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

April 6, 2021

Borough of Keyport Planning Board
Borough Hall
70 West Front Street
Keyport, NJ 07735

Re: Hudson Pointe at Keyport LLC
Lots 8 & 9 in Block 120
Lots 42 & 48-52 in Block 130
Borough of Keyport, Monmouth County
MRA File No. 19-249

Dear Board Members:

McDonough & Rea Associates (MRA) has been asked to provide the Planning Board with *Traffic Impact Analysis* for the *Hudson Pointe at Keyport* project which will be located on the noted property. The property is located at the end of Maple Place near its intersection with Manchester Avenue as shown on *Figure 1*, a *Site Location Map* in the *Appendix.*

Plans prepared by WJH Engineering (WJH) show the following elements:

- 48 multi-family apartment units
- 12 single family duplex homes
- 2 single family homes
- 1 two-family home

The total number of housing units proposed is therefore 48 multi-family units and 16 single family units (assuming the duplexes and 2-family home were also single family homes for traffic generation purposes).

SCOPE OF STUDY

In order to prepare a thorough *Traffic Impact Analysis* for *Hudson Pointe at Keyport*, MRA conducted the following tasks:

1. Made a field visit to the site to establish existing roadway and traffic conditions in the area.

Please reply to:
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105 Elm Street, Lower Level, Westfield, NJ 07090 • (908) 789-7180 • Fax (908) 789-7181

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2. Conducted peak hour traffic counts at the intersection of Maple Place/Green Grove Road in order to inventory existing peak hour traffic hour volumes in the area.

3. Prepared estimates of traffic to be generated by the residential units based upon Institute of Transportation Engineers (ITE) data.

4. Distributed site generated traffic to the adjacent roadway network in accordance with anticipated origins and destinations.

5. Prepared estimates of future traffic volume demand for a design year of 2025.

6. Conducted level of service capacity analyses for the intersection of Maple Place/Green Grove Road through which most, if not all, site generated traffic will travel.

7. Reviewed the *Site Plan* with respect to New Jersey Residential Site Improvement Standards (RSIS).

The following report sets forth the database accumulated and the conclusions reached with respect to *Hudson Pointe at Keyport.*

EXISTING CONDITIONS

The subject property is located along the north end of Maple Place and previously was utilized as an industrial property. It also has frontage on Manchester Avenue, a 1-way street traveling in a northbound direction. Maple Place is a relatively wide (46 feet) street which will serve as access to the property. Maple Place intersects Green Grove Road at an unsignalized 4-way intersection. Traffic traveling from the project will travel through the Maple Place/Green Grove Road intersection in order to reach major highways such as Route 35 and Route 36.

EXISTING TRAFFIC VOLUMES

Traffic volume data was collected in November 2019 prior to the Covid 19 pandemic shutdowns and is shown on *Figure 2* in the *Appendix.*

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TRIP GENERATION/DISTRIBUTION

Estimates of traffic to be generated by the multi-family units and single family homes were made after consulting the *10th Edition* of the ITE *Trip Generation Manual. Table I* illustrates the anticipated traffic generation during the morning and afternoon peak hours based upon this data.

TABLE I
TRIP GENERATION
48 MULTI-FAMILY & 16 SINGLE FAMILY DWELLINGS

	IN	OUT	TOTAL
AM Peak Street Hour	10	30	40
PM Peak Street Hour	31	18	49

Based on a review of access to higher order roadways such as Route 35 and Route 36 and existing commuter patterns in the area, traffic from *Hudson Pointe at Keyport* was distributed as follows:

- 75 percent to/from Route 35
- 25 percent to/from Route 36

Site generated and distributed traffic volumes are shown on *Figure 3* in the *Appendix*.

ANALYSIS OF FUTURE 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.

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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 *McTrans Highway Capacity Software (HCS)*, release 7.8.5.

Findings were all movements at the intersection of Maple Place/Green Grove Road will operate at level of service "B" or better during the AM and PM peak hours for both the *no-build* and *build* condition. Therefore, this intersection will operate within acceptable traffic engineering parameters.

SITE PLAN AND PARKING

The *Site Plan* prepared by WJH shows a total of 128 parking spaces required under RSIS. Based on the surface parking and on-street parking provided, 139 spaces are provided. Therefore, parking meets and exceeds RSIS

CONCLUSIONS

It is concluded, based on the analysis set forth in this report, that plans to construct 48 multi-family residential units and 16 duplex/townhouse/single family homes on the noted property can be approved and operate compatibility with future traffic conditions in the area. Post-development levels of service for the 2025 design year at Maple Place/Green Grove Road, through which most, if not all, site generated traffic will travel, will operate at level of service "B" or better.

The *Site Plan* itself has been designed with respect to New Jersey RSIS and meets and exceeds RSIS parking requirements.

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A representative from MRA will be in attendance at an upcoming Borough of Keyport Planning Board meeting 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: John Kling
Len Rubinstein
Chrisine Cofone
Sal Alfieri, Esq.
Walter Hopkin, P.E.

