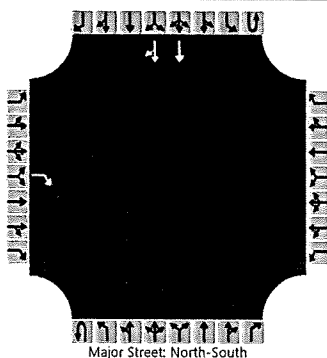
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				201													
Capacity, c (veh/h)				324													
v/c Ratio				0.62													
95% Queue Length, Q ₉₅ (veh)				3.9													
Control Delay (s/veh)				32.6													
Level of Service (LOS)				D													
Approach Delay (s/veh)	32.6																
Approach LOS	D																

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	STK	Intersection	RT 31SB & SOUTH ACCESS				
Agency/Co.	MRA	Jurisdiction					
Date Performed	10/23/23	East/West Street	SOUTH ACCESS				
Analysis Year	2027	North/South Street	ROUTE 31				
Time Analyzed	AM	Peak Hour Factor	0.95				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	17-182AFB-2 BUILD						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	0	1		0	0	0	0	0	0	0	0	0	2	0	
Configuration				R											T	TR	
Volume (veh/h)				100											1878	80	
Percent Heavy Vehicles (%)				3													
Proportion Time Blocked				0.700													
Percent Grade (%)	0																
Right Turn Channelized	No																
Median Type Storage	Undivided																

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9													
Critical Headway (sec)				6.96													
Base Follow-Up Headway (sec)				3.3													
Follow-Up Headway (sec)				3.33													

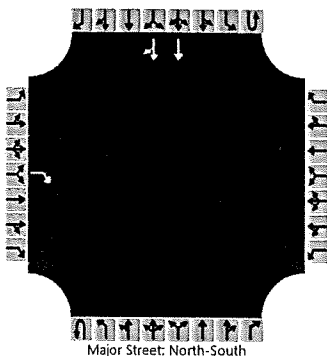
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				105													
Capacity, c (veh/h)				324													
v/c Ratio				0.32													
95% Queue Length, Q ₉₅ (veh)				1.4													
Control Delay (s/veh)				21.3													
Level of Service (LOS)				C													
Approach Delay (s/veh)	21.3																
Approach LOS	C																

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	STK	Intersection	RT 31SB & SOUTH ACCESS				
Agency/Co.	MRA	Jurisdiction					
Date Performed	10/23/23	East/West Street	SOUTH ACCESS				
Analysis Year	2027	North/South Street	ROUTE 31				
Time Analyzed	PM	Peak Hour Factor	0.95				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	17-182PFB-2 BUILD						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	0	0	0	0	0	2	0
Configuration				R											T	TR
Volume (veh/h)				118											1136	117
Percent Heavy Vehicles (%)				3												
Proportion Time Blocked				0.700												
Percent Grade (%)	0															
Right Turn Channelized	No															
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9												
Critical Headway (sec)				6.96												
Base Follow-Up Headway (sec)				3.3												
Follow-Up Headway (sec)				3.33												

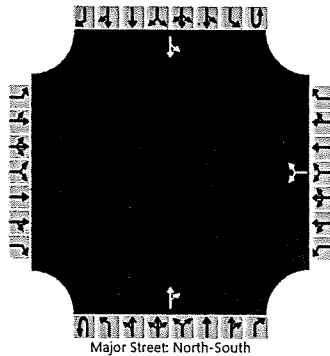
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				124												
Capacity, c (veh/h)				324												
v/c Ratio				0.38												
95% Queue Length, Q ₉₅ (veh)				1.7												
Control Delay (s/veh)				22.8												
Level of Service (LOS)				C												
Approach Delay (s/veh)	22.8															
Approach LOS	C															

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	STK			Intersection	CENTER & GEORGES PL		
Agency/Co.	MRA			Jurisdiction			
Date Performed	10/23/23			East/West Street	GEORGES PL		
Analysis Year	2027			North/South Street	CENTER ST		
Time Analyzed	AM			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	17-182AFB-4 BUILD						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement									1U	1	2	3	4U	4	5	6
Priority		10	11	12		7	8	9								
Number of Lanes		0	0	0		0	1	0		0	1	0		0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						14		38			53	3		19	48	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

