

---

# TRAFFIC IMPACT STUDY

For

**Proposed Warehouse Development  
Block 168, Lots 17, 18, 19.02, 19.04, & 19.08  
Township of Howell  
Monmouth County, New Jersey**

*Prepared For:*

**AASTHW Property, LLC  
5 Tenafly Road, Suite 416  
Englewood, NJ 07631**

*Prepared By:*

**Langan Engineering & Environmental Services, Inc.  
989 Lenox Drive, Suite 124  
Lawrenceville, NJ 08648  
NJ Certificate of Authorization No: 24GA27996400**



---

**Daniel D. Disario, P.E., PTOE  
P.E. License No. 40025**



---

**Eric J. Vitoria, P.E.  
P.E. License No. 55407**

**LANGAN**

**30 November 2021  
130176701**

## Table of Contents

<b>EXECUTIVE SUMMARY</b> .....	<b>i</b>
<b>INTRODUCTION</b> .....	<b>1</b>
Project Description.....	1
Study Area .....	1
<b>Scope of Study</b> .....	<b>2</b>
<b>DESCRIPTION OF EXISTING CONDITIONS</b> .....	<b>3</b>
Roads.....	3
NJ Route 33 .....	3
Park Avenue (NJ Route 33 Business) .....	3
Elton Adelpia Road (County Road (CR) 524).....	3
Fairfield Road .....	3
Brickyard Road .....	3
Baker Road.....	3
Bennett Road .....	4
Traffic Volumes .....	4
<b>ESTIMATE OF FUTURE CONDITIONS</b> .....	<b>5</b>
Background Traffic Growth .....	5
No-Build Condition .....	5
Site-Generated Trips .....	5
Trip Distribution.....	6
Build Traffic Volumes .....	7
<b>ANALYSIS OF TRAFFIC OPERATIONS</b> .....	<b>7</b>
Level of Service Criteria .....	7
Capacity Analysis .....	8
Elton Adelpia Road (CR 524) and Fairfield Road / School Driveway.....	9
Fairfield Road and NJ Route 33 EB Off-Ramp .....	10
Fairfield Road and Baker Road.....	10
Fairfield Road and Bennett Road .....	10
Fairfield Road and Site Driveway 1 (North) .....	10
Fairfield Road and Site Driveway 2 (South) .....	11
<b>CONCLUSIONS</b> .....	<b>11</b>

## **List of Figures**

Figure 1 - Site Location Map  
Figure 2 - 2021 Existing Traffic Volumes  
Figure 3 - Traffic Volume Adjustments  
Figure 4 - 2021 Adjusted Existing Traffic Volumes  
Figure 5 - 2023 Base Traffic Volumes  
Figure 6 - Total Adjacent Development Traffic Volumes  
Figure 7 - 2023 No-Build Traffic Volumes  
Figure 8 - Passenger Vehicle Arrival and Departure Distributions  
Figure 9 - Truck Arrival and Departure Distributions  
Figure 10 - Passenger Vehicle Site-Generated Trips  
Figure 11 - Truck Site Generated Trips  
Figure 12 - Total Site-Generated Trips  
Figure 13 - 2023 Build Traffic Volumes

## **List of Tables**

Table 1 – Trip Generation Estimates  
Table 2 – Arrival and Departure Trip Distributions  
Table 3 – Intersection Capacity Analysis Summary  
Table 4 – Supplemental Intersection Capacity Analysis Summary

## **Appendices**

Appendix A - Figures  
Appendix B - Journey To Work Model  
Appendix C - Traffic Counts  
Appendix D - Adjacent Development Volume Worksheets  
Appendix E - Timing Directives  
Appendix F - Capacity Analysis Printouts

## **EXECUTIVE SUMMARY**

AASTHW Property LLC retained Langan Engineering and Environmental Services to prepare a traffic impact study for a proposed 212,844 square foot (sf) warehouse building. The site is located along the southbound side of Fairfield Road. It is bordered on the east by Fairfield Road, on the west and south by undeveloped land, and on the north by the NJ Route 33 EB Off-Ramp. Two full-movement driveways will provide site access along Fairfield Road.

Langan estimated the number of new trips the proposed warehouse development would generate based on data compiled for Land Use Code 150 (Warehousing) by the Institute of Transportation Engineers (ITE) as contained in the publication Trip Generation, 11<sup>th</sup> Edition. We estimated that the proposed warehouse development would generate approximately 52 trips (34 enter, 18 exit) during the weekday morning peak hour and 52 trips (12 enter, 40 exit) during the weekday evening peak hour.

We determined the directional distribution of the site-generated trips for the proposed warehouse development based on existing area travel patterns, demographic data, traffic studies for other nearby developments, and a journey-to-work model, which is included in Appendix B.

We conducted capacity analyses for the following intersections:

- Park Avenue (NJ 33 Business) / NJ Route 33 WB Off-Ramp and Fairfield Road / Brickyard Road;
- Elton Adelpia Road (County Road 524) and Fairfield Road / School Driveway;
- Fairfield Road and NJ Route 33 EB Off-Ramp;
- Fairfield Road and Baker Road;
- Fairfield Road and Bennett Road;
- Fairfield Road and Site Driveway 1;
- Fairfield Road and Site Driveway 2.

