
TRAFFIC IMPACT STUDY

For

**The Place at Marlboro
Township of Marlboro
Monmouth County, New Jersey**

Prepared For:

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LANGAN

**27 July 2020
130033305**

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EXECUTIVE SUMMARY

Community Investment Strategies, Inc. has retained Langan Engineering and Environmental Services to prepare a traffic impact study for a proposed development consisting of 258 garden apartment units. The site is located in the Township of Marlboro, Monmouth County, New Jersey.

The site is located along northbound Tennent Road (County Route 3). It is bordered on the east by the Henry Hudson Trail, on the west by Tennent Road, and on the north and south by residential land uses. Access to the site will be provided via one stop-controlled access driveway along Tennent Road. The access driveway is proposed to intersect Tennent Road to form a full-movement T-shaped intersection under stop control.

We prepared trip generation estimates for the proposed development using data compiled for Land Use 220 (Multifamily Housing (Low-Rise)) by the Institute of Transportation Engineers (ITE) as contained in the publication Trip Generation, 10th edition. Langan estimates that the development will generate approximately 117 new trips (27 enter, 90 exit) during the weekday morning peak hour and 137 new trips (86 enter, 51 exit) during the weekday evening peak hour.

We determined the directional distribution of the site-generated trips based on an examination of census data, demographic data, a journey-to-work model, and existing travel patterns in the study area. We conducted capacity analyses at the following intersections:

- Tennent Road (CR 3) and Greenwood Road
- Tennent Road (CR 3) and Wooleytown Road
- Tennent Road (CR 3) and Site Driveway

Based upon the results of our analyses, Langan concludes that the proposed development will not significantly affect area traffic operations during peak hours. While the additional traffic will result in minor increases in delay experienced at the adjacent intersections, overall acceptable levels of service are maintained. The site access and proposed parking layout will provide efficient access and on-site circulation.

INTRODUCTION

Community Investment Strategies, Inc. has retained Langan Engineering and Environmental Services to prepare a traffic impact study for a proposed development consisting of 258 garden apartment units. The site is located in the Township of Marlboro, Monmouth County, New Jersey.

Project Description

The proposed development consists of 258 garden apartment units. The site is designated as Block 148, Lot 31 and Block 149, Lot 16 according to Township of Marlboro tax maps. The site location is shown on Figure 1.

The site is located along northbound Tennent Road (County Route 3). It is bordered on the east by the Henry Hudson Trail, on the west by Tennent Road, and on the north and south by residential land uses. Access to the site will be provided via one stop-controlled access driveway along Tennent Road. The access driveway is proposed to intersect Tennent Road to form a full-movement T-shaped intersection under stop control.

Study Area

We conducted capacity analyses at the following intersections:

- Tennent Road (CR 3) and Greenwood Road
- Tennent Road (CR 3) and Wooleytown Road
- Tennent Road (CR 3) and Site Driveway

An inventory of the physical road conditions is presented in the section "Description of Existing Conditions."

Scope of Study

Langan undertook the following steps to prepare this study in accordance with standard traffic engineering methodologies:

1. Conducted a field examination of the site and surrounding road network to inventory physical and regulatory conditions including the number of lanes, lane assignments, channelization, traffic-control devices, lateral clearances, and other factors that limit traffic capacity.
2. Conducted a series of turning movement traffic counts at the study intersections. Turning movement counts were conducted on a typical weekday during the peak periods. The existing weekday morning and evening peak hour traffic volumes were identified based on the traffic count data.
3. Established 2023 base traffic volumes by applying the New Jersey Department of Transportation (NJDOT) Monmouth County growth factor of 1.0 percent per year for five years and 0.5 percent per year for three years to the existing traffic volumes.
4. Identified other planned developments in the study area and established 2023 No-Build traffic volumes with the other development-generated trips.
5. Prepared peak hour trip generation estimates for the proposed mixed-use development based on trip generation data published by the Institute of Transportation Engineers (ITE).
6. Developed trip distribution based on an examination of census data, demographic data, a journey-to-work model, a gravity model, and existing travel patterns in the study area.
7. Assigned site-generated trips to the site access roads and surrounding road network based on the likely travel routes motorists will use to travel to and from the site.
8. Established 2023 Build traffic volumes by adding site-generated trips to the 2023 No-Build traffic volumes.
9. Performed intersection capacity analyses for the weekday morning and evening peak hours using Highway Capacity Software (HCS).

DESCRIPTION OF EXISTING CONDITIONS

This section describes the roads, intersections and traffic volumes in the area of the proposed development located in the Township of Marlboro, Monmouth County, New Jersey.

Roads

Tennent Road (CR 3)

Tennent Road is classified as an urban minor arterial road and is under Monmouth County jurisdiction. The roadway has a general north-south orientation and provides one travel lane in each direction in the vicinity of the development. The posted speed limit in the immediate study area is 35 mph.

Greenwood Road

Greenwood Road is classified as a local road. The roadway has a general east-west orientation and provides one travel lane in each direction. The posted speed limit is 35 mph.

Wooleytown Road

Wooleytown Road is classified as a local road. The roadway has a general east-west orientation and provides one travel lane in each direction. The posted speed limit is 35 mph.

Intersections

Tennent Road (CR 3) and Greenwood Road

Greenwood Road intersects Tennent Road to form a four-way intersection under stop control. The eastbound and westbound Greenwood Road approaches each provide one shared left-turn/thru/right-turn lane and are stop-controlled. The northbound and southbound Tennent Road approaches each provide one shared left-turn/thru/right-turn lane.

Tennent Road (CR 3) and Wooleytown Road

Wooleytown Road intersects Tennent Road to form a T-shaped intersection under stop control. The eastbound Wooleytown Road approach provides one shared left-turn/right-turn lane and is stop-controlled. The northbound Tennent Road approach provides one shared left-turn, thru lane. The southbound Tennent Road approach provides on shared thru/right-turn lane.

Traffic Volumes

We arranged for turning movement traffic counts to be conducted during the weekday morning and evening peak periods on a typical weekday at the study intersections. Specifically, we conducted turning movement counts on Thursday, 1 October 2015, from 7:00 AM to 9:00 AM

and 4:00 PM to 6:00 PM. Additionally, we conducted Automatic Traffic Recorder (ATR) counts on Tennent Road from Friday, 27 January 2017 to Wednesday, 1 February 2017.

The traffic counts identify distinct times during the weekday morning and evening hours when traffic experienced its highest levels. According to the traffic count data collected, the weekday morning peak hour occurs from 7:30 AM to 8:30 AM and the weekday evening peak hour occurs from 4:00 PM to 5:00 PM.

Given the current COVID-19 pandemic, we were unable to collect updated traffic count data, however, the previously collected is sufficiently current for analysis purposes and provides a reasonable representation of traffic flow conditions on the roadway system. The 2015 existing traffic volumes were increased by a compounded annual growth rate of 1.0 percent, established by NJDOT for Monmouth County for short-term growth projections, to derive the 2020 Existing traffic volumes.

Figure 2 illustrates the existing weekday morning and evening peak hour traffic volumes. Summaries of the manual traffic counts are contained in Appendix B.

ESTIMATE OF FUTURE CONDITIONS

This section of the report covers background traffic growth, site-generated trips, trip distribution, and future traffic volumes. We anticipate the project will be complete by the end of 2023. Accordingly, we projected traffic volumes to include existing traffic and new traffic created by background growth to derive the 2023 No-Build traffic volumes. We added the site-generated trips to the 2023 No-Build traffic volumes to derive the 2023 Build traffic volumes.

Background Traffic Growth

We increased the 2020 existing traffic volumes by a compounded annual growth rate of 0.5 percent to derive the 2023 base traffic volumes. Figure 3 illustrates the 2023 base traffic volumes.

Adjacent Development

In preparing the future traffic projections, we included traffic associated with the adjacent new residential development known as Camelot West at Marlboro. Camelot West consisting of 250 multi-family residential units was substantially completed in 2019.

Traffic associated with this development was derived from its traffic study. The traffic from this development is shown on Figure 4. The adjacent development traffic was added to the 2023 base traffic volumes to develop the 2023 No-Build traffic volumes. The 2020 No-Build traffic volumes are shown in Figure 5.

Site-Generated Trips

We prepared trip generation estimates for the proposed development using data compiled for Land Use 220 (Multifamily Housing (Low-Rise)) by the Institute of Transportation Engineers (ITE) as contained in the publication Trip Generation, 10th edition. Table 1 summarizes the trip generation estimates.

Table 1 – Trip Generation Estimates

Use	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	In	Out	Total	In	Out	Total
258 Garden Apartment Units	27	90	117	86	51	137

Trip Distribution

We determined the directional distribution of the site-generated trips based on an examination of census demographic data, a journey-to-work model, and existing travel patterns in the study area. The directional distribution of site traffic is shown in Table 2.

Table 2 - Trip Distribution

Direction (To/From)	Arrival & Departure Distributions
NJ Route 79 (North)	52%
Tennent Road (South)	48%
Total	100%

Figure 6 shows the arrival and departure distributions associated with the development. Figure 7 shows the total new site-generated trips assigned to the roadway network for the development.

Build Traffic Volumes

The 2023 Build traffic volumes were derived by adding the total site-generated trips to the 2023 No-Build traffic volumes. Figure 8 illustrates the 2023 Build weekday morning and evening peak hour traffic volumes.

ANALYSIS OF TRAFFIC OPERATIONS

This section describes the capacity analysis we conducted to assess traffic operations for the No-Build and Build conditions. Capacity analysis provides an indication of the adequacy of road facilities to serve traffic demand.

Level of Service Criteria

Level of Service (LOS) is the term used to denote different operating conditions that occur on a given road segment under various traffic volume demands. LOS is a qualitative measure that considers a number of factors including road geometry, speed, travel delay and freedom to maneuver. LOS designations range from A to F and provide an index of operational qualities of a road segment or an intersection. LOS A represents the best operating conditions; LOS F represents the worst.

LOS designations are reported differently for signalized and unsignalized intersections. For signalized intersections, the analysis considers the operation of all traffic entering the intersection. For unsignalized intersections, the analysis considers the operation of all movements that conflict with other movements, such as main-line left turns and traffic exiting a side street. The evaluation criteria used to analyze the study area intersections are based on the Highway Capacity Manual, 6th edition (HCM), published by the Transportation Research Board and the latest version of the Synchro Software.