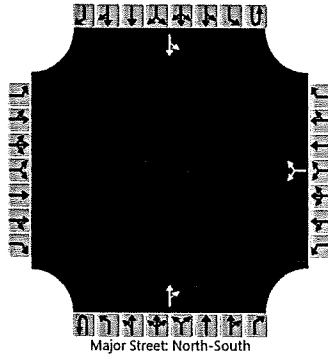
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						55								20		
Capacity, c (veh/h)						952								1539		
v/c Ratio						0.06								0.01		
95% Queue Length, Q ₉₅ (veh)						0.2								0.0		
Control Delay (s/veh)						9.0								7.4	0.1	
Level of Service (LOS)						A								A	A	
Approach Delay (s/veh)					9.0								2.2			
Approach LOS					A								A			

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	STK			Intersection	CENTER & GEORGES PL		
Agency/Co.	MRA			Jurisdiction			
Date Performed	10/23/23			East/West Street	GEORGES PL		
Analysis Year	2027			North/South Street	CENTER ST		
Time Analyzed	PM			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	17-182PFB-4 BUILD						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						17		29			67	9		21	51	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

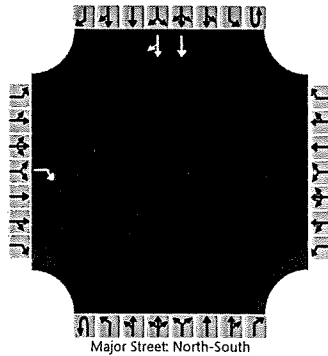
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						48								22		
Capacity, c (veh/h)						908								1512		
v/c Ratio						0.05								0.01		
95% Queue Length, Q ₉₅ (veh)						0.2								0.0		
Control Delay (s/veh)						9.2								7.4	0.1	
Level of Service (LOS)						A								A	A	
Approach Delay (s/veh)					9.2								2.2			
Approach LOS					A								A			

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	STK			Intersection	RT 31SB & GEORGES PL		
Agency/Co.	MRA			Jurisdiction			
Date Performed	10/23/23			East/West Street	GEORGES PL		
Analysis Year	2027			North/South Street	ROUTE 31		
Time Analyzed	PM			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	17-182PFB-3 BUILD						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	0	0	0	0	0	2	0
Configuration				R											T	TR
Volume (veh/h)				22											1235	38
Percent Heavy Vehicles (%)				3												
Proportion Time Blocked				0.700												
Percent Grade (%)	0															
Right Turn Channelized	No															
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9												
Critical Headway (sec)				6.96												
Base Follow-Up Headway (sec)				3.3												
Follow-Up Headway (sec)				3.33												

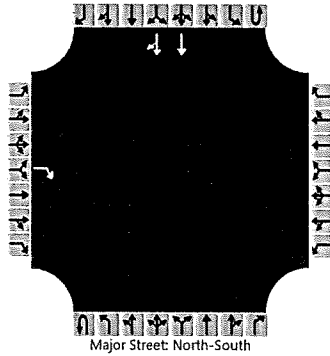
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				23												
Capacity, c (veh/h)				324												
v/c Ratio				0.07												
95% Queue Length, Q ₉₅ (veh)				0.2												
Control Delay (s/veh)				17.0												
Level of Service (LOS)				C												
Approach Delay (s/veh)	17.0															
Approach LOS	C															

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	STK			Intersection	RT 31SB & GEORGES PL		
Agency/Co.	MRA			Jurisdiction			
Date Performed	10/23/23			East/West Street	GEORGES PL		
Analysis Year	2027			North/South Street	ROUTE 31		
Time Analyzed	AM			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	17-182AFB-3 BUILD						