Based on our analyses, we determined the proposed warehouse development would not significantly alter overall area traffic operations during peak hours. The proposed driveways will also operate at acceptable levels of service (LOS) during peak traffic hours.

## **INTRODUCTION**

AASTHW Property LLC retained Langan Engineering and Environmental Services to prepare a traffic impact study for a proposed 212,844 square foot (sf) warehouse building. The project site is located along Fairfield Road in the Township of Howell, Monmouth County, New Jersey.

### **Project Description**

The site is located along the southbound side of Fairfield Road. It is bordered on the east by Fairfield Road, on the west and south by undeveloped land, and on the north by the NJ Route 33 EB Off-Ramp. The Howell tax maps designate the site as Block 168, Lots 17, 18, 19.02, 19.04, & 19.08. Figure 1 shows the site location.

The project proposes a 212,844 square foot (sf) warehouse building. Two full-movement driveways will provide site access along Fairfield Road.

### **Study Area**

We conducted capacity analyses for the following intersections:

- Park Avenue (NJ 33 Business) / NJ Route 33 WB Off-Ramp and Fairfield Road / Brickyard Road;
- Elton Adelpia Road (County Road 524) and Fairfield Road / School Driveway;
- Fairfield Road and NJ Route 33 EB Off-Ramp;
- Fairfield Road and Baker Road;
- Fairfield Road and Bennett Road;
- Fairfield Road and Site Driveway 1;
- Fairfield Road and Site Driveway 2.

The section "Description of Existing Conditions" presents an inventory of the physical road conditions.

## **SCOPE OF STUDY**

Langan undertook the following steps to prepare this study according to standard accepted 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 turning movement counts at the study intersections in October 2021, when COVID-19 restrictions were lifted and schools were in session with in-person learning. However, the 2021 traffic counts may not be representative of typical traffic conditions. We also obtained historical count data from the New Jersey Department of Transportation (NJDOT) from 2013 and 2016 to aid in establishing traffic volumes representative of typical traffic conditions. We then identified the existing weekday morning and evening peak hour traffic volumes based on the collected traffic count data.
3. Applied the NJDOT Monmouth County growth factors of 1.00, 1.25, 1.75, and 2.50 percent per year as appropriate to the existing weekday peak hour traffic volumes to establish 2023 Base traffic volumes.
4. Obtained traffic information for local developments not yet built in the study area. Estimated traffic for those local developments. Added that local development traffic to the 2023 Base volumes to establish the 2023 No-Build traffic volumes.
5. Prepared trip generation estimates for the proposed warehouse development based on research data developed by the Institute of Transportation Engineers (ITE).
6. Developed trip distribution for the proposed warehouse development based on existing area travel patterns, demographic data, review of traffic studies for other nearby developments, a journey-to-work model, and the likely travel paths of site-generated traffic.
7. Assigned site-generated trips to the site driveways and the surrounding roadway network based on the likely travel routes motorists will use to travel to and from the site.
8. Established future 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 Synchro Software.

## **DESCRIPTION OF EXISTING CONDITIONS**

This section describes the roads and traffic volumes near the site.

### **Roads**

#### NJ Route 33

NJ Route 33 is an urban principal arterial freeway/expressway under New Jersey Department of Transportation (NJDOT) jurisdiction. NJ Route 33 has a general east-west orientation and provides one travel lane in each direction in the immediate study area. The posted speed limit within the study area is 55mph.

#### Park Avenue (NJ Route 33 Business)

Park Avenue (NJ Route 33 Business) is an urban principal arterial under NJDOT jurisdiction. Park Avenue has a general east-west orientation and provides one travel lane in each direction in the immediate study area. The posted speed limit within the study area is 50mph.

#### Elton Adelphia Road (County Road (CR) 524)

Elton Adelphia Road (CR 524) is an urban major collector under Monmouth County jurisdiction. CR 524 has a general east-west orientation and provides one travel lane in each direction in the immediate study area. The posted speed limit within the study area is 45mph

#### Fairfield Road

Fairfield Road is a local road. The roadway has a general north-south orientation and provides one travel lane in each direction in the immediate study area. The posted speed limit within the study area is 45mph.

#### Brickyard Road

Brickyard Road is a local road. The roadway has a general north-south orientation and provides one travel lane in each direction in the immediate study area. The posted speed limit within the study area is 35mph.

#### Baker Road

Baker Road is a private driveway. The roadway has a general east-west orientation and provides one travel lane in each direction in the immediate study area. There is no posted speed limit.

## Bennett Road

Bennett Road is a local road. The roadway has a general east-west orientation and provides one travel lane in each direction in the immediate study area. The posted speed limit within the study area is 40mph.

### **Traffic Volumes**

To examine traffic conditions near the site, we arranged turning movement counts (TMC) at the study intersections on a typical weekday. The TMCs occurred after New Jersey lifted COVID-19 restrictions and schools were in session with in-person learning. Specifically, we arranged for TMCs from 6:00 AM to 10:00 AM and from 2:00 PM to 6:00 PM on Tuesday, October 5, 2021.