APPENDIX

McDONOUGH & REA ASSOCIATES TRAFFIC AND TRANSPORTATION CONSULTING	FIGURE 1	
	JOB NO. 19-249	DATE: APR 2021

SUBJECT:

HUDSON POINTE - KEYPORT
SITE LOCATION MAP

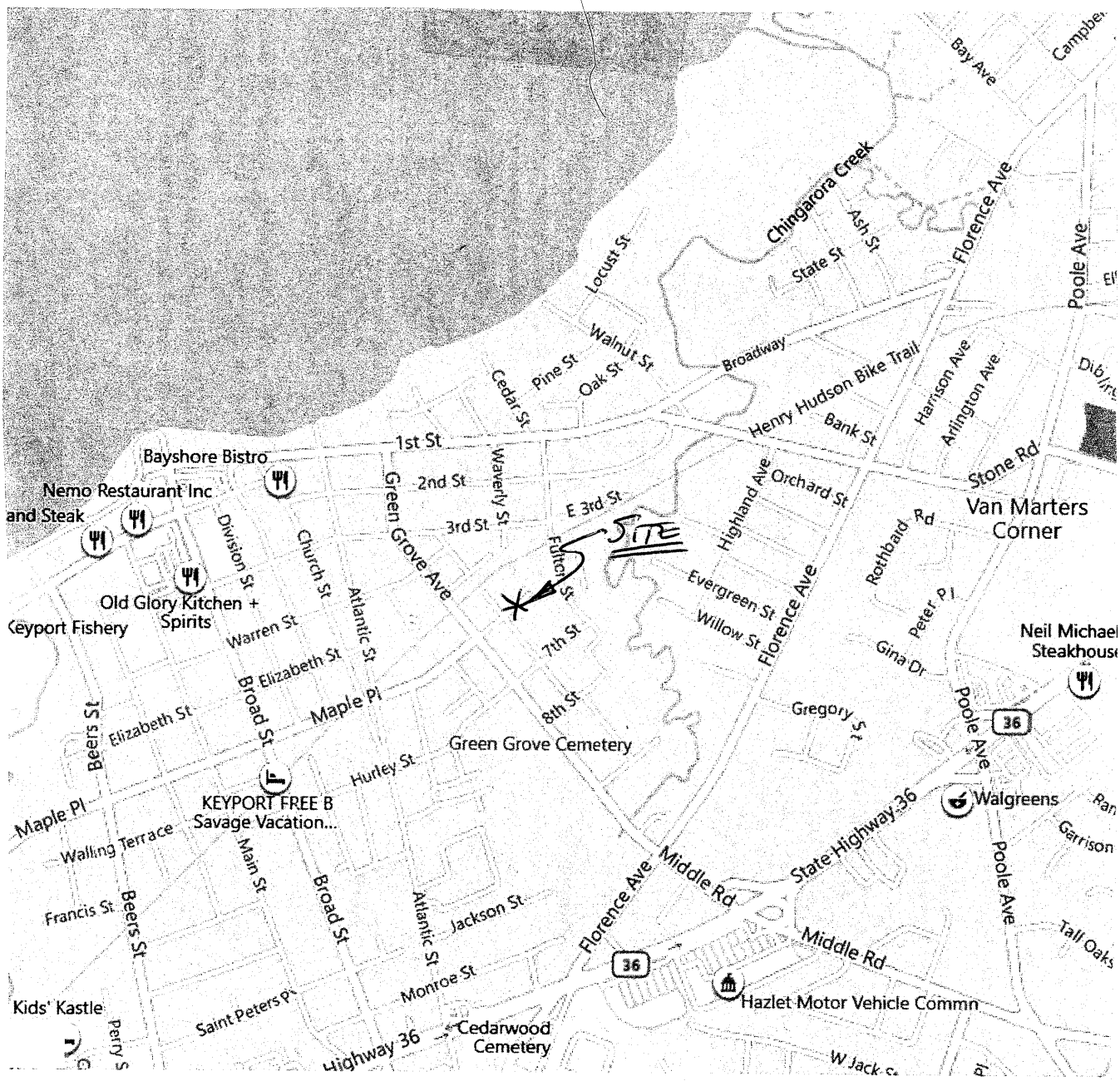

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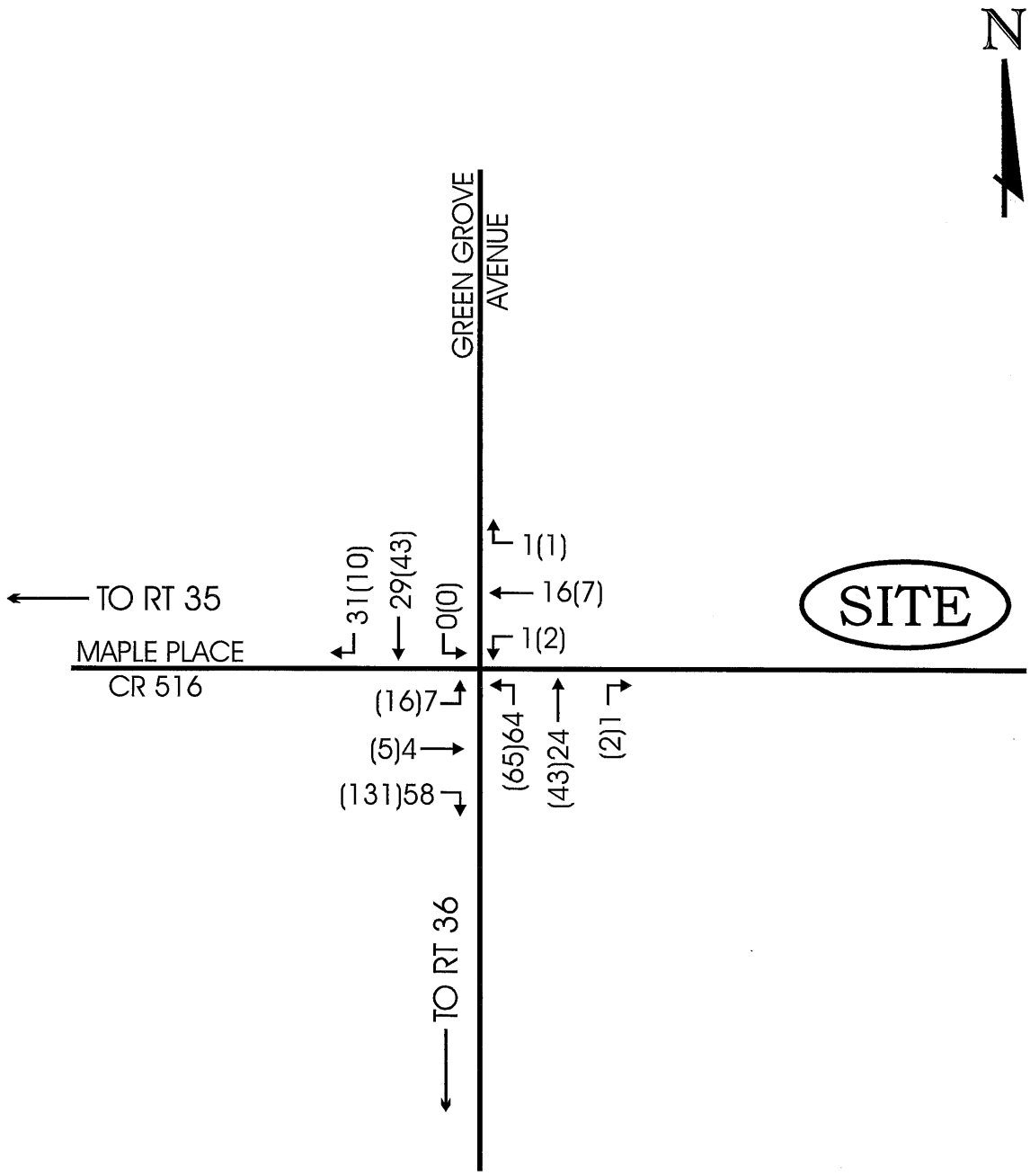