The HCM defines LOS for signalized intersections as follows:

<u>LOS</u>	<u>Control Delay per Vehicle</u>
A	≤10 sec
B	>10 and ≤20 sec
C	>20 and ≤35 sec
D	>35 and ≤55 sec
E	>55 and ≤80 sec
F	>80 sec

The HCM defines LOS for unsignalized intersections as follows:

<u>LOS</u>	<u>Delay Range (sec/veh)</u>
A	≤10 sec
B	>10 and ≤15 sec
C	>15 and ≤25 sec
D	>25 and ≤35 sec
E	>35 and ≤50 sec
F	>50 sec

Capacity Analysis

We conducted capacity analyses for the intersections in the study area and found that the proposed development will not significantly alter traffic operations in the study area during peak hours. Table 3 summarizes the 2023 No-Build and 2023 Build levels of service (LOS) at each relevant study intersection during the weekday morning and evening peak hours. Following are discussions pertaining to each of the intersections analyzed for the project. All capacity analysis printouts are contained in Appendix C.

Table 3 – Intersection Capacity Analysis Summary

Location	Movement		2023 No-Build Condition		2023 Build Condition	
			AM	PM	AM	PM
Unsignalized Intersections						
Tennent Road (CR 3) and Greenwood Road	EB	L,T,R	D (25.4)	D (28.8)	D (28.1)	D (34.0)
	WB	L,T,R	C (24.5)	D (25.7)	D (27.2)	D (28.8)
	NB	L	A (8.8)	A (8.6)	A (8.8)	A (8.8)
	SB	L	A (8.6)	A (8.8)	A (8.7)	A (8.9)
Tennent Road (CR 3) and Wooleytown Road	EB	L,R	D (25.7)	C (18.9)	D (29.4)	C (20.0)
	SB	L	A (8.9)	A (9.1)	A (9.0)	A (9.2)
Tennent Road (CR 3) and Site Driveway	WB	L,R	-	-	C (23.7)	C (24.4)
	SB	L	-	-	A (8.8)	A (9.2)

Based on Highway Capacity Software (HCS7) *Level of Service (Average vehicle delay [seconds per vehicle])

Tennent Road (CR 3) and Greenwood Road

All turning movements at the stop-controlled intersection are expected to operate at LOS D or better during both the weekday morning and evening peak hours under the No-Build condition. Under the Build condition, all turning movements are expected to continue to operate at LOS D or better during both the weekday morning and evening peak hours.

Tennent Road (CR 3) and Wooleytown Road

All turning movements at the stop-controlled intersection are expected to operate at LOS D or better during both the weekday morning and evening peak hours under the No-Build condition. Under the Build condition, all turning movements are expected to continue to operate at LOS D or better during both the weekday morning and evening peak hours.

Tennent Road (CR 3) and Site Driveway

Geometry

The site driveway is proposed to intersect NJ Route 79 to form a T-shaped intersection under stop control. The westbound site driveway approach will provide one shared left-turn/right-turn lane and will be stop-controlled. The northbound Tennent Road approach will provide one shared

thru/right-turn. The southbound Tennent Road approach will provide one shared left-turn/thru lane.

Analysis

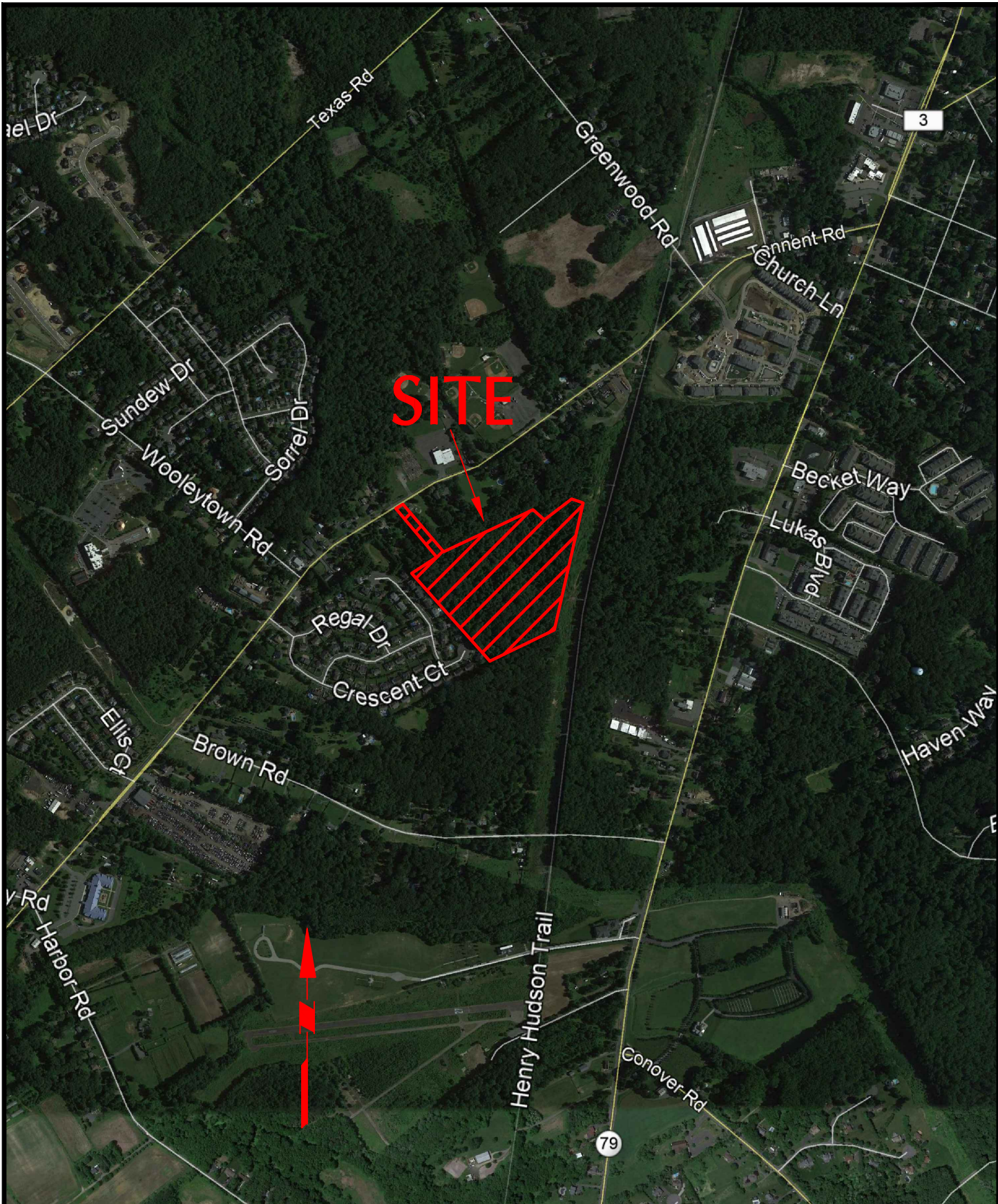
All movements at the stop-controlled intersection are expected to operate at LOS C or better during the weekday morning and evening peak hours under the Build condition.

CONCLUSIONS

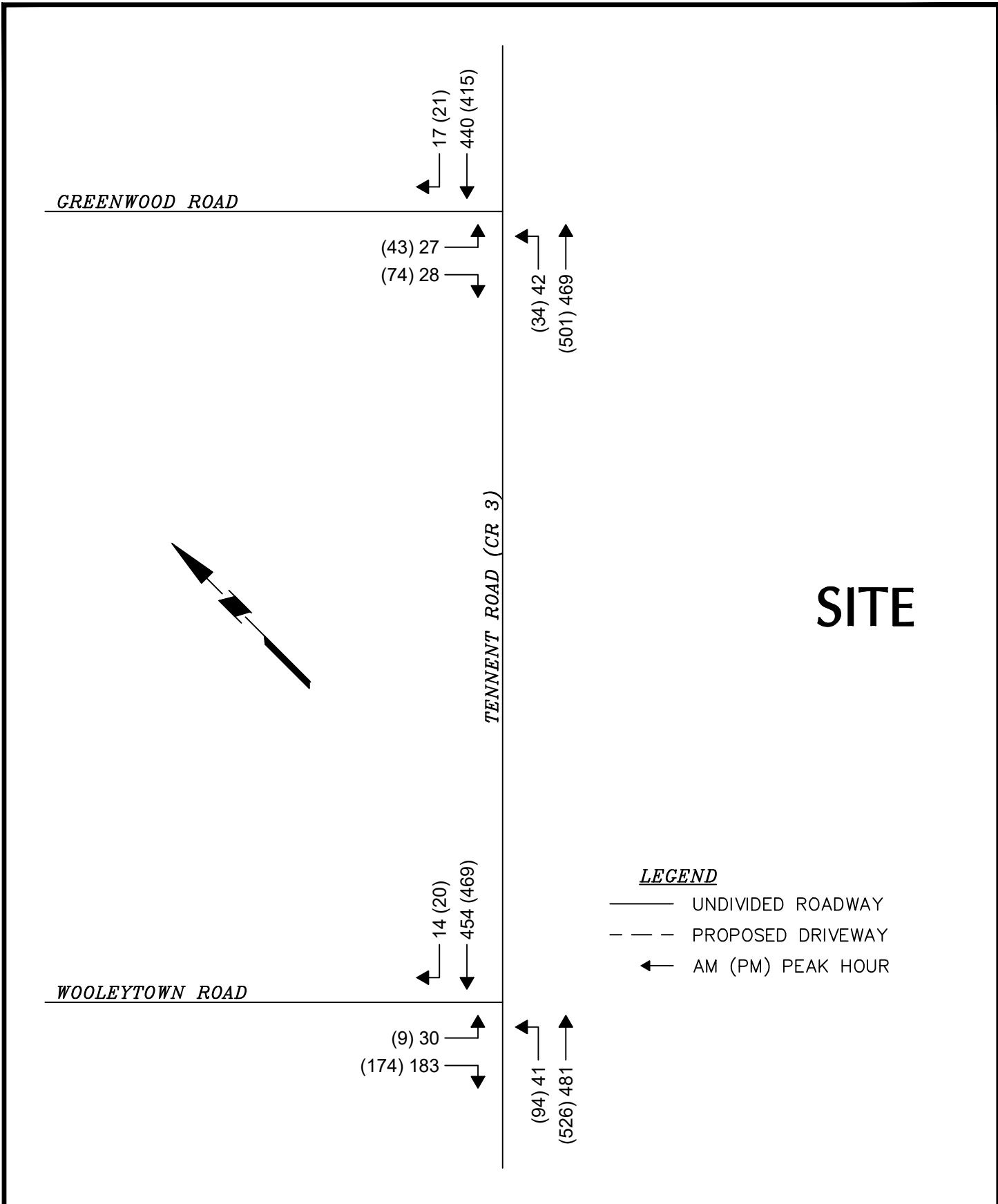
Langan concludes that the proposed development will not significantly influence area traffic operations during peak hours. While the additional traffic will result in minor increases in delay experienced at the adjacent intersections, overall acceptable levels of service are maintained. The site access and proposed parking layout will provide efficient access and on-site circulation.