Lanes



Vehicle Volumes and Adjustments

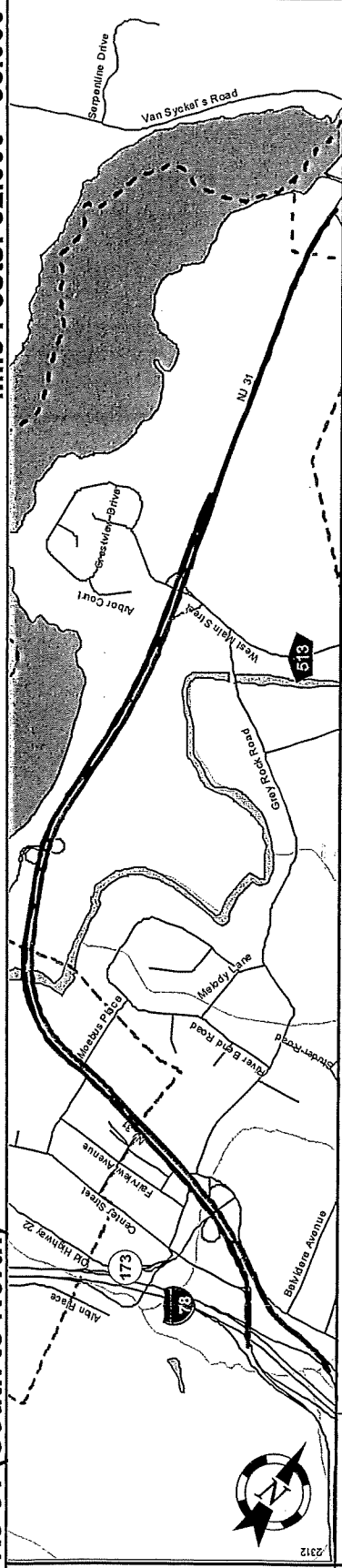
Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	0	0	0	0	0	2	0
Configuration				R											T	TR
Volume (veh/h)				20											1978	45
Percent Heavy Vehicles (%)				3												
Proportion Time Blocked				0.700												
Percent Grade (%)	0															
Right Turn Channelized	No															
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9												
Critical Headway (sec)				6.96												
Base Follow-Up Headway (sec)				3.3												
Follow-Up Headway (sec)				3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				21												
Capacity, c (veh/h)				324												
v/c Ratio				0.06												
95% Queue Length, Q ₉₅ (veh)				0.2												
Control Delay (s/veh)				16.9												
Level of Service (LOS)				C												
Approach Delay (s/veh)	16.9															
Approach LOS	C															



Pavement	26
Shoulder	24
Number of Lanes	12
Speed Limit	2
Street Name	50
Street Name	NJ 31
Interstate Route	287
US Route	22
NJ Route	33
County Road	689
Interchange Number	2
Grade	◆
Separated Interchange	◆
Traffic Signal	◆
Traffic Monitoring Sites	WIND AVC
Road Underpass	VOL
Road Overpass	◆

Street Name	NJ 31
Jurisdiction	N.J.D.O.T.
Functional Class	Urban Principal Arterial
Federal Aid - NHS Sy.	NHS
Control Section	1013
Speed Limit	50
Number of Lanes	2
Med. Type	Positive
Med. Width	12
Pavement	24
Shoulder	12
Traffic Volume	
Traffic Sta. ID	
Structure No.	1017157 N/A 1004153 1013151
Enlarged Views	1013160



www.TSTData.com
184 Baker Rd

Clinton Twp, NJ
Georges PI & Center St
Tuesday, September 19, 2023
Location: 40.639845, -
74.904373

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Georges PI &
Center St
Site Code:
Start Date: 09/19/2023
Page No: 1