FIGURE 2

JOB NO. 19-249

DATE: APR 2021

SUBJECT: HUDSON POINTE - KEYPORT
EXISTING AM PSH (PM PSH) TRAFFIC VOLUMES



LEGEND:⟵ AM PSH(PM PSH)

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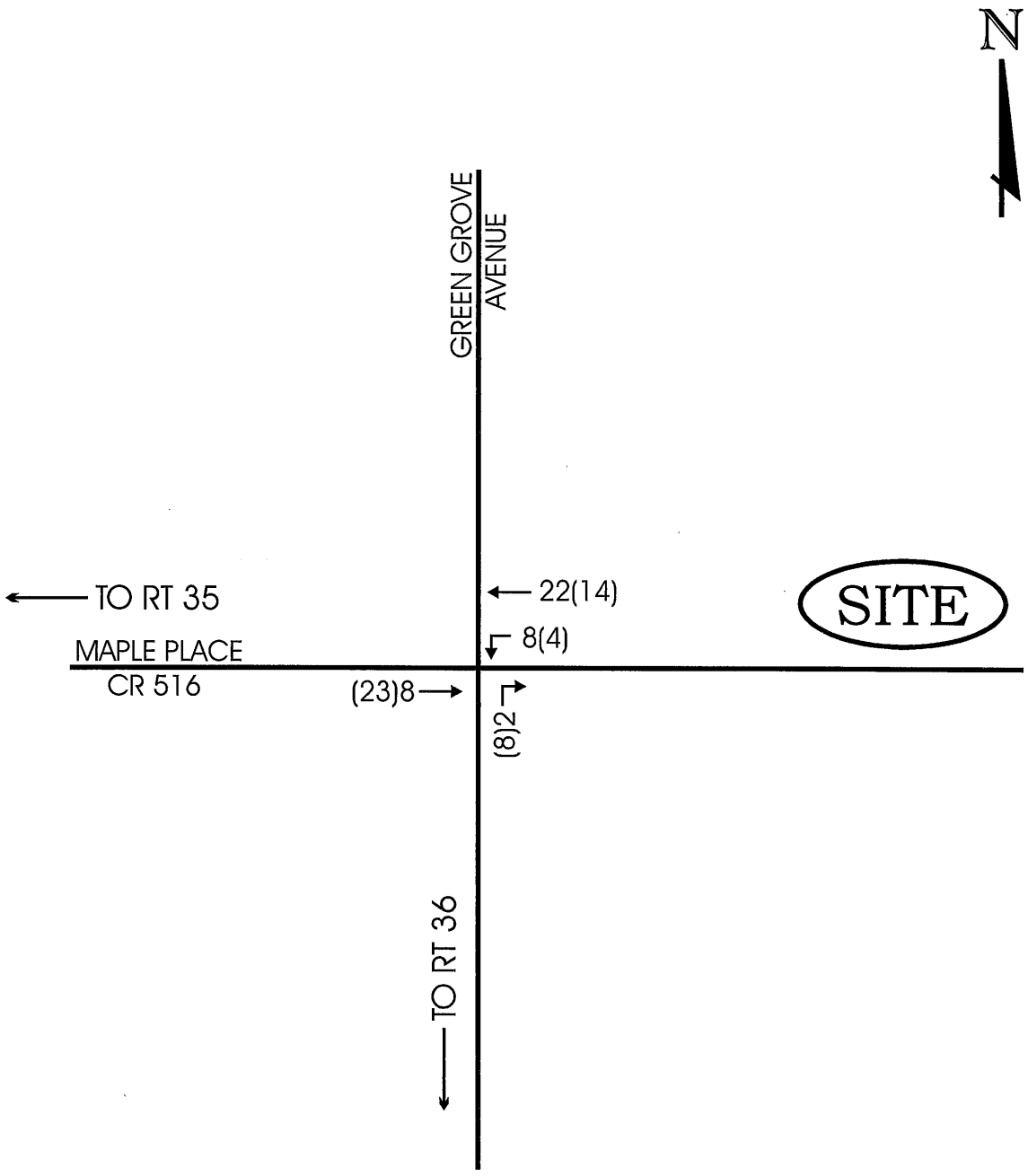
FIGURE 3