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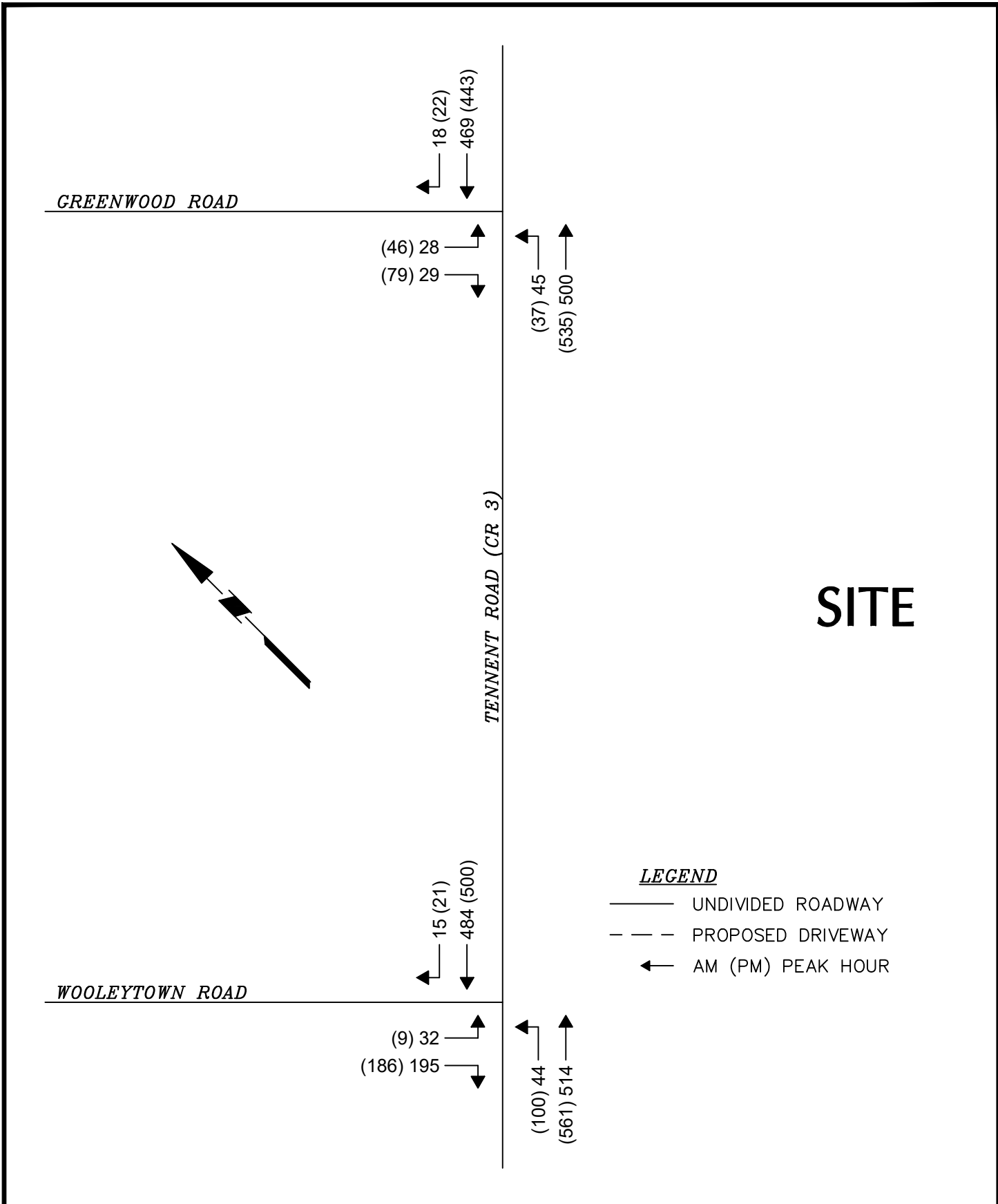
APPENDIX A
FIGURES



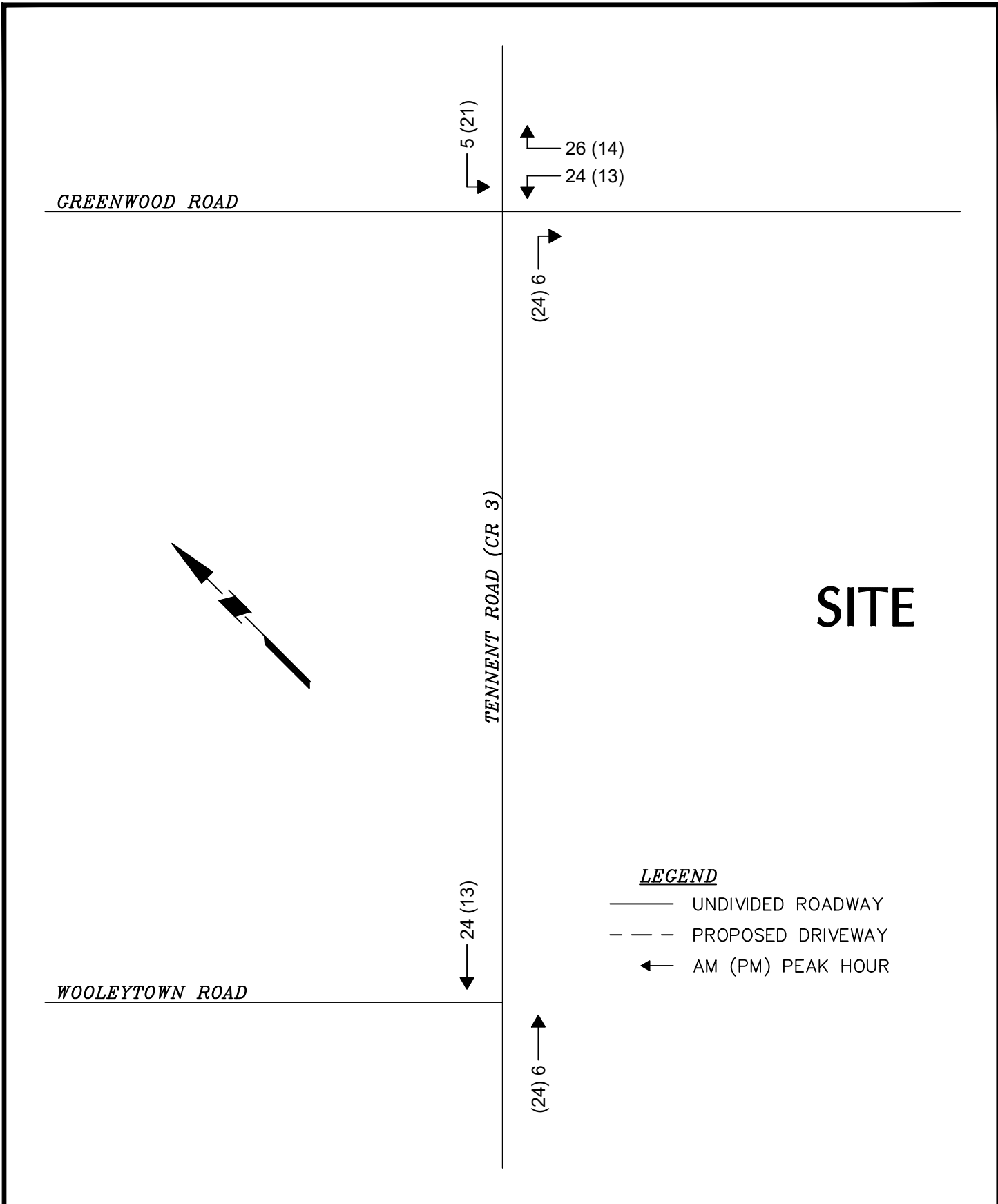
LANGAN Langan Engineering and Environmental Services, Inc. 989 Lenox Drive, Suite 124 Lawrenceville, NJ 08648 T: 609.282.8000 F: 609.282.8001 www.langan.com NJ Certificate of Authorization No.24GA27996400	Project	Drawing Title	Project No.	Drawing No.
	THE PLACE AT MARLBORO	SITE LOCATION MAP	130033305	FIGURE 1
	BLOCK No. 148, LOT No. 31 and BLOCK No. 149, LOT No. 16		Date	
	TOWNSHIP OF MARLBORO MONMOUTH COUNTY NEW JERSEY		7/21/2020	
			Drawn By	Sheet 1 of 8
			JEG	
			Checked By	
			KAP	



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	THE PLACE AT MARLBORO	2020 EXISTING TRAFFIC VOLUMES	130033305	FIGURE 2
	BLOCK No. 148, LOT No. 31 and BLOCK No. 149, LOT No. 16 TOWNSHIP OF MARLBORO MONMOUTH COUNTY NEW JERSEY		Date 7/21/2020	
			Drawn By JEG	Sheet 2 of 8
			Checked By KAP	



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	THE PLACE AT MARLBORO	2023 BASE TRAFFIC VOLUMES	130033305	FIGURE 3
	BLOCK No. 148, LOT No. 31 and BLOCK No. 149, LOT No. 16 TOWNSHIP OF MARLBORO MONMOUTH COUNTY NEW JERSEY		Date 7/21/2020	
			Drawn By JEG	Sheet 3 of 8
			Checked By KAP	