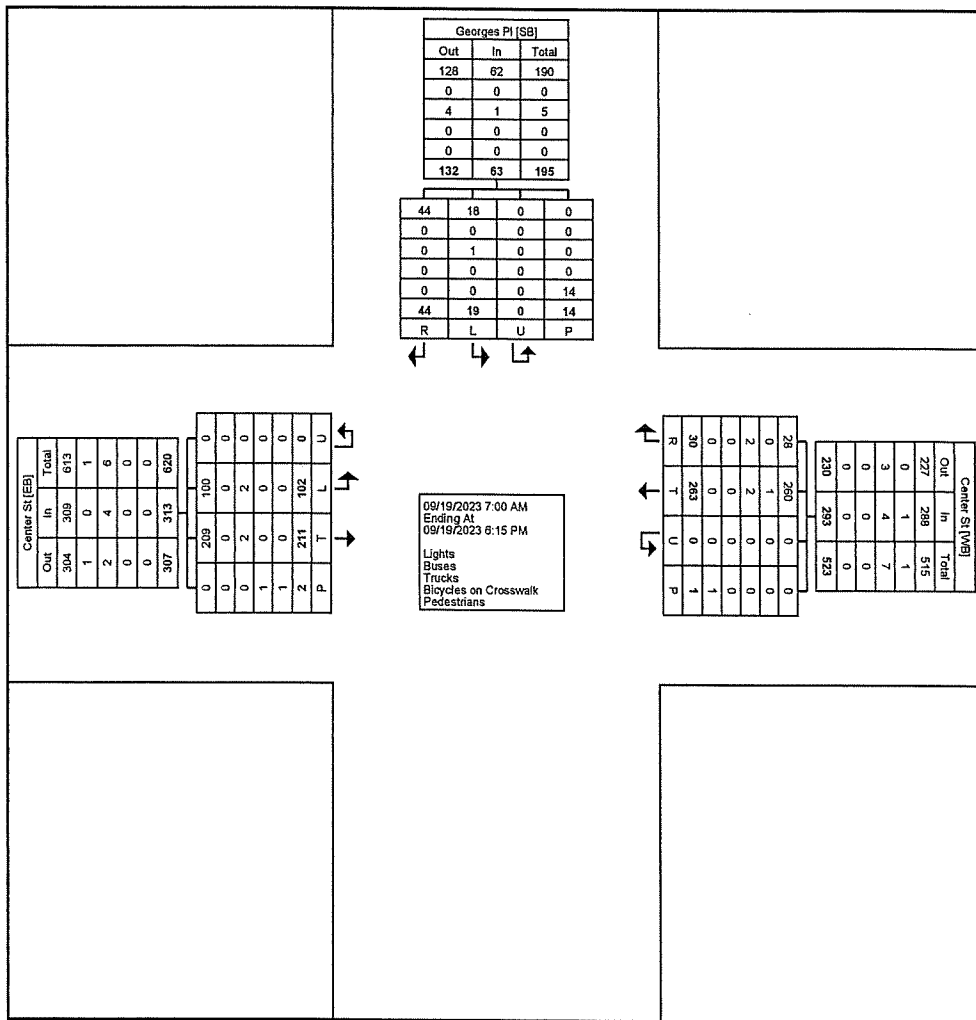
Turning Movement Data

Start Time	Center St Eastbound					Center St Westbound					Georges PI Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	4	7	0	0	11	2	0	0	0	2	3	3	0	0	6	19
7:15 AM	7	3	0	0	10	3	1	0	0	4	2	0	0	2	2	16
7:30 AM	6	9	0	0	15	3	0	0	0	3	3	5	0	0	8	26
7:45 AM	2	5	0	0	7	9	0	0	0	9	2	3	0	1	5	21
Hourly Total	19	24	0	0	43	17	1	0	0	18	10	11	0	3	21	82
8:00 AM	1	6	0	0	7	13	2	0	0	15	0	3	0	0	3	25
8:15 AM	4	7	0	0	11	10	0	0	0	10	0	8	0	0	8	29
8:30 AM	5	11	0	0	16	8	1	0	0	9	2	2	0	2	4	29
8:45 AM	7	14	0	1	21	17	1	0	0	18	0	3	0	1	3	42
Hourly Total	17	38	0	1	55	48	4	0	0	52	2	16	0	3	18	125
9:00 AM	3	12	0	0	15	13	1	0	0	14	0	3	0	1	3	32
9:15 AM	2	5	0	0	7	16	1	0	0	17	1	1	0	0	2	26
9:30 AM	5	9	0	0	14	7	4	0	0	11	0	1	0	0	1	26
9:45 AM	2	6	0	0	8	10	1	0	0	11	0	0	0	0	0	19
Hourly Total	12	32	0	0	44	46	7	0	0	53	1	5	0	1	6	103
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	10	9	0	0	19	11	0	0	0	11	1	3	0	0	4	34
3:15 PM	2	10	0	1	12	11	1	0	0	12	0	1	0	0	1	25
3:30 PM	8	9	0	0	17	13	1	0	0	14	0	0	0	0	0	31
3:45 PM	3	12	0	0	15	11	3	0	0	14	0	1	0	0	1	30
Hourly Total	23	40	0	1	63	46	5	0	0	51	1	5	0	0	6	120
4:00 PM	2	6	0	0	8	10	1	0	0	11	1	0	0	0	1	20
4:15 PM	3	10	0	0	13	13	1	0	0	14	0	0	0	0	0	27
4:30 PM	3	11	0	0	14	14	4	0	0	18	1	1	0	1	2	34
4:45 PM	8	13	0	0	21	16	0	0	1	16	0	2	0	1	2	39