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

Due to the effects of the COVID-19 pandemic, the count data might not represent typical traffic conditions. Therefore, we obtained NJDOT automatic traffic recorder (ATR) counts conducted in January 2013 along Park Avenue (NJ Route 33 Business) and in October 2016 along the NJ Route 33 WB On-Ramp and EB Off-Ramp near the site. The 2013 NJDOT ATR counts were higher in the eastbound direction during the morning peak hour along Park Avenue and the 2016 NJDOT ATR counts were higher along both NJ Route 33 ramps during the morning and evening peak hours. Therefore, to be conservative, we increased the 2021 TMCs to conservatively derive the 2021 Adjusted Existing traffic volumes in the study area.

Additionally, McDonough & Rea Associates, Inc., conducted turning movement counts for the Rock Solid Realty-Warehouse development. Specifically, they collected counts along Fairfield Road in December 2018 and October 2019. Based on a comparison to the December 2018 and October 2019 traffic volumes, the 2021 Adjusted Existing traffic volumes are representative of existing traffic conditions.

Figure 2 illustrates the 2021 Existing weekday morning and evening peak hour traffic volumes. We then utilized the higher 2013 and 2016 NJDOT ATR volumes to increase and balance traffic volumes between intersections by adjusting specific movements upwards, where appropriate. Figure 3 shows the traffic volume adjustments. Figure 4 shows the 2021 Adjusted Existing weekday morning and evening peak hour traffic volumes. Summaries of the traffic count data are contained in Appendix C.



## **ESTIMATE OF FUTURE CONDITIONS**

This section of the report covers background traffic growth, adjacent developments, site-generated trips, trip distribution, and future traffic volumes. We anticipate the developer will complete the project by the end of 2023. Accordingly, we projected traffic volumes to include existing traffic, new traffic created by background growth, and new traffic created by other nearby developments 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 2021 Existing Adjusted traffic volumes by a compounded annual growth rate of 1.00, 1.25, 1.75, and 2.50 percent per year to the respective roadway traffic volumes to establish the 2023 Base traffic volumes. The NJDOT has established those Monmouth County short-term traffic growth rates. Figure 5 shows the 2023 Base traffic volumes.

### **No-Build Condition**

In addition to general background traffic growth, there are prior and pending approvals for developments near the site that could increase traffic on the surrounding road network. In preparing the future traffic projections, we included traffic from the following other developments:

- Active 29 Howell Road – 425,000 sf warehouse;
- Black Rock Enterprises – Relocated Black Rock Enterprises;
- Rock Solid Realty-Warehouse – 368,050 sf warehouse;
- New Jersey Natural Gas Company – 30,000 sf building and outdoor training facility;
- AAFRHW Property LLC - 503,956 sf warehouse (Block 177, Lot 8.01).

We derived traffic for these other developments based on data compiled from their respective traffic studies. Appendix D contains the volume worksheets from the respective traffic studies. Figure 6 shows the collective traffic from these other developments. We added the other development traffic to the 2023 Base traffic volumes to derive the 2023 No-Build traffic volumes, which Figure 7 shows.

### **Site-Generated Trips**

We prepared trip generation estimates for the proposed warehouse development using data compiled for Land Use Code 150 (Warehousing) by the Institute of Transportation Engineers (ITE) as contained in the publication *Trip Generation*, 11th edition. Additionally, for the warehouse land

use, ITE provides truck trip generation data in the supplement to the *Trip Generation* publication. Table 1 summarizes the trip generation estimates for the proposed warehouse development for the weekday morning and evening peak hours.

**Table 1 – Trip Generation Estimates**

Use	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	In	Out	Total	In	Out	Total
Passenger Vehicles	32	16	48	9	37	46
Trucks*	2	2	4	3	3	6
<b>Total</b>	<b>34</b>	<b>18</b>	<b>52</b>	<b>12</b>	<b>40</b>	<b>52</b>

\*Trucks percentages from the ITE Supplement – 7.7% AM peak hour and 11.5% PM peak hour

Table 1 shows the proposed warehouse development will generate little traffic during weekday peak hours. Many entities, including the NJDOT, classify land uses generating less than 100 peak hour trips as having an insignificant traffic impact.

### Trip Distribution

We determined the directional distribution of site-generated trips based on examining existing area travel patterns, demographic data, traffic studies for other nearby developments, a journey-to-work model, and the likely site-generated travel paths. Appendix B contains the journey-to-work model. We assigned the site-generated trips to the adjacent roadway system based on travel routing software. Table 2 shows the directional distributions.

**Table 2 – Arrival and Departure Trip Distributions**

Direction (To/From)	Arrival and Departure Distributions	
	Passenger Vehicles	Trucks
NJ Route 33 (East)	38%	50%
NJ Route 33 (West)	18%	50%
Park Avenue – NJ Route 33 Business (West)	25%	-
Elton Adelphia Road – CR 524 (East)	16%	-
Elton Adelphia Road – CR 524 (West)	1%	-
Bennett Road (West)	2%	-
<b>Total</b>	<b>100%</b>	<b>100%</b>

Figures 8 and 9 show the arrival and departure distributions for passenger vehicles and trucks, respectively. Figures 10 and 11 show the site-generated trips for passenger vehicles and trucks, respectively. Figure 12 shows the total site-generated trips assigned to the roadway network.

## **Build Traffic Volumes**

We derived the 2023 Build traffic volumes by adding the site-generated trips to the 2023 No-Build traffic volumes. Figure 13 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, 6<sup>th</sup> edition, (HCM), published by the Transportation Research Board and the Synchro software.