JOB NO. 19-249

DATE: APR 2021

SUBJECT: HUDSON POINTE - KEYPORT
SITE GENERATED TRAFFIC VOLUMES



LEGEND:← AM PSH(PM PSH)

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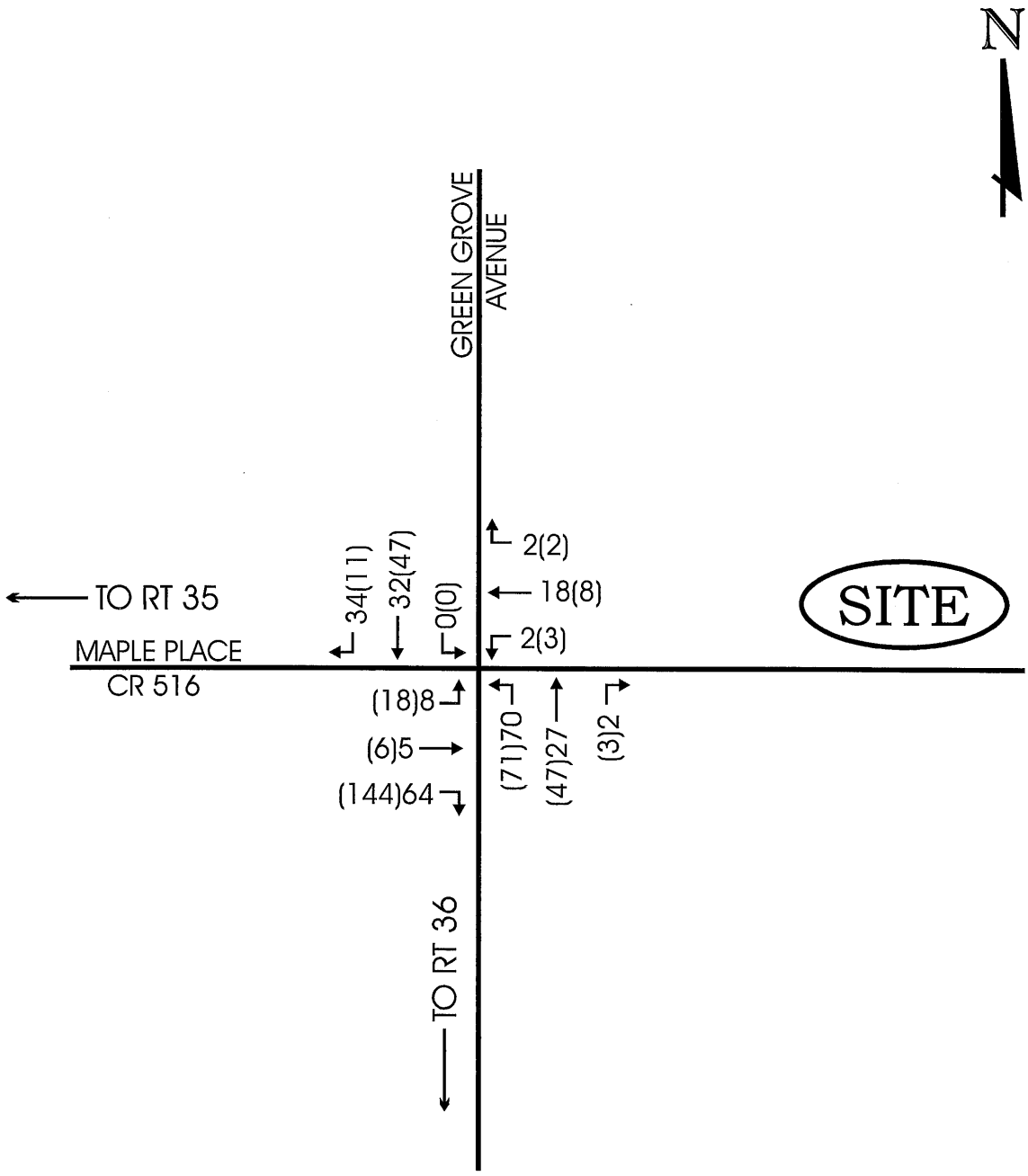
FIGURE 4

JOB NO. 19-249

DATE: APR 2021

SUBJECT: HUDSON POINTE - KEYPORT
2025 NO - BUILD TRAFFIC VOLUMES



LEGEND: ← AM PSH(PM PSH)