Hourly Total	16	40	0	0	56	53	6	0	1	59	2	3	0	2	5	120
5:00 PM	5	13	0	0	18	18	4	0	0	22	1	1	0	3	2	42
5:15 PM	5	9	0	0	14	13	1	0	0	14	2	1	0	1	3	31
5:30 PM	4	6	0	0	10	8	1	0	0	9	0	1	0	0	1	20
5:45 PM	1	9	0	0	10	14	1	0	0	15	0	1	0	1	1	26
Hourly Total	15	37	0	0	52	53	7	0	0	60	3	4	0	5	7	119
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	102	211	0	2	313	263	30	0	1	293	19	44	0	14	63	669
Approach %	32.6	67.4	0.0	-	-	89.8	10.2	0.0	-	-	30.2	69.8	0.0	-	-	-
Total %	15.2	31.5	0.0	-	46.8	39.3	4.5	0.0	-	43.8	2.8	6.6	0.0	-	9.4	-
Lights	100	209	0	-	309	260	28	0	-	288	18	44	0	-	62	659
% Lights	98.0	99.1	-	-	98.7	98.9	93.3	-	-	98.3	94.7	100.0	-	-	98.4	98.5
Buses	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Buses	0.0	0.0	-	-	0.0	0.4	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.1
Trucks	2	2	0	-	4	2	2	0	-	4	1	0	0	-	1	9
% Trucks	2.0	0.9	-	-	1.3	0.8	6.7	-	-	1.4	5.3	0.0	-	-	1.6	1.3
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	50.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	1	-	-	-	-	14	-	-
% Pedestrians	-	-	-	50.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Clinton Twp, NJ
Georges PI & Center St
Tuesday, September 19, 2023
Location: 40.639845, -
74.904373

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Georges PI &
Center St
Site Code:
Start Date: 09/19/2023
Page No: 2