The HCM defines LOS for signalized intersections as follows:

<b><u>LOS</u></b>	<b><u>Control Delay per Vehicle</u></b>
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:

<b><u>LOS</u></b>	<b><u>Delay Range (sec/veh)</u></b>
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 study intersections and found that the proposed warehouse development driveways will operate acceptably during the peak hours. Moreover, site traffic impacts at the study intersections will be negligible. Table 3 on the following page summarizes the 2023 No-Build and Build levels of service (LOS) at each study intersection during the weekday morning and evening peak hours. Following are discussions pertaining to each of the study intersections. Appendix F contains the capacity analysis worksheets.

#### Park Avenue (NJ 33 Business) / NJ Route 33 WB Off-Ramp and Fairfield Road / Brickyard Road

We expect this signalized intersection to operate at an overall LOS C during the weekday morning peak hour and an overall LOS B during the weekday evening peak hour under the No-Build condition. Under the Build condition, the intersection will continue to operate at an overall LOS C during the weekday morning peak hour and an overall LOS B during the weekday evening peak hour.

**Table 3 – Intersection Capacity Analysis Summary**

Location	Movement	2023 No-Build Condition		2023 Build Condition		
		AM	PM	AM	PM	
<b>Signalized Intersection</b>						
Park Ave (NJ 33 Business) / NJ Route 33 WB Off-Ramp and Fairfield Road / Brickyard Road	EB	L	B (12.1)	A (8.2)	B (12.3)	A (8.6)
		T,R	C (20.9)	B (12.5)	C (21.6)	B (13.1)
	WB	L	B (19.3)	A (9.7)	C (22.6)	B (10.3)
		T,R	B (13.8)	A (8.9)	B (14.1)	A (9.3)
	NB	L,T	D (47.2)	D (51.1)	D (47.0)	D (50.6)
	SB	L,T,R	B (17.2)	C (20.2)	B (16.9)	B (19.7)
	<b>Overall</b>		<b>C (23.4)</b>	<b>B (18.2)</b>	<b>C (24.0)</b>	<b>B (18.7)</b>
Elton Adelpia Road (County Road 524) and Fairfield Road / School Driveway	EB	L	A (5.7)	A (4.0)	A (5.7)	A (4.0)
		T,R	B (11.0)	A (7.3)	B (11.0)	A (7.3)
	WB	L	A (5.5)	A (3.9)	A (5.5)	A (3.9)
		T,R	B (12.7)	A (9.2)	B (12.8)	A (9.2)
	NB	L	D (35.2)	C (29.0)	D (35.2)	C (29.0)
		T,R	D (36.7)	C (32.0)	D (36.7)	C (32.0)
	SB	L	D (38.3)	F (320.6)	D (38.5)	F (329.4)
		T,R	C (22.7)	B (16.4)	C (22.7)	B (16.4)
	<b>Overall</b>		<b>B (16.6)</b>	<b>F (131.1)</b>	<b>B (16.8)</b>	<b>F (135.3)</b>
<b>Unsignalized Intersections</b>						
Fairfield Road and NJ Route 33 EB Off-Ramp	EB	L	C (17.5)	C (17.7)	C (18.2)	C (18.7)
		R	B (11.4)	B (14.6)	B (11.8)	B (14.9)
Fairfield Road and Baker Road	WB	L,R	B (13.5)	A (9.6)	B (13.6)	A (9.6)
	SB	L	A (8.8)	A (7.7)	A (8.9)	A (7.7)
Fairfield Road and Bennett Road	EB	L,R	C (15.4)	B (14.5)	C (15.5)	B (14.7)
	NB	L	A (8.1)	A (8.6)	A (8.1)	A (8.7)
Fairfield Road and Site Driveway 1	EB	L,R	-	-	C (18.9)	C (21.3)
	NB	L	-	-	A (8.4)	A (8.8)
Fairfield Road and Site Driveway 2	EB	L,R	-	-	D (26.6)	D (28.6)
	NB	L	-	-	A (0.0)	A (0.0)

Based on Synchro Software [\*Level of Service (Average vehicle delay (seconds per vehicle))]

Elton Adelpia Road (CR 524) and Fairfield Road / School Driveway

We expect this signalized intersection to operate at an overall LOS B during the weekday morning peak hour and an overall LOS F during the weekday evening peak hour under the No-Build condition. Under the Build condition, the intersection will continue to operate at an overall LOS B during the weekday morning peak hour and an overall LOS F during the weekday evening peak hour.

We note that the southbound Fairfield Road left-turn movement operates with delay, particularly during the weekday evening peak hour. Increasing the cycle length from 103 seconds to 105 seconds with a shift of three seconds from the Elton Adelpia (CR 524) advance phase and ten seconds from the Fairfield Road / School Driveway ROW to the Fairfield Road / School Driveway

advance phase would improve operations along Fairfield Road. We conducted a supplemental analysis, which illustrates the improved operations during the weekday evening peak hour in both the No-Build and Build conditions. Table 4 summarizes the 2023 No-Build and Build conditions with the timing adjustment.