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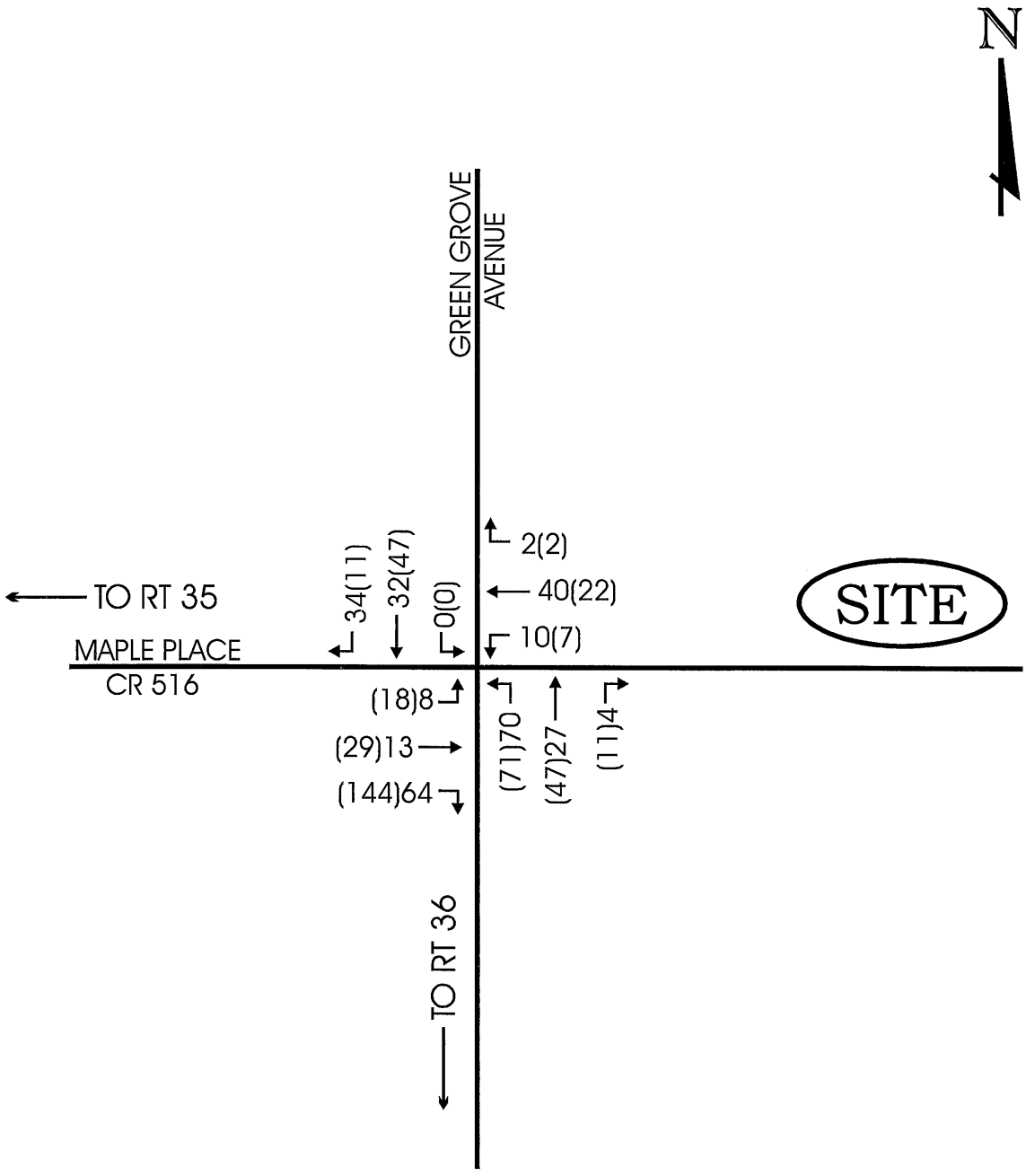
FIGURE 5

JOB NO. 19-249

DATE: APR 2021

SUBJECT: HUDSON POINTE - KEYPORT
2025 BUILD TRAFFIC VOLUMES



LEGEND:← AM PSH(PM PSH)

LEVEL OF SERVICE CRITERIA
FOR
TWO-WAY STOP-CONTROLLED INTERSECTIONS[1]

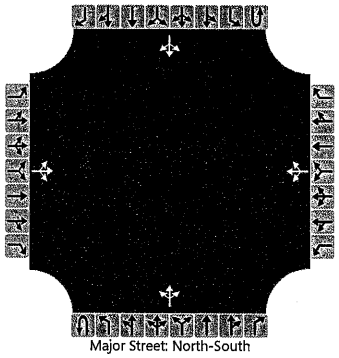
Level of Service	Average Control Delay
A	$\leq$ 10.0 Seconds Per Vehicle
B	> 10.0 and $\leq$ 15.0 Seconds Per Vehicle
C	> 15.0 and $\leq$ 25.0 Seconds Per Vehicle
D	> 25.0 and $\leq$ 35.0 Seconds Per Vehicle
E	> 35.0 and $\leq$ 50.0 Seconds Per Vehicle
F	> 50.0 Seconds Per Vehicle

[1] Transportation Research Board, Highway Capacity Manual 2010, National Research Council, Washington, DC, 2010.