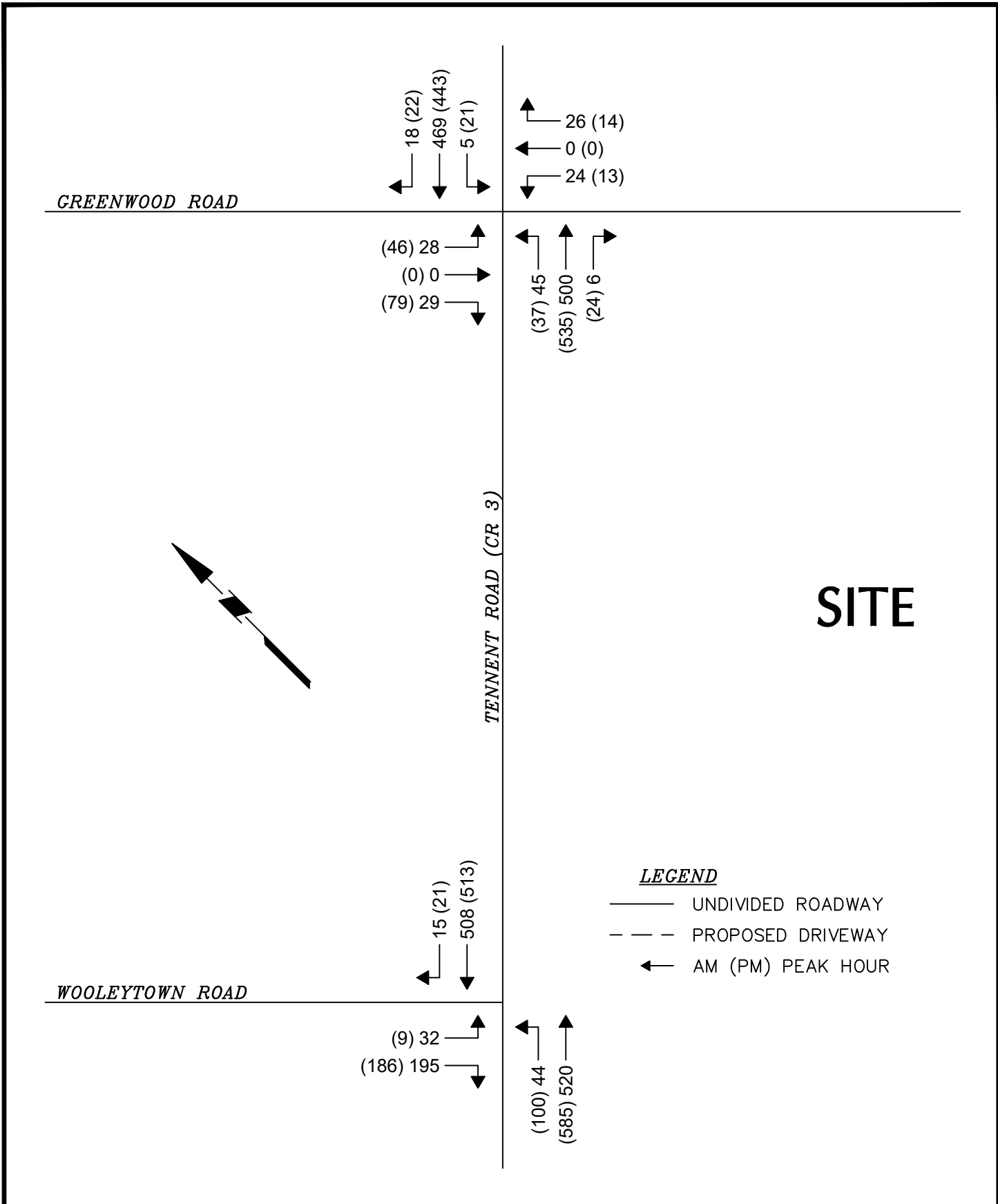


SITE

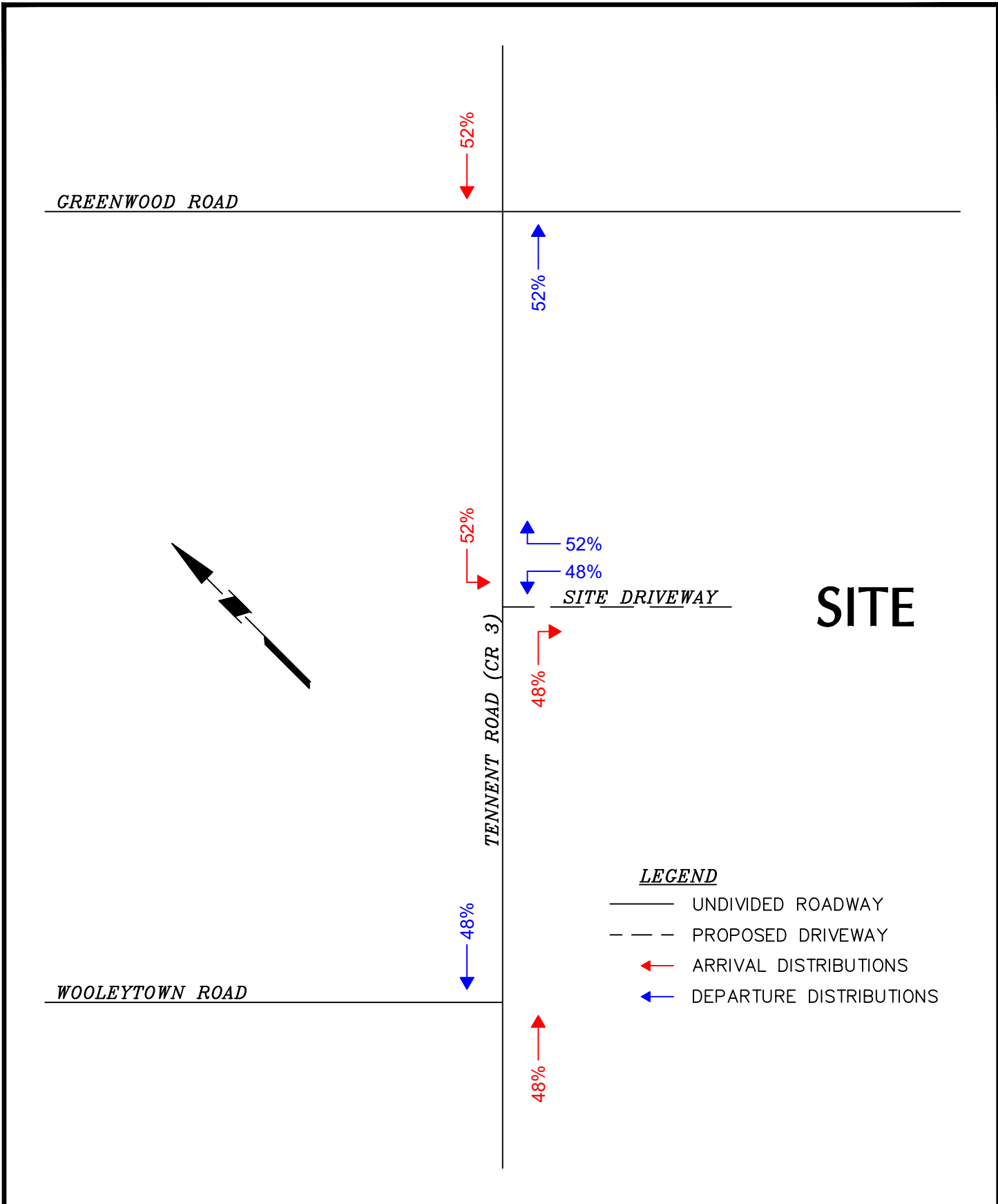
LEGEND

- — — — — UNDIVIDED ROADWAY
- - - - - PROPOSED DRIVEWAY
- ← — — — — AM (PM) PEAK HOUR

<p>LANGAN Langan Engineering and Environmental Services, Inc. 989 Lenox Drive, Suite 124 Lawrenceville, NJ 08648 T: 609.282.8000 F: 609.282.8001 www.langan.com NJ Certificate of Authorization No.24GA27996400</p>	Project	Drawing Title	Project No.	Drawing No.	
	<p>THE PLACE AT MARLBORO BLOCK No. 148, LOT No. 31 and BLOCK No. 149, LOT No. 16 TOWNSHIP OF MARLBORO MONMOUTH COUNTY NEW JERSEY</p>	<p>ADJACENT DEVELOPMENT TRAFFIC VOLUMES</p>	130033305	<p>FIGURE 4 Sheet 4 of 8</p>	
			Date		7/21/2020
			Drawn By		JEG
	Checked By	KAP			



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	THE PLACE AT MARLBORO	2023 NO-BUILD TRAFFIC VOLUMES	130033305	FIGURE 5
	BLOCK No. 148, LOT No. 31 and BLOCK No. 149, LOT No. 16 TOWNSHIP OF MARLBORO MONMOUTH COUNTY NEW JERSEY		Date	7/21/2020
			Drawn By	JEG
			Checked By	KAP
				Sheet 5 of 8