**Table 4 – Supplemental Intersection Capacity Analysis Summary**

Location	Movement		2023 No-Build with Timing Adjustment Condition	2023 Build with Timing Adjustment Condition
			PM	PM
Elton Adelphia Road (County Road 524) and Fairfield Road / School Driveway	EB	L	A (8.2)	A (8.2)
		T,R	B (12.8)	B (12.8)
	WB	L	A (7.9)	A (7.9)
		T,R	B (14.5)	B (14.5)
	NB	L	C (30.0)	C (30.0)
		T,R	D (38.7)	D (38.7)
	SB	L	E (73.9)	E (77.1)
		T,R	B (12.6)	B (12.6)
<b>Overall</b>		<b>D (37.3)</b>	<b>D (38.7)</b>	

Fairfield Road and NJ Route 33 EB Off-Ramp

We expect all movements at this stop-controlled intersection to operate at LOS C or better during both the weekday morning and evening peak hours under the No-Build conditions. Under the Build condition, all movements will continue to operate at LOS C or better during both the weekday morning and evening peak hours.

Fairfield Road and Baker Road

We expect all movements at this stop-controlled intersection to operate at LOS B or better during both the weekday morning and evening peak hours under the No-Build conditions. Under the Build condition, all movements will continue to operate at LOS B or better during both the weekday morning and evening peak hours.

Fairfield Road and Bennett Road

We expect all movements at this stop-controlled intersection to operate at LOS C or better during both the weekday morning and evening peak hours under the No-Build conditions. Under the Build condition, all movements will continue to operate at LOS C or better during both the weekday morning and evening peak hours.

Fairfield Road and Site Driveway 1 (North)

Site Driveway 1 will intersect Fairfield Road to form the west leg of a T-shaped intersection under stop control. Note this driveway will serve as the primary access for passenger vehicles. The

eastbound site driveway approach will provide one shared left-turn / right-turn lane and will be stop-controlled. The northbound Fairfield Road approach will provide one shared left-turn / through lane. The southbound Fairfield Road approach will provide one shared through / right-turn lane.

Under the Build condition, we expect all movements at the stop-controlled intersection to operate a LOS C or better during both the weekday morning and evening peak hours.

#### Fairfield Road and Site Driveway 2 (South)

Site Driveway 2 will intersect Fairfield Road to form the west leg of a T-shaped intersection under stop control. Note this driveway will serve as the primary access for trucks. The eastbound site driveway approach will provide one shared left-turn / right-turn lane and will be stop-controlled. The northbound Fairfield Road approach will provide one shared left-turn / through lane. The southbound Fairfield Road approach will provide one shared through / right-turn lane.

Under the Build condition, we expect all movements at the stop-controlled intersection to operate a LOS D or better during both the weekday morning and evening peak hours

## **CONCLUSIONS**

Langan has concluded the proposed warehouse development will not significantly alter area traffic operations during peak hours. We expect the site access points to operate at acceptable levels of service during peak traffic hours.

**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

## PROPOSED WAREHOUSE DEVELOPMENT

BLOCK No. 168, LOT Nos. 17, 18,

19.02, 19.04, & 19.08

TOWNSHIP OF HOWELL

MONMOUTH COUNTY NEW JERSEY

Drawing Title

## SITE LOCATION MAP

Project No.