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	STK	Intersection	GREEN GROVE & MAPLE-SITE
Agency/Co.	MRA	Jurisdiction	
Date Performed	4/1/2021	East/West Street	MAPLE AVE- SITE ACCESS
Analysis Year	2021	North/South Street	GREEN GROVE
Time Analyzed	AM	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-249AE EXISTING		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		7	4	58		1	16	1		64	24	1		0	29	31
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		7.13	6.53	6.23		4.13				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			77				20			71				0		
Capacity, c (veh/h)			938				645			1529				1579		
v/c Ratio			0.08				0.03			0.05				0.00		
95% Queue Length, Q_{95} (veh)			0.3				0.1			0.1				0.0		
Control Delay (s/veh)			9.2				10.8			7.5				7.3		
Level of Service (LOS)			A				B			A				A		
Approach Delay (s/veh)		9.2				10.8				5.5				0.0		
Approach LOS		A				B										

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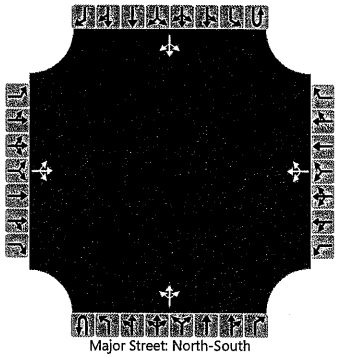
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	STK	Intersection	GREEN GROVE & MAPLE-SITE
Agency/Co.	MRA	Jurisdiction	
Date Performed	4/1/2021	East/West Street	MAPLE AVE- SITE ACCESS
Analysis Year	2025	North/South Street	GREEN GROVE
Time Analyzed	AM	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-249ANB NO-BUILD		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		8	5	64		2	18	2		70	27	2		0	32	34
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		7.13	6.53	6.23		4.13				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			86				24			78				0		
Capacity, c (veh/h)			920				632			1520				1573		
v/c Ratio			0.09				0.04			0.05				0.00		
95% Queue Length, Q_{95} (veh)			0.3				0.1			0.2				0.0		
Control Delay (s/veh)			9.3				10.9			7.5				7.3		
Level of Service (LOS)			A				B			A				A		
Approach Delay (s/veh)		9.3				10.9				5.4				0.0		
Approach LOS		A				B										

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HCS7 Two-Way Stop-Control Report

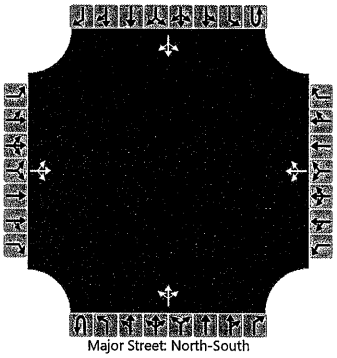
General Information

Analyst	STK
Agency/Co.	MRA
Date Performed	4/1/2021
Analysis Year	2025
Time Analyzed	AM
Intersection Orientation	North-South
Project Description	19-249AFB BUILD

Site Information

Intersection	GREEN GROVE & MAPLE-SITE
Jurisdiction	
East/West Street	MAPLE AVE- SITE ACCESS
North/South Street	GREEN GROVE
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		8	13	64		10	40	2		70	27	4		0	32	34
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		7.13	6.53	6.23		4.13				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			94				58			78				0		
Capacity, c (veh/h)			874				613			1520				1571		
v/c Ratio			0.11				0.09			0.05				0.00		
95% Queue Length, Q_{95} (veh)			0.4				0.3			0.2				0.0		
Control Delay (s/veh)			9.6				11.5			7.5				7.3		
Level of Service (LOS)			A				B			A				A		
Approach Delay (s/veh)		9.6				11.5				5.3				0.0		
Approach LOS		A				B										

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HCS7 Two-Way Stop-Control Report

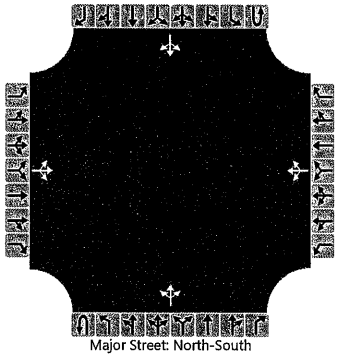
General Information

Analyst	STK
Agency/Co.	MRA
Date Performed	4/1/2021
Analysis Year	2021
Time Analyzed	PM
Intersection Orientation	North-South
Project Description	19-249PE EXISTING

Site Information

Intersection	GREEN GROVE & MAPLE-SITE
Jurisdiction	
East/West Street	MAPLE AVE- SITE ACCESS
North/South Street	GREEN GROVE
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		16	5	131		2	7	1		65	43	2		0	43	10
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		7.13	6.53	6.23		4.13				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			169				11			72				0		
Capacity, c (veh/h)			941				617			1539				1550		
v/c Ratio			0.18				0.02			0.05				0.00		
95% Queue Length, Q_{95} (veh)			0.7				0.1			0.1				0.0		
Control Delay (s/veh)			9.7				10.9			7.5				7.3		
Level of Service (LOS)			A				B			A				A		
Approach Delay (s/veh)		9.7				10.9				4.6				0.0		
Approach LOS		A				B										