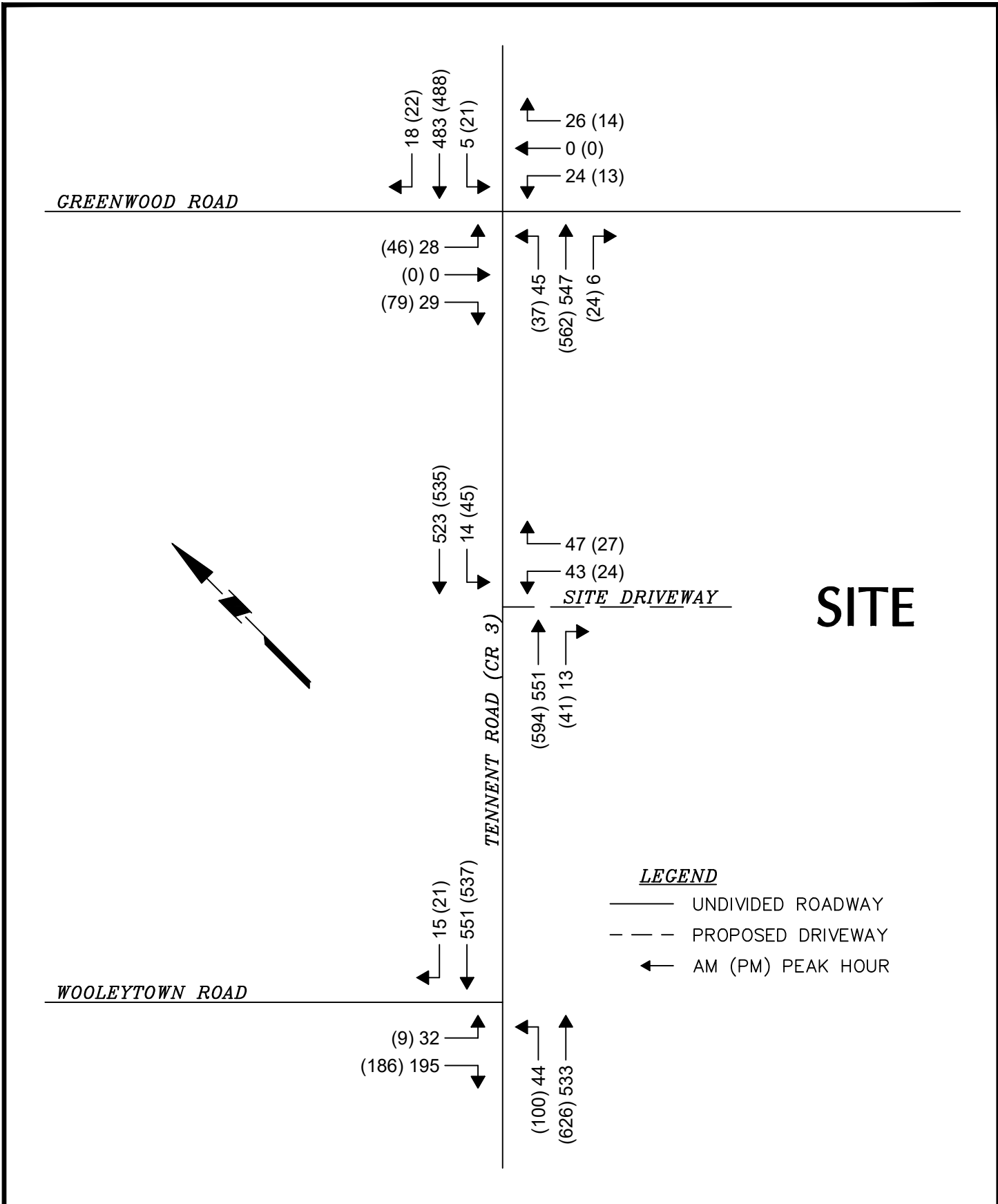


SITE

LEGEND

- — — — — UNDIVIDED ROADWAY
- - - - - PROPOSED DRIVEWAY
- ← (Red) ARRIVAL DISTRIBUTIONS
- ← (Blue) DEPARTURE DISTRIBUTIONS

<p>LANGAN Langan Engineering and Environmental Services, Inc. 989 Lenox Drive, Suite 124 Lawrenceville, NJ 08648 T: 609.282.8000 F: 609.282.8001 www.langan.com NJ Certificate of Authorization No.24GA27996400</p>	Project	Drawing Title	Project No.	Drawing No.	
	<p>THE PLACE AT MARLBORO BLOCK No. 148, LOT No. 31 and BLOCK No. 149, LOT No. 16 TOWNSHIP OF MARLBORO MONMOUTH COUNTY NEW JERSEY</p>	<p>ARRIVAL & DEPARTURE DISTRIBUTIONS</p>	130033305	<p>FIGURE 6 Sheet 6 of 8</p>	
			Date		7/21/2020
			Drawn By		JEG
			Checked By	KAP	



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	THE PLACE AT MARLBORO	2023 BUILD TRAFFIC VOLUMES	130033305	FIGURE 8
	BLOCK No. 148, LOT No. 31 and BLOCK No. 149, LOT No. 16 TOWNSHIP OF MARLBORO MONMOUTH COUNTY NEW JERSEY		Date 7/21/2020	
			Drawn By JEG	
			Checked By KAP	Sheet 8 of 8

APPENDIX B
TRAFFIC COUNTS

LANGAN

Tennent Rd & Greenwood Rd
 Manual Turning Movement Count
 Weekday AM and PM Peak Hours
 Thursday, 1 October 2015

File Name : TennentRd&GreenwoodRd AMPM 10-01-2015
 Site Code : 00000000
 Start Date : 10/1/2015
 Page No : 1

Groups Printed- Lights - Buses - Trucks

Start Time	GREENWOOD ROAD Southbound				TENNETT ROAD Westbound				TENNETT ROAD Eastbound				Int. Total
	Left	Right	U-Turns	App. Total	Thru	Right	U-Turns	App. Total	Left	Thru	U-Turns	App. Total	
07:00 AM	7	6	0	13	73	2	0	75	7	85	0	92	180
07:15 AM	8	4	0	12	93	4	0	97	11	109	0	120	229
07:30 AM	3	11	0	14	108	4	0	112	7	137	0	144	270
07:45 AM	7	4	0	11	120	5	0	125	24	114	0	138	274
Total	25	25	0	50	394	15	0	409	49	445	0	494	953
08:00 AM	12	7	0	19	109	2	0	111	6	96	0	102	232
08:15 AM	5	6	0	11	103	6	0	109	5	122	0	127	247
08:30 AM	9	7	0	16	87	7	0	94	12	136	0	148	258
08:45 AM	7	9	0	16	104	4	0	108	11	123	0	134	258
Total	33	29	0	62	403	19	0	422	34	477	0	511	995
*** BREAK ***													
04:00 PM	9	30	0	39	110	8	0	118	14	136	0	150	307
04:15 PM	5	19	0	24	111	9	0	120	12	133	0	145	289
04:30 PM	17	16	0	33	119	3	0	122	2	124	0	126	281
04:45 PM	12	9	0	21	135	1	0	136	6	108	0	114	271
Total	43	74	0	117	475	21	0	496	34	501	0	535	1148
05:00 PM	10	12	0	22	110	8	0	118	7	114	0	121	261
05:15 PM	5	10	0	15	118	9	0	127	8	124	0	132	274
05:30 PM	6	5	0	11	114	8	0	122	8	119	0	127	260
05:45 PM	6	12	0	18	132	6	0	138	10	118	0	128	284
Total	27	39	0	66	474	31	0	505	33	475	0	508	1079
Grand Total	128	167	0	295	1746	86	0	1832	150	1898	0	2048	4175
Aprch %	43.4	56.6	0		95.3	4.7	0		7.3	92.7	0		
Total %	3.1	4	0	7.1	41.8	2.1	0	43.9	3.6	45.5	0	49.1	
Lights	122	162	0	284	1684	77	0	1761	140	1814	0	1954	3999
% Lights	95.3	97	0	96.3	96.4	89.5	0	96.1	93.3	95.6	0	95.4	95.8
Buses	3	2	0	5	22	4	0	26	3	30	0	33	64
% Buses	2.3	1.2	0	1.7	1.3	4.7	0	1.4	2	1.6	0	1.6	1.5
Trucks	3	3	0	6	40	5	0	45	7	54	0	61	112
% Trucks	2.3	1.8	0	2	2.3	5.8	0	2.5	4.7	2.8	0	3	2.7

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Tennent Rd & Greenwood Rd
 Manual Turning Movement Count
 Weekday AM and PM Peak Hours
 Thursday, 1 October 2015

File Name : TennentRd&GreenwoodRd AMPM 10-01-2015
 Site Code : 00000000
 Start Date : 10/1/2015
 Page No : 2

Start Time	GREENWOOD ROAD Southbound				TENNENT ROAD Westbound				TENNENT ROAD Eastbound				Int. Total
	Left	Right	U-Turns	App. Total	Thru	Right	U-Turns	App. Total	Left	Thru	U-Turns	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	3	11	0	14	108	4	0	112	7	137	0	144	270
07:45 AM	7	4	0	11	120	5	0	125	24	114	0	138	274
08:00 AM	12	7	0	19	109	2	0	111	6	96	0	102	232
08:15 AM	5	6	0	11	103	6	0	109	5	122	0	127	247
Total Volume	27	28	0	55	440	17	0	457	42	469	0	511	1023
% App. Total	49.1	50.9	0		96.3	3.7	0		8.2	91.8	0		
PHF	.563	.636	.000	.724	.917	.708	.000	.914	.438	.856	.000	.887	.933
Lights	26	27	0	53	415	15	0	430	38	449	0	487	970
% Lights	96.3	96.4	0	96.4	94.3	88.2	0	94.1	90.5	95.7	0	95.3	94.8
Buses	1	0	0	1	14	0	0	14	2	3	0	5	20
% Buses	3.7	0	0	1.8	3.2	0	0	3.1	4.8	0.6	0	1.0	2.0
Trucks	0	1	0	1	11	2	0	13	2	17	0	19	33
% Trucks	0	3.6	0	1.8	2.5	11.8	0	2.8	4.8	3.6	0	3.7	3.2
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	9	30	0	39	110	8	0	118	14	136	0	150	307
04:15 PM	5	19	0	24	111	9	0	120	12	133	0	145	289
04:30 PM	17	16	0	33	119	3	0	122	2	124	0	126	281
04:45 PM	12	9	0	21	135	1	0	136	6	108	0	114	271
Total Volume	43	74	0	117	475	21	0	496	34	501	0	535	1148
% App. Total	36.8	63.2	0		95.8	4.2	0		6.4	93.6	0		
PHF	.632	.617	.000	.750	.880	.583	.000	.912	.607	.921	.000	.892	.935
Lights	43	72	0	115	459	21	0	480	31	487	0	518	1113
% Lights	100	97.3	0	98.3	96.6	100	0	96.8	91.2	97.2	0	96.8	97.0
Buses	0	1	0	1	1	0	0	1	0	2	0	2	4
% Buses	0	1.4	0	0.9	0.2	0	0	0.2	0	0.4	0	0.4	0.3
Trucks	0	1	0	1	15	0	0	15	3	12	0	15	31
% Trucks	0	1.4	0	0.9	3.2	0	0	3.0	8.8	2.4	0	2.8	2.7

LANGAN

Tennent Rd & Wooleytown Rd
 Manual Turning Movement Count
 Weekday AM and PM Peak Hours
 Wednesday, 7 October 2015

File Name : TennentRd&WooleytownRd AMPM 10-07-2015
 Site Code : 00000000
 Start Date : 10/7/2015
 Page No : 1