130176701

Date

11/18/2021

Drawn By

EJV

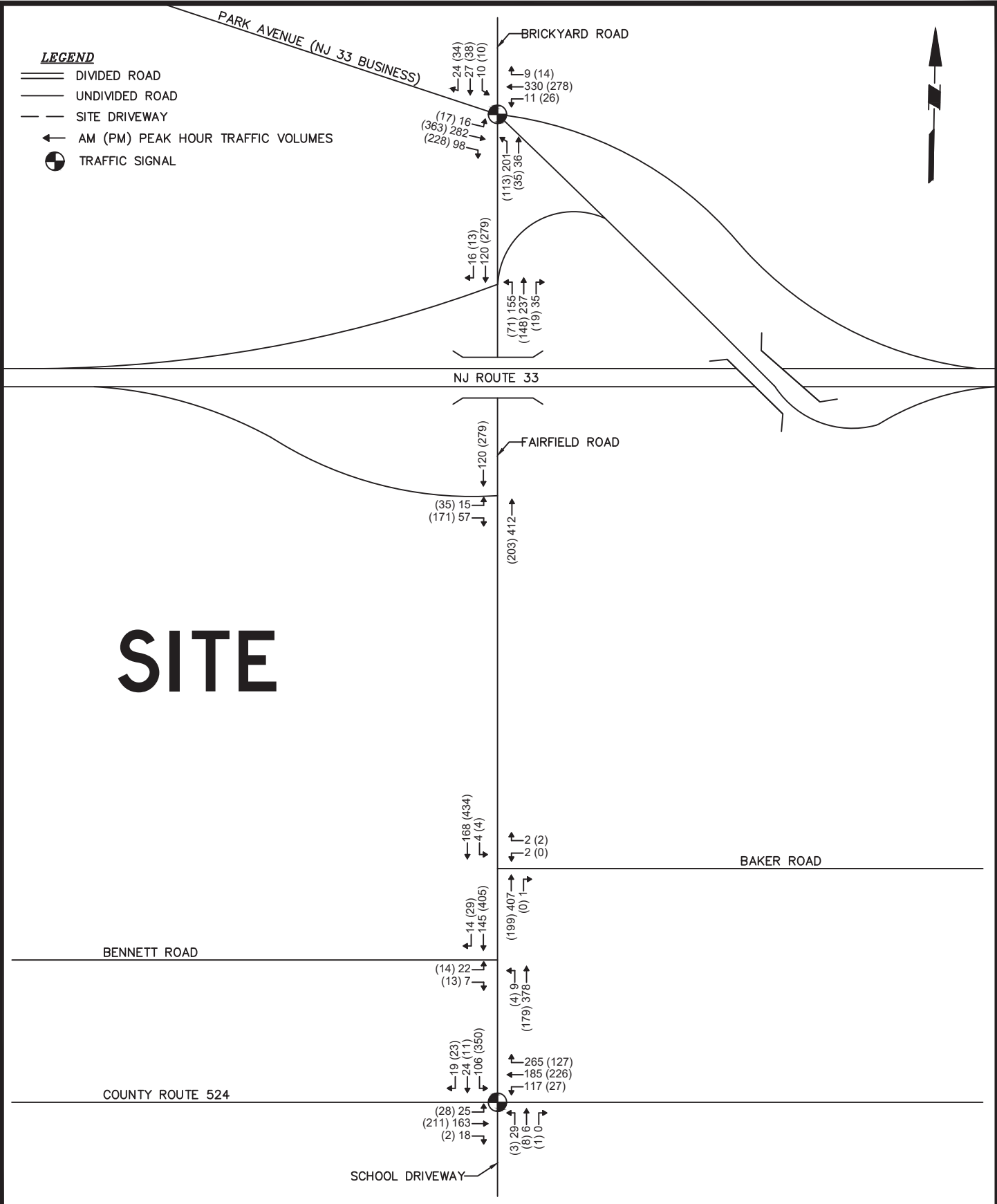
Submission Date

NOVEMBER 2021

Figure

1

Sheet 1 of 13



**SITE**

**LANGAN**

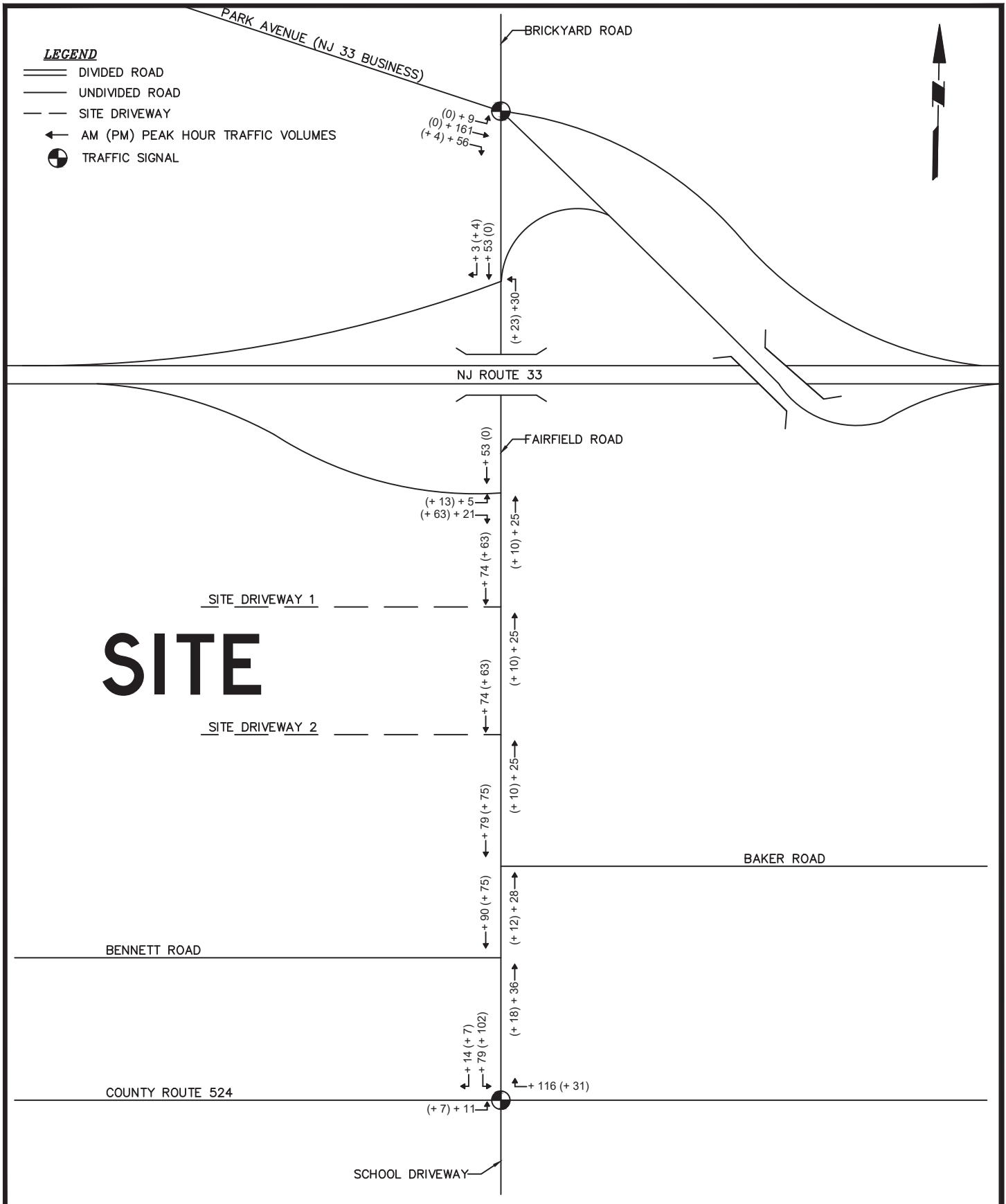
Langan Engineering and Environmental Services, Inc.  
 989 Lenox Drive, Suite 124  
 Lawrenceville, NJ 08648  
 T: 609.282.8000 F: 609.282.8001 www.langan.com  
 NJ Certificate of Authorization No.24GA27996400