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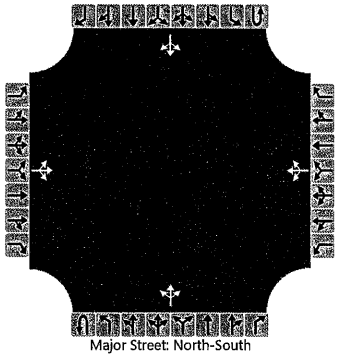
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	STK	Intersection	GREEN GROVE & MAPLE-SITE
Agency/Co.	MRA	Jurisdiction	
Date Performed	4/1/2021	East/West Street	MAPLE AVE- SITE ACCESS
Analysis Year	2025	North/South Street	GREEN GROVE
Time Analyzed	PM	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-249PNB NOBUILD		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		18	6	144		3	8	2		71	47	3		0	47	11
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		7.13	6.53	6.23		4.13				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			187				14			79				0		
Capacity, c (veh/h)			926				600			1531				1543		
v/c Ratio			0.20				0.02			0.05				0.00		
95% Queue Length, Q_{95} (veh)			0.8				0.1			0.2				0.0		
Control Delay (s/veh)			9.9				11.1			7.5				7.3		
Level of Service (LOS)			A				B			A				A		
Approach Delay (s/veh)		9.9				11.1				4.6				0.0		
Approach LOS		A				B										

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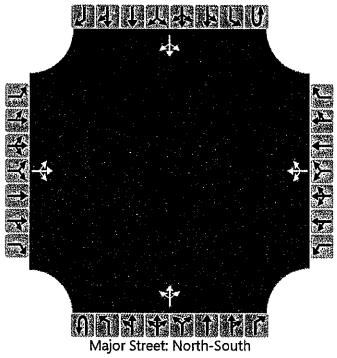
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	STK	Intersection	GREEN GROVE & MAPLE-SITE
Agency/Co.	MRA	Jurisdiction	
Date Performed	4/1/2021	East/West Street	MAPLE AVE- SITE ACCESS
Analysis Year	2025	North/South Street	GREEN GROVE
Time Analyzed	PM	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-249PFB BUILD		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		18	29	144		7	22	2		71	47	11		0	47	11
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		7.13	6.53	6.23		4.13				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			212				34			79				0		
Capacity, c (veh/h)			862				568			1531				1531		
v/c Ratio			0.25				0.06			0.05				0.00		
95% Queue Length, Q_{95} (veh)			1.0				0.2			0.2				0.0		
Control Delay (s/veh)			10.5				11.8			7.5				7.4		
Level of Service (LOS)			B				B			A				A		
Approach Delay (s/veh)		10.5				11.8				4.3				0.0		
Approach LOS		B				B										

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ITE Land Use: 220, Multifamily Housing (Low-Rise)

Size of Development: 48 Dwelling Units 10th

Time Period	Average Rate	Studies	Avg. Size	R^2	Trips	Equation				Trips	Split	
Weekday Daily	7.32	29	168	0.96	351.4	T=	7.560	(x)-	40.860	322.0	50	50
AM Peak Street Hour	0.46	42	199	0.90	22.1	Ln(T)=	0.950	Ln(x)-	0.510	23.8	23	77
PM Peak Street Hour	0.56	50	187	0.86	26.9	Ln(T)=	0.890	Ln(x)-	0.020	30.7	63	37
AM Peak Hour of Generator	0.56	36	161	0.91	26.9	Ln(T)=	0.940	Ln(x)-	0.290	28.5	28	72
PM Peak Hour of Generator	0.67	35	146	0.94	32.2	T=	0.660	(x)+	1.410	33.1	59	41
Saturday Daily	8.14	5	89	0.93	390.7	T=	14.010	(x)-	521.690	150.8	50	50
Saturday Peak Hour of Generator	0.70	5	89	0.92	33.6	T=	1.080	(x)-	33.240	18.6	N/A	
Sunday Daily	6.28	5	89	0.96	301.4	T=	10.130	(x)-	341.890	144.4	50	50
Sunday Peak Hour of Generator	0.67	5	89	0.93	32.2	T=	1.120	(x)-	40.410	13.4	N/A	

ITE Land Use: 210, Single-Family Detached Housing

Size of Development: 16 Dwelling Units 10th

Time Period	Average Rate	Studies	Avg. Size	R^2	Trips	Equation				Trips	Split	
Weekday Daily	9.44	159	264	0.95	151.0	Ln(T)=	0.920	Ln(x)+	2.710	192.6	50	50
AM Peak Street Hour	0.74	173	219	0.89	11.8	T=	0.710	(x)+	4.800	16.2	25	75
PM Peak Street Hour	0.99	190	242	0.92	15.8	Ln(T)=	0.960	Ln(x)+	0.200	17.5	63	37
AM Peak Hour of Generator	0.76	157	231	0.89	12.2	Ln(T)=	0.910	Ln(x)+	0.200	15.2	26	74
PM Peak Hour of Generator	1.00	165	217	0.92	16.0	Ln(T)=	0.940	Ln(x)+	0.340	19.0	64	36
Saturday Daily	9.54	52	207	0.91	152.6	Ln(T)=	0.940	Ln(x)+	2.560	175.3	50	50
Saturday Peak Hour of Generator	0.93	31	188	0.87	14.9	T=	0.840	(x)+	17.990	31.4	54	46
Sunday Daily	8.55	51	209	0.94	136.8	T=	8.870	(x)-	65.120	76.8	50	50
Sunday Peak Hour of Generator	0.85	31	193	0.91	13.6	T=	0.790	(x)+	11.020	23.7	53	47

McDonough & Rea Associates
1431 Lakewood Road Suite C
Manasquan NJ 08736
(732) 528-7076

HUDSON POINTE
GREEN GROVE AVENUE & MAPLE AVENUE
KEYPORT BOROUGH, MONMOUTH COUNTY
MRA JOB 19-249 THURSDAY AM COUNT

File Name : 19249 green grove & maple am1
Site Code : 00019249
Start Date : 11/21/2019
Page No : 1