Groups Printed- Lights - Buses - Trucks

Start Time	WOOLEYTOWN ROAD Southbound				TENNENT ROAD Westbound				TENNENT ROAD Eastbound				Int. Total
	Left	Right	U-Turns	App. Total	Thru	Right	U-Turns	App. Total	Left	Thru	U-Turns	App. Total	
07:00 AM	2	14	0	16	87	1	0	88	11	98	0	109	213
07:15 AM	8	17	0	25	99	2	0	101	5	110	0	115	241
07:30 AM	8	50	0	58	105	2	0	107	4	99	0	103	268
07:45 AM	3	61	0	64	120	2	0	122	11	116	0	127	313
Total	21	142	0	163	411	7	0	418	31	423	0	454	1035
08:00 AM	8	42	0	50	144	9	0	153	17	110	0	127	330
08:15 AM	9	30	0	39	135	2	0	137	9	117	0	126	302
08:30 AM	5	25	0	30	137	8	0	145	11	142	1	154	329
08:45 AM	6	25	0	31	140	4	0	144	16	143	0	159	334
Total	28	122	0	150	556	23	0	579	53	512	1	566	1295
*** BREAK ***													
04:00 PM	4	48	0	52	127	4	0	131	24	135	0	159	342
04:15 PM	2	45	0	47	145	9	0	154	19	134	0	153	354
04:30 PM	3	50	0	53	123	7	0	130	32	162	0	194	377
04:45 PM	2	31	0	33	110	2	0	112	19	181	0	200	345
Total	11	174	0	185	505	22	0	527	94	612	0	706	1418
05:00 PM	6	8	0	14	123	9	0	132	18	135	0	153	299
05:15 PM	4	10	0	14	121	10	0	131	21	134	0	155	300
05:30 PM	9	14	0	23	129	6	0	135	25	124	0	149	307
05:45 PM	6	16	0	22	130	3	0	133	20	119	0	139	294
Total	25	48	0	73	503	28	0	531	84	512	0	596	1200
Grand Total	85	486	0	571	1975	80	0	2055	262	2059	1	2322	4948
Apprch %	14.9	85.1	0		96.1	3.9	0		11.3	88.7	0		
Total %	1.7	9.8	0	11.5	39.9	1.6	0	41.5	5.3	41.6	0	46.9	
Lights	78	459	0	537	1913	74	0	1987	242	1967	1	2210	4734
% Lights	91.8	94.4	0	94	96.9	92.5	0	96.7	92.4	95.5	100	95.2	95.7
Buses	6	13	0	19	20	5	0	25	12	28	0	40	84
% Buses	7.1	2.7	0	3.3	1	6.2	0	1.2	4.6	1.4	0	1.7	1.7
Trucks	1	14	0	15	42	1	0	43	8	64	0	72	130
% Trucks	1.2	2.9	0	2.6	2.1	1.2	0	2.1	3.1	3.1	0	3.1	2.6

LANGAN

Tennent Rd & Wooleytown Rd
 Manual Turning Movement Count
 Weekday AM and PM Peak Hours
 Wednesday, 7 October 2015

























File Name : TennentRd&WooleytownRd AMPM 10-07-2015
 Site Code : 00000000
 Start Date : 10/7/2015
 Page No : 2

Start Time	WOOLEYTOWN ROAD Southbound				TENNENT ROAD Westbound				TENNENT ROAD Eastbound				Int. Total
	Left	Right	U-Turns	App. Total	Thru	Right	U-Turns	App. Total	Left	Thru	U-Turns	App. Total	
Peak Hour Analysis From 07:00 AM to 08:15 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	8	50	0	58	105	2	0	107	4	99	0	103	268
07:45 AM	3	61	0	64	120	2	0	122	11	116	0	127	313
08:00 AM	8	42	0	50	144	9	0	153	17	110	0	127	330
08:15 AM	9	30	0	39	135	2	0	137	9	117	0	126	302
Total Volume	28	183	0	211	504	15	0	519	41	442	0	483	1213
% App. Total	13.3	86.7	0		97.1	2.9	0		8.5	91.5	0		
PHF	.778	.750	.000	.824	.875	.417	.000	.848	.603	.944	.000	.951	.919
Lights	26	172	0	198	482	14	0	496	38	417	0	455	1149
% Lights	92.9	94.0	0	93.8	95.6	93.3	0	95.6	92.7	94.3	0	94.2	94.7
Buses	2	5	0	7	11	1	0	12	0	2	0	2	21
% Buses	7.1	2.7	0	3.3	2.2	6.7	0	2.3	0	0.5	0	0.4	1.7
Trucks	0	6	0	6	11	0	0	11	3	23	0	26	43
% Trucks	0	3.3	0	2.8	2.2	0	0	2.1	7.3	5.2	0	5.4	3.5
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	4	48	0	52	127	4	0	131	24	135	0	159	342
04:15 PM	2	45	0	47	145	9	0	154	19	134	0	153	354
04:30 PM	3	50	0	53	123	7	0	130	32	162	0	194	377
04:45 PM	2	31	0	33	110	2	0	112	19	181	0	200	345
Total Volume	11	174	0	185	505	22	0	527	94	612	0	706	1418
% App. Total	5.9	94.1	0		95.8	4.2	0		13.3	86.7	0		
PHF	.688	.870	.000	.873	.871	.611	.000	.856	.734	.845	.000	.883	.940
Lights	10	168	0	178	494	22	0	516	90	600	0	690	1384
% Lights	90.9	96.6	0	96.2	97.8	100	0	97.9	95.7	98.0	0	97.7	97.6
Buses	1	1	0	2	1	0	0	1	1	3	0	4	7
% Buses	9.1	0.6	0	1.1	0.2	0	0	0.2	1.1	0.5	0	0.6	0.5
Trucks	0	5	0	5	10	0	0	10	3	9	0	12	27
% Trucks	0	2.9	0	2.7	2.0	0	0	1.9	3.2	1.5	0	1.7	1.9

Traffic Databank

716 S Sixth Ave
Mount Vernon, NY 10550

Site Code:
Station ID:
EB TENNENT RD
MARLBORO,NJ
Latitude: 0' 0.0000 Undefined

Start Time	Mon 23-Jan-17	Tue 24-Jan-17	Wed 25-Jan-17	Thu 26-Jan-17	Fri 27-Jan-17	Average Day	Sat 28-Jan-17	Sun 29-Jan-17	Week Average			
12:00 AM	*	*	*	*	*	*	71	58	64 			
01:00	*	*	*	*	10	10	49	32	30 			
02:00	*	*	*	*	9	9	26	10	15 			
03:00	*	*	*	*	11	11	18	10	13 			
04:00	*	*	*	*	10	10	21	9	13 			
05:00	*	*	*	*	47	47	27	19	31 			
06:00	*	*	*	*	220	220	80	55	118 			
07:00	*	*	*	*	427	427	151	63	214 			
08:00	*	*	*	*	513	513	259	150	307 			
09:00	*	*	*	*	381	381	323	260	321 			
10:00	*	*	*	*	313	313	365	310	329 			
11:00	*	*	*	*	331	331	439	353	374 			
12:00 PM	*	*	*	*	332	332	424	398	385 			
01:00	*	*	*	*	352	352	474	402	409 			
02:00	*	*	*	*	495	495	435	407	446 			
03:00	*	*	*	*	476	476	367	466	436 			
04:00	*	*	*	*	478	478	356	332	389 			
05:00	*	*	*	*	507	507	362	262	377 			
06:00	*	*	*	*	487	487	318	236	347 			
07:00	*	*	*	*	361	361	237	214	271 			
08:00	*	*	*	*	246	246	202	171	206 			
09:00	*	*	*	*	183	183	199	103	162 			
10:00	*	*	*	*	87	87	169	59	105 			
11:00	*	*	*	*	94	94	97	34	75 			
Day Total	0	0	0	0	6370	6370	5469	4413	5437			
% Avg. WkDay	0.0%	0.0%	0.0%	0.0%	100.0%							
% Avg. Week	0.0%	0.0%	0.0%	0.0%	117.2%	117.2%	100.6%	81.2%				
AM Peak	-	-	-	-	08:00	-	08:00	-	11:00	11:00	-	-
Vol.	-	-	-	-	513	-	513	-	439	353	-	374
PM Peak	-	-	-	-	17:00	-	17:00	-	13:00	15:00	-	14:00
Vol.	-	-	-	-	507	-	507	-	474	466	-	446

Traffic Databank

716 S Sixth Ave
Mount Vernon, NY 10550

Site Code:
Station ID:
EB TENNENT RD
MARLBORO,NJ
Latitude: 0' 0.0000 Undefined

























Start Time	Mon 30-Jan-17	Tue 31-Jan-17	Wed 01-Feb-17	Thu 02-Feb-17	Fri 03-Feb-17	Average Day	Sat 04-Feb-17	Sun 05-Feb-17	Week Average
12:00 AM	14	17	19	*	*	17	*	*	17
01:00	7	10	8	*	*	8	*	*	8
02:00	6	11	6	*	*	8	*	*	8
03:00	10	8	11	*	*	10	*	*	10
04:00	8	7	20	*	*	12	*	*	12
05:00	33	57	64	*	*	51	*	*	51
06:00	190	196	213	*	*	200	*	*	200
07:00	385	417	410	*	*	404	*	*	404
08:00	447	491	466	*	*	468	*	*	468
09:00	339	362	368	*	*	356	*	*	356
10:00	264	289	294	*	*	282	*	*	282
11:00	277	303	332	*	*	304	*	*	304
12:00 PM	286	311	334	*	*	310	*	*	310
01:00	302	333	319	*	*	318	*	*	318
02:00	434	465	413	*	*	437	*	*	437
03:00	431	463	462	*	*	452	*	*	452
04:00	413	466	499	*	*	459	*	*	459
05:00	451	497	526	*	*	491	*	*	491
06:00	417	454	473	*	*	448	*	*	448
07:00	328	358	316	*	*	334	*	*	334
08:00	206	223	230	*	*	220	*	*	220
09:00	174	188	195	*	*	186	*	*	186
10:00	70	66	72	*	*	69	*	*	69
11:00	38	44	65	*	*	49	*	*	49
Day Total	5530	6036	6115	0	0	5893	0	0	5893
% Avg. WkDay	93.8%	102.4%	103.8%	0.0%	0.0%				
% Avg. Week	93.8%	102.4%	103.8%	0.0%	0.0%	100.0%	0.0%	0.0%	
AM Peak	08:00	08:00	08:00	-	-	08:00	-	-	08:00
Vol.	447	491	466	-	-	468	-	-	468
PM Peak	17:00	17:00	17:00	-	-	17:00	-	-	17:00
Vol.	451	497	526	-	-	491	-	-	491