Project  
**PROPOSED WAREHOUSE DEVELOPMENT**  
 BLOCK No. 168, LOT Nos. 17, 18, 19.02, 19.04, & 19.08  
 TOWNSHIP OF HOWELL  
 MONMOUTH COUNTY NEW JERSEY

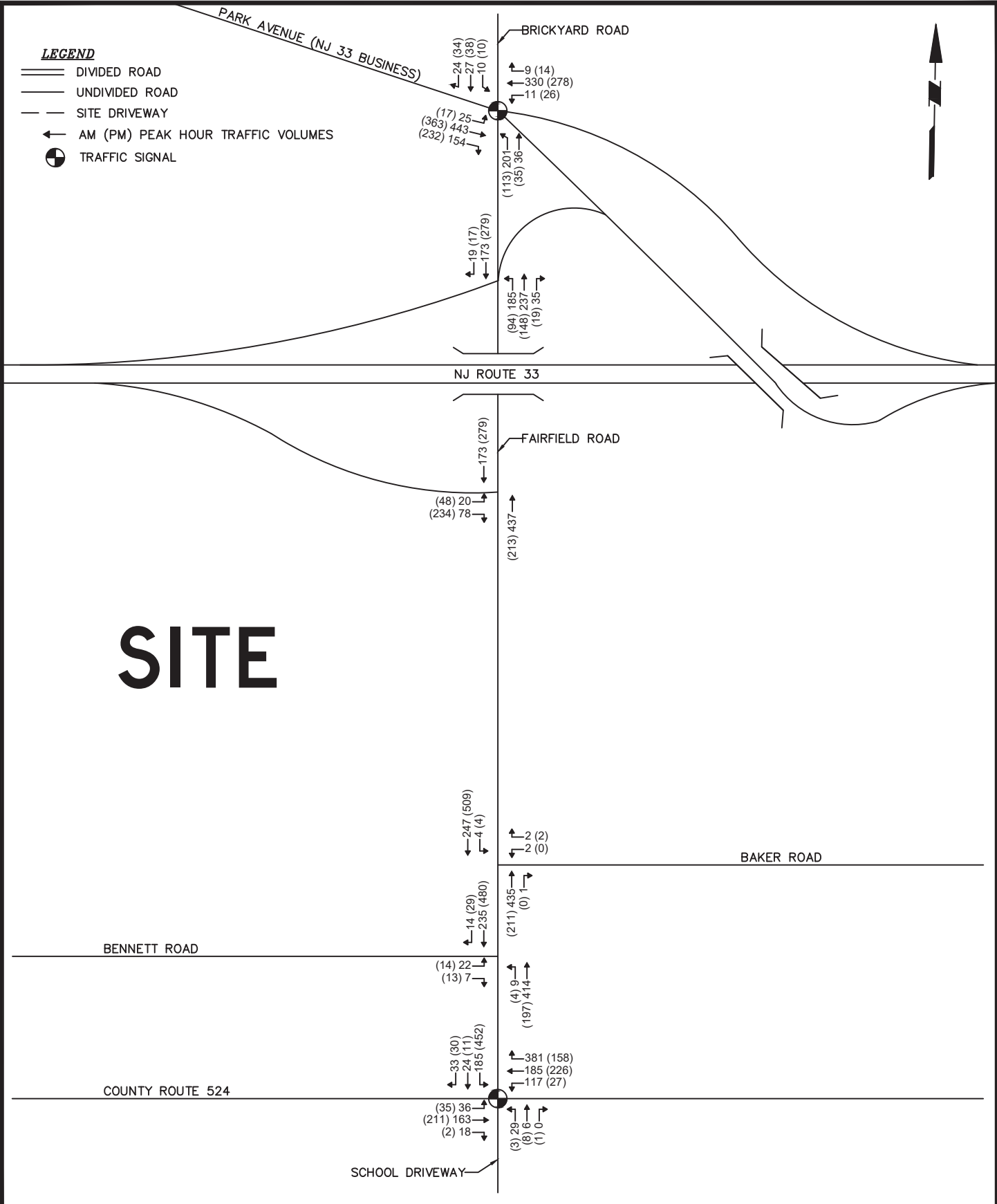
Drawing Title  
**2021 EXISTING TRAFFIC VOLUMES**

Project No.  
130176701  
 Date  
11/18/2021  
 Drawn By  
EJV  
 Submission Date  
NOVEMBER 2021