Groups Printed- CARS - TRUCKS - SCHOOL BUS

	Green Grove Avenue Southbound				Maple Place Westbound				Green Grove Avenue Northbound				Maple Place Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	11	2	13	0	5	0	5	20	4	0	24	1	0	14	15	57
07:15 AM	0	5	7	12	0	1	0	1	15	3	0	18	2	0	14	16	47
07:30 AM	0	12	8	20	1	3	0	4	16	8	1	25	0	1	13	14	63
07:45 AM	0	6	5	11	0	3	0	3	21	4	0	25	2	1	18	21	60
Total	0	34	22	56	1	12	0	13	72	19	1	92	5	2	59	66	227
08:00 AM	0	7	9	16	0	2	1	3	17	8	0	25	2	2	16	20	64
08:15 AM	0	4	9	13	0	8	0	8	10	4	0	14	3	0	11	14	49
08:30 AM	0	9	0	9	0	1	0	1	19	10	0	29	4	4	10	18	57
08:45 AM	0	7	2	9	0	6	0	6	16	9	0	25	1	1	18	20	60
Total	0	27	20	47	0	17	1	18	62	31	0	93	10	7	55	72	230
09:00 AM	1	4	2	7	0	1	2	3	19	9	0	28	0	0	9	9	47
09:15 AM	0	7	0	7	1	2	0	3	11	8	1	20	3	0	15	18	48
Grand Total	1	72	44	117	2	32	3	37	164	67	2	233	18	9	138	165	552
Apprch %	0.9	61.5	37.6		5.4	86.5	8.1		70.4	28.8	0.9		10.9	5.5	83.6		
Total %	0.2	13.0	8.0	21.2	0.4	5.8	0.5	6.7	29.7	12.1	0.4	42.2	3.3	1.6	25.0	29.9	

	Green Grove Avenue Southbound				Maple Place Westbound				Green Grove Avenue Northbound				Maple Place Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 07:00 AM to 09:15 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	0	29	31	60	1	16	1	18	64	24	1	89	7	4	58	69	236
Percent	0.0	48.3	51.7		5.6	88.9	5.6		71.9	27.0	1.1		10.1	5.8	84.1		
08:00 Volume	0	7	9	16	0	2	1	3	17	8	0	25	2	2	16	20	64
Peak Factor																	0.922
High Int.	07:30 AM				08:15 AM				07:30 AM				07:45 AM				
Volume	0	12	8	20	0	8	0	8	16	8	1	25	2	1	18	21	
Peak Factor				0.750				0.563				0.890				0.821	

McDonough & Rea Associates
1431 Lakewood Road Suite C
Manasquan NJ 08736
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File Name : 19249 green grove & maple pm1
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Groups Printed- CARS - TRUCKS - SCHOOL BUS

	Green Grove Avenue Southbound				Maple Place Westbound				Green Grove Avenue Northbound				Maple Place Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:30 PM	0	5	1	6	1	3	1	5	20	11	0	31	2	2	16	20	62
03:45 PM	0	12	0	12	1	2	0	3	15	13	0	28	3	2	21	26	69
Total	0	17	1	18	2	5	1	8	35	24	0	59	5	4	37	46	131
04:00 PM	0	16	1	17	0	0	0	0	17	9	0	26	3	0	34	37	80
04:15 PM	0	9	2	11	1	1	0	2	18	10	0	28	8	1	34	43	84
04:30 PM	0	4	4	8	0	0	0	0	16	12	1	29	8	1	31	40	77
04:45 PM	0	7	3	10	2	2	0	4	11	8	0	19	1	0	33	34	67
Total	0	36	10	46	3	3	0	6	62	39	1	102	20	2	132	154	308
05:00 PM	0	8	2	10	1	0	0	1	14	4	1	19	4	0	38	42	72
05:15 PM	0	11	3	14	0	3	0	3	17	11	1	29	6	1	26	33	79
05:30 PM	0	8	2	10	1	3	0	4	20	13	0	33	4	1	38	43	90
05:45 PM	0	16	3	19	0	1	1	2	14	15	0	29	2	3	29	34	84
Total	0	43	10	53	2	7	1	10	65	43	2	110	16	5	131	152	325
Grand Total	0	96	21	117	7	15	2	24	162	106	3	271	41	11	300	352	764
Apprch %	0.0	82.1	17.9		29.2	62.5	8.3		59.8	39.1	1.1		11.6	3.1	85.2		
Total %	0.0	12.6	2.7	15.3	0.9	2.0	0.3	3.1	21.2	13.9	0.4	35.5	5.4	1.4	39.3	46.1	

	Green Grove Avenue Southbound				Maple Place Westbound				Green Grove Avenue Northbound				Maple Place Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 03:30 PM to 05:45 PM - Peak 1 of 1																	
Intersection	05:00 PM																
Volume	0	43	10	53	2	7	1	10	65	43	2	110	16	5	131	152	325
Percent	0.0	81.1	18.9		20.0	70.0	10.0		59.1	39.1	1.8		10.5	3.3	86.2		
05:30 Volume	0	8	2	10	1	3	0	4	20	13	0	33	4	1	38	43	90
Peak Factor																	0.903
High Int.	05:45 PM				05:30 PM				05:30 PM				05:30 PM				
Volume	0	16	3	19	1	3	0	4	20	13	0	33	4	1	38	43	
Peak Factor				0.697				0.625				0.833				0.884	