Turning Movement Data Plot



www.TSTData.com
184 Baker Rd

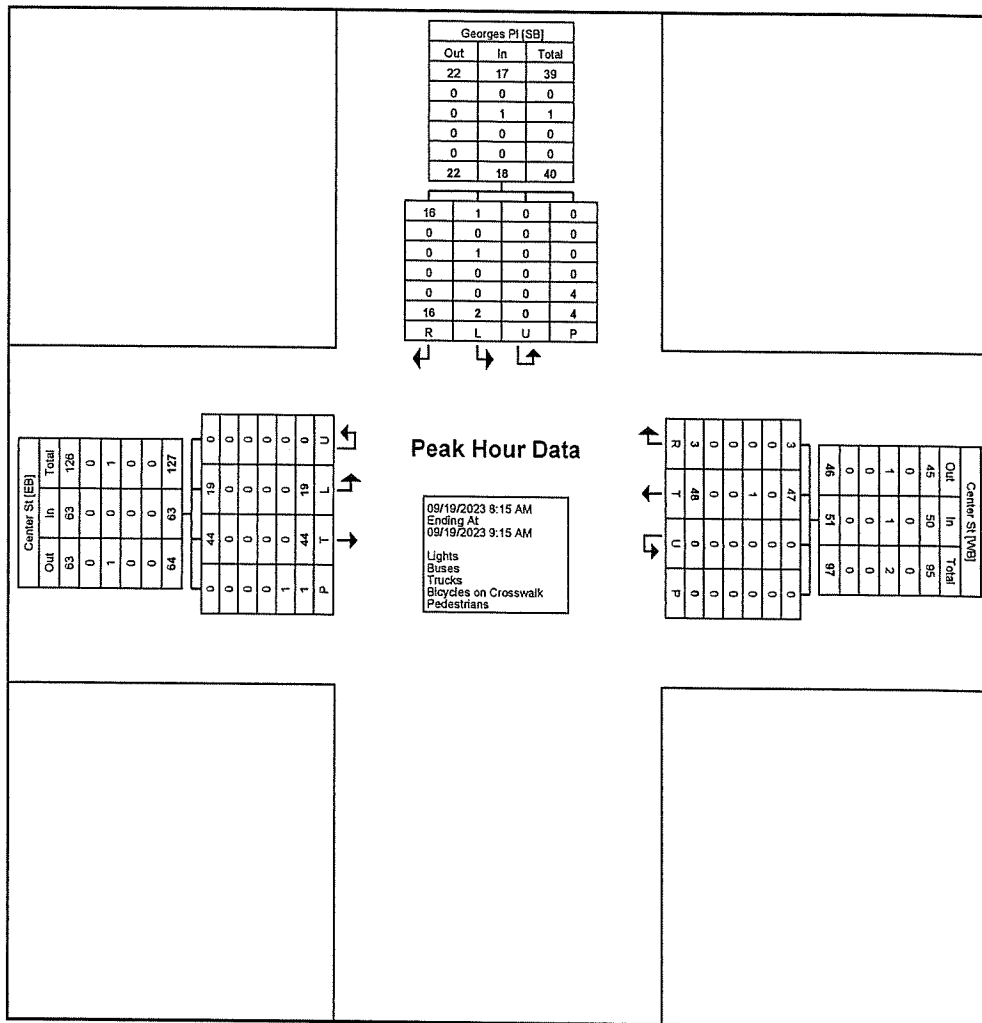
Clinton Twp, NJ
Georges Pl & Center St
Tuesday, September 19, 2023
Location: 40.639845, -
74.904373

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Georges Pl &
Center St
Site Code:
Start Date: 09/19/2023
Page No: 3

Turning Movement Peak Hour Data (8:15 AM)

Start Time	Center St Eastbound					Center St Westbound					Georges Pl Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
8:15 AM	4	7	0	0	11	10	0	0	0	10	0	8	0	0	8	29
8:30 AM	5	11	0	0	16	8	1	0	0	9	2	2	0	2	4	29
8:45 AM	7	14	0	1	21	17	1	0	0	18	0	3	0	1	3	42
9:00 AM	3	12	0	0	15	13	1	0	0	14	0	3	0	1	3	32
Total	19	44	0	1	63	48	3	0	0	51	2	16	0	4	18	132
Approach %	30.2	69.8	0.0	-	-	94.1	5.9	0.0	-	-	11.1	88.9	0.0	-	-	-
Total %	14.4	33.3	0.0	-	47.7	36.4	2.3	0.0	-	38.6	1.5	12.1	0.0	-	13.6	-
PHF	0.679	0.786	0.000	-	0.750	0.706	0.750	0.000	-	0.708	0.250	0.500	0.000	-	0.563	0.786
Lights	19	44	0	-	63	47	3	0	-	50	1	16	0	-	17	130
% Lights	100.0	100.0	-	-	100.0	97.9	100.0	-	-	98.0	50.0	100.0	-	-	94.4	98.5
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	0	0	-	0	1	0	0	-	1	1	0	0	-	1	2
% Trucks	0.0	0.0	-	-	0.0	2.1	0.0	-	-	2.0	50.0	0.0	-	-	5.6	1.5
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	4	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (8:15 AM)