Grand Total	5530	6036	6115	0	6370	12263	5469	4413	11330
ADT		ADT 5,426			AADT 5,426				

Traffic Databank

716 S Sixth Ave
Mount Vernon, NY 10550

Site Code:
Station ID:
WB TENNENT RD
MARLBORO,NJ
Latitude: 0' 0.0000 Undefined

Start Time	Mon 23-Jan-17	Tue 24-Jan-17	Wed 25-Jan-17	Thu 26-Jan-17	Fri 27-Jan-17	Average Day	Sat 28-Jan-17	Sun 29-Jan-17	Week Average
12:00 AM	*	*	*	*	18	18	49	83	50 
01:00	*	*	*	*	15	15	39	58	37 
02:00	*	*	*	*	11	11	29	35	25 
03:00	*	*	*	*	10	10	23	26	20 
04:00	*	*	*	*	21	21	19	20	20 
05:00	*	*	*	*	68	68	14	7	30 
06:00	*	*	*	*	237	237	18	25	93 
07:00	*	*	*	*	430	430	68	49	182 
08:00	*	*	*	*	460	460	85	44	196 
09:00	*	*	*	*	406	406	161	109	225 
10:00	*	*	*	*	321	321	218	159	233 
11:00	*	*	*	*	307	307	328	215	283 
12:00 PM	*	*	*	*	293	293	384	236	304 
01:00	*	*	*	*	373	373	396	244	338 
02:00	*	*	*	*	365	365	425	276	355 
03:00	*	*	*	*	461	461	349	289	366 
04:00	*	*	*	*	489	489	358	242	363 
05:00	*	*	*	*	494	494	311	216	340 
06:00	*	*	*	*	408	408	310	212	310 
07:00	*	*	*	*	333	333	307	200	280 
08:00	*	*	*	*	272	272	209	179	220 
09:00	*	*	*	*	180	180	191	128	166 
10:00	*	*	*	*	116	116	173	54	114 
11:00	*	*	*	*	83	83	147	35	88 
Day Total	0	0	0	0	6171	6171	4611	3141	4638
% Avg. WkDay	0.0%	0.0%	0.0%	0.0%	100.0%				
% Avg. Week	0.0%	0.0%	0.0%	0.0%	133.1%	133.1%	99.4%	67.7%	
AM Peak	-	-	-	-	08:00	08:00	11:00	11:00	11:00
Vol.	-	-	-	-	460	460	328	215	283
PM Peak	-	-	-	-	17:00	17:00	14:00	15:00	15:00
Vol.	-	-	-	-	494	494	425	289	366

Traffic Databank

716 S Sixth Ave
Mount Vernon, NY 10550

Site Code:
Station ID:
WB TENNENT RD
MARLBORO,NJ
Latitude: 0' 0.0000 Undefined

Start Time	Mon 30-Jan-17	Tue 31-Jan-17	Wed 01-Feb-17	Thu 02-Feb-17	Fri 03-Feb-17	Average Day	Sat 04-Feb-17	Sun 05-Feb-17	Week Average
12:00 AM	15	17	21	*	*	18	*	*	18
01:00	7	8	9	*	*	8	*	*	8
02:00	9	7	9	*	*	8	*	*	8
03:00	10	11	8	*	*	10	*	*	10
04:00	14	19	16	*	*	16	*	*	16
05:00	50	75	71	*	*	65	*	*	65
06:00	193	268	295	*	*	252	*	*	252
07:00	405	409	441	*	*	418	*	*	418
08:00	428	438	456	*	*	441	*	*	441
09:00	325	321	313	*	*	320	*	*	320
10:00	284	291	267	*	*	281	*	*	281
11:00	277	298	320	*	*	298	*	*	298
12:00 PM	263	304	306	*	*	291	*	*	291
01:00	336	330	348	*	*	338	*	*	338
02:00	324	375	381	*	*	360	*	*	360
03:00	410	386	387	*	*	394	*	*	394
04:00	434	449	426	*	*	436	*	*	436
05:00	465	484	485	*	*	478	*	*	478
06:00	362	389	381	*	*	377	*	*	377
07:00	297	317	301	*	*	305	*	*	305
08:00	242	237	206	*	*	228	*	*	228
09:00	160	156	132	*	*	149	*	*	149
10:00	75	91	73	*	*	80	*	*	80
11:00	35	46	31	*	*	37	*	*	37
Day Total	5420	5726	5683	0	0	5608	0	0	5608
% Avg. WkDay	96.6%	102.1%	101.3%	0.0%	0.0%				
% Avg. Week	96.6%	102.1%	101.3%	0.0%	0.0%	100.0%	0.0%	0.0%	
AM Peak	08:00	08:00	08:00	-	-	08:00	-	-	08:00
Vol.	428	438	456	-	-	441	-	-	441
PM Peak	17:00	17:00	17:00	-	-	17:00	-	-	17:00
Vol.	465	484	485	-	-	478	-	-	478

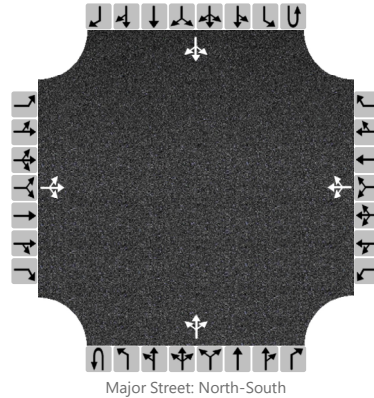
Grand Total	5420	5726	5683	0	6171	11779	4611	3141	10246
ADT		ADT 4,641	AADT 4,641						

APPENDIX C
CAPACITY ANALYSES

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	JEG			Intersection	Tennent & Greenwood		
Agency/Co.	Langan Engineering			Jurisdiction			
Date Performed	7/20/2020			East/West Street	Greenwood Road		
Analysis Year	2023			North/South Street	Tennent Road (CR 3)		
Time Analyzed	No-Build, AM Peak Hour			Peak Hour Factor	0.93		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	The Place Marlboro						

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	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		28	0	29		24	0	26		45	500	6		5	469	18
Percent Heavy Vehicles (%)		4	0	4		3	3	3		10				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
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)		7.14	6.50	6.24		7.13	6.53	6.23		4.20				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)		3.54	4.00	3.34		3.53	4.03	3.33		2.29				2.23		

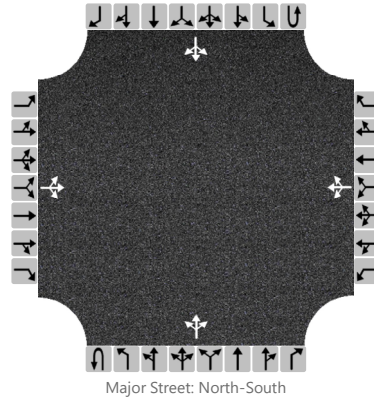
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			61				54				48				5	
Capacity, c (veh/h)			237				238				1003				1019	
v/c Ratio			0.26				0.23				0.05				0.01	
95% Queue Length, Q ₉₅ (veh)			1.0				0.8				0.2				0.0	
Control Delay (s/veh)			25.4				24.5				8.8				8.6	
Level of Service, LOS			D				C				A				A	
Approach Delay (s/veh)	25.4				24.5				1.3				0.2			
Approach LOS	D				C											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	JEG			Intersection	Tennent & Greenwood		
Agency/Co.	Langan Engineering			Jurisdiction			
Date Performed	7/20/2020			East/West Street	Greenwood Road		
Analysis Year	2023			North/South Street	Tennent Road (CR 3)		
Time Analyzed	No-Build, PM Peak Hour			Peak Hour Factor	0.94		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	The Place Marlboro						

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	1	0		0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		46	0	79		13	0	14		37	535	24		21	443	22
Percent Heavy Vehicles (%)		0	0	3		3	3	3		9				3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
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)		7.10	6.50	6.23		7.13	6.53	6.23		4.19				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)		3.50	4.00	3.33		3.53	4.03	3.33		2.28				2.23		

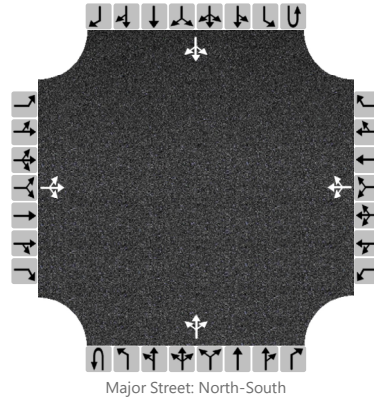
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			133				29				39				22	
Capacity, c (veh/h)			281				202				1034				975	
v/c Ratio			0.47				0.14				0.04				0.02	
95% Queue Length, Q ₉₅ (veh)			2.4				0.5				0.1				0.1	
Control Delay (s/veh)			28.8				25.7				8.6				8.8	
Level of Service, LOS			D				D				A				A	
Approach Delay (s/veh)		28.8				25.7				1.0				0.6		
Approach LOS		D				D										

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	JEG			Intersection	Tennent & Greenwood		
Agency/Co.	Langan Engineering			Jurisdiction			
Date Performed	7/20/2020			East/West Street	Greenwood Road		
Analysis Year	2023			North/South Street	Tennent Road (CR 3)		
Time Analyzed	Build, AM Peak Hour			Peak Hour Factor	0.93		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	The Place Marlboro						

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	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		28	0	29		24	0	26		45	547	6		5	483	18
Percent Heavy Vehicles (%)		4	0	4		3	3	3		10				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
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)		7.14	6.50	6.24		7.13	6.53	6.23		4.20				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)		3.54	4.00	3.34		3.53	4.03	3.33		2.29				2.23		