www.TSTData.com
184 Baker Rd

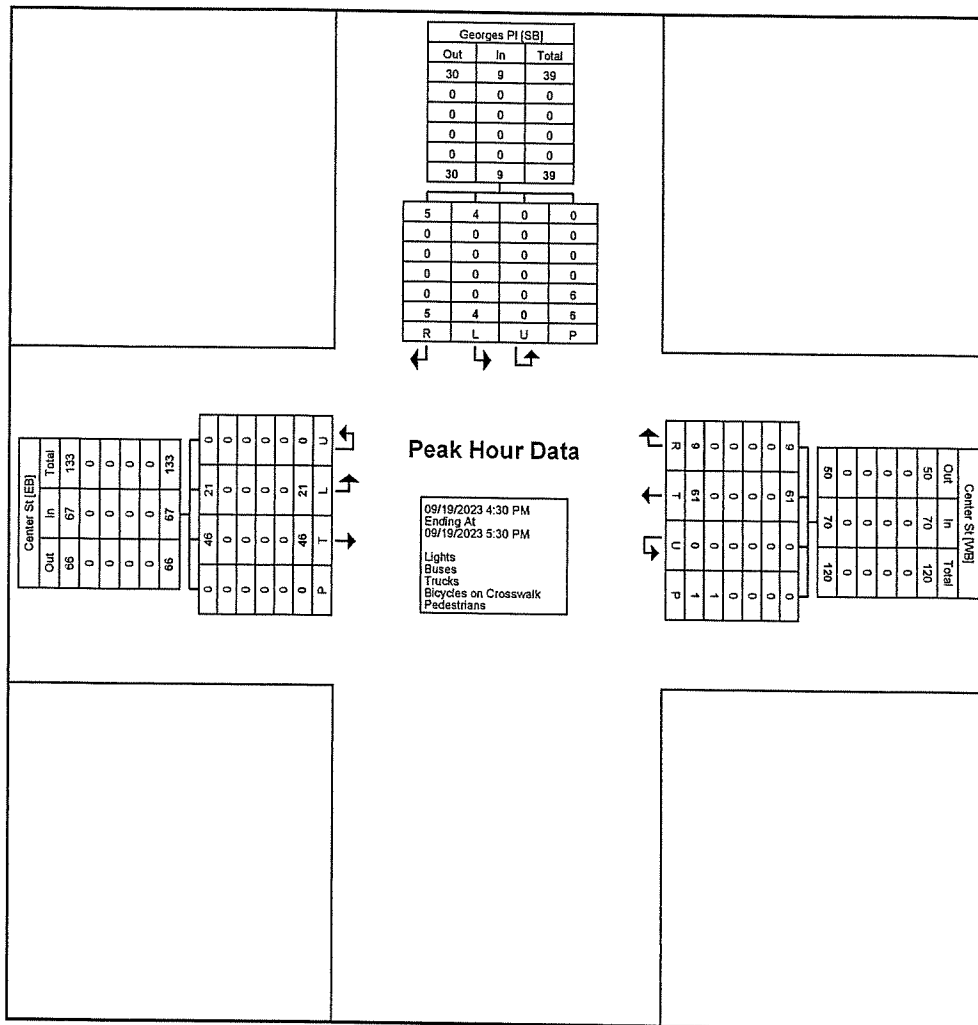
Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Clinton Twp, NJ
Georges PI & Center St
Tuesday, September 19, 2023
Location: 40.639845, -
74.904373

Count Name: Georges PI &
Center St
Site Code:
Start Date: 09/19/2023
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Center St Eastbound					Center St Westbound					Georges PI Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
4:30 PM	3	11	0	0	14	14	4	0	0	18	1	1	0	1	2	34
4:45 PM	8	13	0	0	21	16	0	0	1	16	0	2	0	1	2	39
5:00 PM	5	13	0	0	18	18	4	0	0	22	1	1	0	3	2	42
5:15 PM	5	9	0	0	14	13	1	0	0	14	2	1	0	1	3	31
Total	21	46	0	0	67	61	9	0	1	70	4	5	0	6	9	146
Approach %	31.3	68.7	0.0	-	-	87.1	12.9	0.0	-	-	44.4	55.6	0.0	-	-	-
Total %	14.4	31.5	0.0	-	45.9	41.8	6.2	0.0	-	47.9	2.7	3.4	0.0	-	6.2	-
PHF	0.656	0.885	0.000	-	0.798	0.847	0.563	0.000	-	0.795	0.500	0.625	0.000	-	0.750	0.869
Lights	21	46	0	-	67	61	9	0	-	70	4	5	0	-	9	146
% Lights	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (4:30 PM)