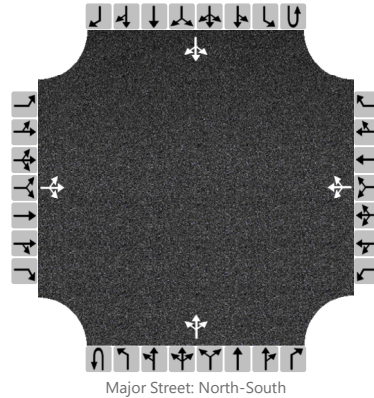
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			61				54				48				5	
Capacity, c (veh/h)			216				216				990				975	
v/c Ratio			0.28				0.25				0.05				0.01	
95% Queue Length, Q ₉₅ (veh)			1.1				1.0				0.2				0.0	
Control Delay (s/veh)			28.1				27.2				8.8				8.7	
Level of Service, LOS			D				D				A				A	
Approach Delay (s/veh)	28.1				27.2				1.3				0.2			
Approach LOS	D				D											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	JEG			Intersection	Tennent & Greenwood		
Agency/Co.	Langan Engineering			Jurisdiction			
Date Performed	7/20/2020			East/West Street	Greenwood Road		
Analysis Year	2023			North/South Street	Tennent Road (CR 3)		
Time Analyzed	Build, PM Peak Hour			Peak Hour Factor	0.94		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	The Place Marlboro						

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	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		46	0	79		13	0	14		37	562	24		21	488	22
Percent Heavy Vehicles (%)		0	0	3		3	3	3		9				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
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)		7.10	6.50	6.23		7.13	6.53	6.23		4.19				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)		3.50	4.00	3.33		3.53	4.03	3.33		2.28				2.23		

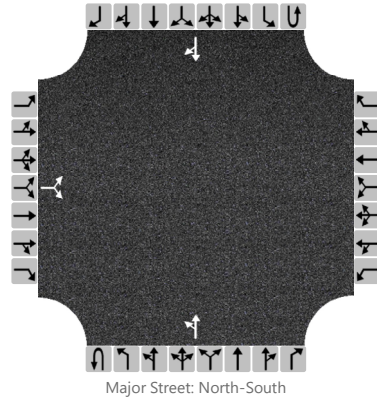
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			133				29			39				22		
Capacity, c (veh/h)			253				180			992				952		
v/c Ratio			0.53				0.16			0.04				0.02		
95% Queue Length, Q ₉₅ (veh)			2.8				0.6			0.1				0.1		
Control Delay (s/veh)			34.0				28.8			8.8				8.9		
Level of Service, LOS			D				D			A				A		
Approach Delay (s/veh)	34.0				28.8				1.0				0.6			
Approach LOS	D				D											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	JEG			Intersection	Tennent & Wooleytown		
Agency/Co.	Langan Engineering			Jurisdiction			
Date Performed	7/20/2020			East/West Street	Wooleytown Road		
Analysis Year	2023			North/South Street	Tennent Road (CR 3)		
Time Analyzed	No-Build, AM Peak Hour			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	The Place Marlboro						

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	1	0		0	0	0	0	0	1	0	0	0	1	0	
Configuration			LR							LT						TR	
Volume, V (veh/h)		32		195						44	520				508	15	
Percent Heavy Vehicles (%)		7		6						7							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized		No					No					No					
Median Type/Storage		Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.47		6.26						4.17						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.56		3.35						2.26						

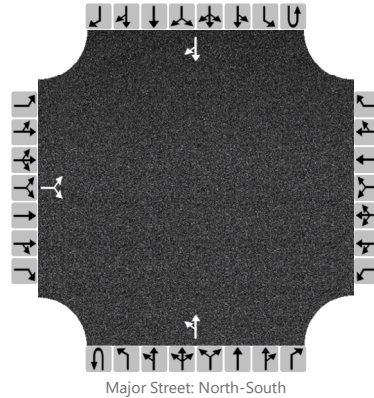
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			247							48						
Capacity, c (veh/h)			414							981						
v/c Ratio			0.60							0.05						
95% Queue Length, Q ₉₅ (veh)			3.7							0.2						
Control Delay (s/veh)			25.7							8.9						
Level of Service, LOS			D							A						
Approach Delay (s/veh)		25.7										1.3				
Approach LOS		D														

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	JEG			Intersection	Tennent & Wooleytown		
Agency/Co.	Langan Engineering			Jurisdiction			
Date Performed	7/20/2020			East/West Street	Wooleytown Road		
Analysis Year	2023			North/South Street	Tennent Road (CR 3)		
Time Analyzed	No-Build, PM Peak Hour			Peak Hour Factor	0.94		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	The Place Marlboro						

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	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume, V (veh/h)		9		186						100	585				513	21
Percent Heavy Vehicles (%)		9		4						4						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.49		6.24						4.14						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.58		3.34						2.24						

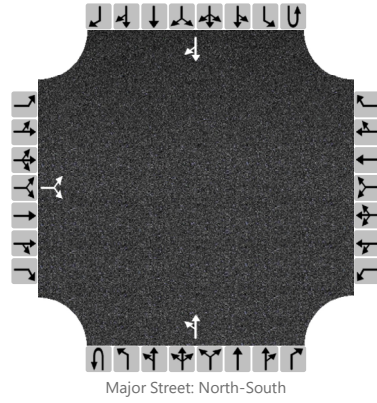
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			207							106						
Capacity, c (veh/h)			464							993						
v/c Ratio			0.45							0.11						
95% Queue Length, Q ₉₅ (veh)			2.3							0.4						
Control Delay (s/veh)			18.9							9.1						
Level of Service, LOS			C							A						
Approach Delay (s/veh)	18.9								2.6							
Approach LOS	C															

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	JEG			Intersection	Tennent & Wooleytown		
Agency/Co.	Langan Engineering			Jurisdiction			
Date Performed	7/20/2020			East/West Street	Wooleytown Road		
Analysis Year	2023			North/South Street	Tennent Road (CR 3)		
Time Analyzed	Build, AM Peak Hour			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	The Place Marlboro						

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	1	0		0	0	0	0	0	1	0	0	0	1	0	
Configuration			LR							LT						TR	
Volume, V (veh/h)		32		195						44	533				551	15	
Percent Heavy Vehicles (%)		7		6						7							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized		No					No					No					
Median Type/Storage		Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.47		6.26						4.17						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.56		3.35						2.26						

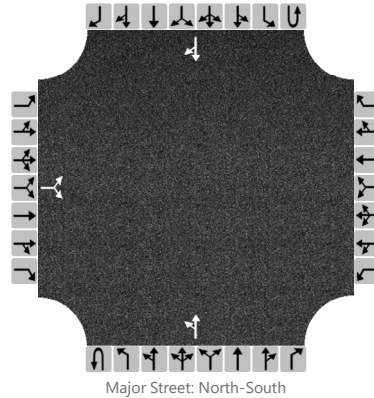
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			247							48						
Capacity, c (veh/h)			386							942						
v/c Ratio			0.64							0.05						
95% Queue Length, Q ₉₅ (veh)			4.3							0.2						
Control Delay (s/veh)			29.4							9.0						
Level of Service, LOS			D							A						
Approach Delay (s/veh)		29.4										1.3				
Approach LOS		D														

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	JEG			Intersection	Tennent & Wooleytown		
Agency/Co.	Langan Engineering			Jurisdiction			
Date Performed	7/20/2020			East/West Street	Wooleytown Road		
Analysis Year	2023			North/South Street	Tennent Road (CR 3)		
Time Analyzed	Build, PM Peak Hour			Peak Hour Factor	0.94		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	The Place Marlboro						

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	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume, V (veh/h)		9		186						100	626				537	21
Percent Heavy Vehicles (%)		9		4						4						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.49		6.24						4.14						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.58		3.34						2.24						

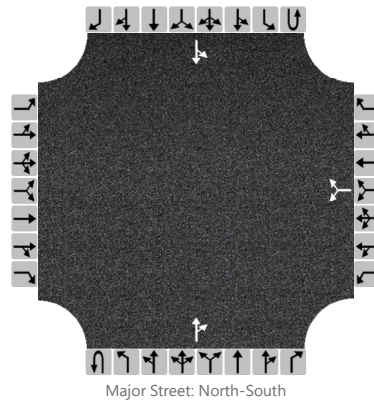
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			207							106						
Capacity, c (veh/h)			444							971						
v/c Ratio			0.47							0.11						
95% Queue Length, Q ₉₅ (veh)			2.4							0.4						
Control Delay (s/veh)			20.0							9.2						
Level of Service, LOS			C							A						
Approach Delay (s/veh)		20.0								2.6						
Approach LOS		C														

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	JEG			Intersection	Tennent & Site Driveway		
Agency/Co.	Langan Engineering			Jurisdiction			
Date Performed	7/20/2020			East/West Street	Site Driveway		
Analysis Year	2023			North/South Street	Tennent Road (CR 3)		
Time Analyzed	Build, AM Peak Hour			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	The Place Marlboro						

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	1	0		0	1	0
Configuration							LR					TR			LT	
Volume, V (veh/h)						43		47			551	13			14	523
Percent Heavy Vehicles (%)						3		3							3	
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized	No				No				No				No			
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	

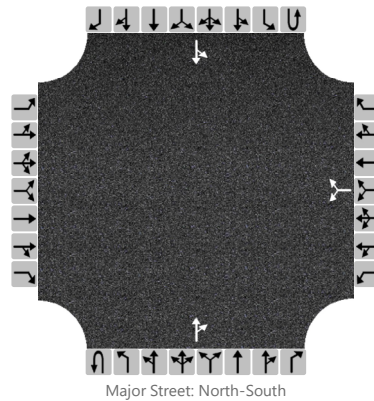
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						98									15	
Capacity, c (veh/h)						289									961	
v/c Ratio						0.34									0.02	
95% Queue Length, Q ₉₅ (veh)						1.4									0.0	
Control Delay (s/veh)						23.7									8.8	
Level of Service, LOS						C									A	
Approach Delay (s/veh)					23.7								0.4			
Approach LOS					C											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	JEG			Intersection	Tennent & Site Driveway		
Agency/Co.	Langan Engineering			Jurisdiction			
Date Performed	7/20/2020			East/West Street	Site Driveway		
Analysis Year	2023			North/South Street	Tennent Road (CR 3)		
Time Analyzed	Build, AM Peak Hour			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	The Place Marlboro						

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, V (veh/h)						24		27			594	41		45	535	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized	No				No				No				No			
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								49		
Capacity, c (veh/h)						240								899		
v/c Ratio						0.23								0.05		
95% Queue Length, Q ₉₅ (veh)						0.9								0.2		
Control Delay (s/veh)						24.4								9.2		
Level of Service, LOS						C								A		
Approach Delay (s/veh)					24.4								1.4			
Approach LOS					C											