Figure  
**2**  
 Sheet 2 of 13



<p>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>	<p>Project <b>PROPOSED WAREHOUSE DEVELOPMENT</b> BLOCK No. 168, LOT Nos. 17, 18, 19.02, 19.04, &amp; 19.08 TOWNSHIP OF HOWELL MONMOUTH COUNTY NEW JERSEY</p>	<p>Drawing Title <b>TRAFFIC VOLUME ADJUSTMENTS</b></p>	<p>Project No. 130176701</p>	<p>Figure <b>3</b></p>
			<p>Date 11/18/2021</p>	
			<p>Drawn By EJV</p>	
				<p>Submission Date NOVEMBER 2021</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

Project

**PROPOSED WAREHOUSE DEVELOPMENT**

BLOCK No. 168, LOT Nos. 17, 18, 19.02, 19.04, & 19.08

TOWNSHIP OF HOWELL

MONMOUTH COUNTY NEW JERSEY

Drawing Title

**2021 ADJUSTED EXISTING TRAFFIC VOLUMES**

Project No.

130176701

Date

11/18/2021

Drawn By

EJV

Submission Date

NOVEMBER 2021

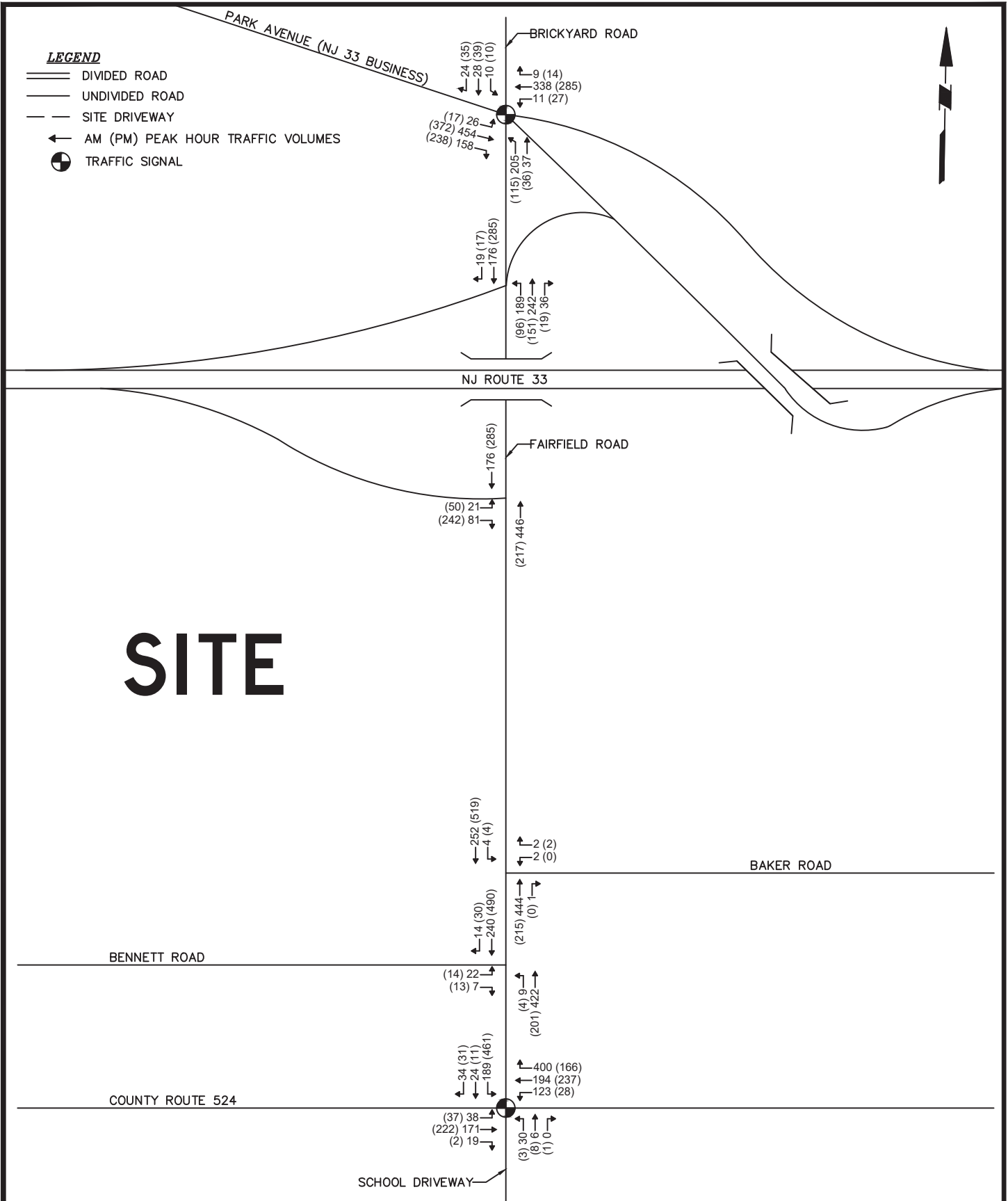
Figure

**4**

Sheet 4 of 13

**LEGEND**

- ==== DIVIDED ROAD
- UNDIVIDED ROAD
- - - SITE DRIVEWAY
- ← AM (PM) PEAK HOUR TRAFFIC VOLUMES
- ⊙ TRAFFIC SIGNAL



**SITE**

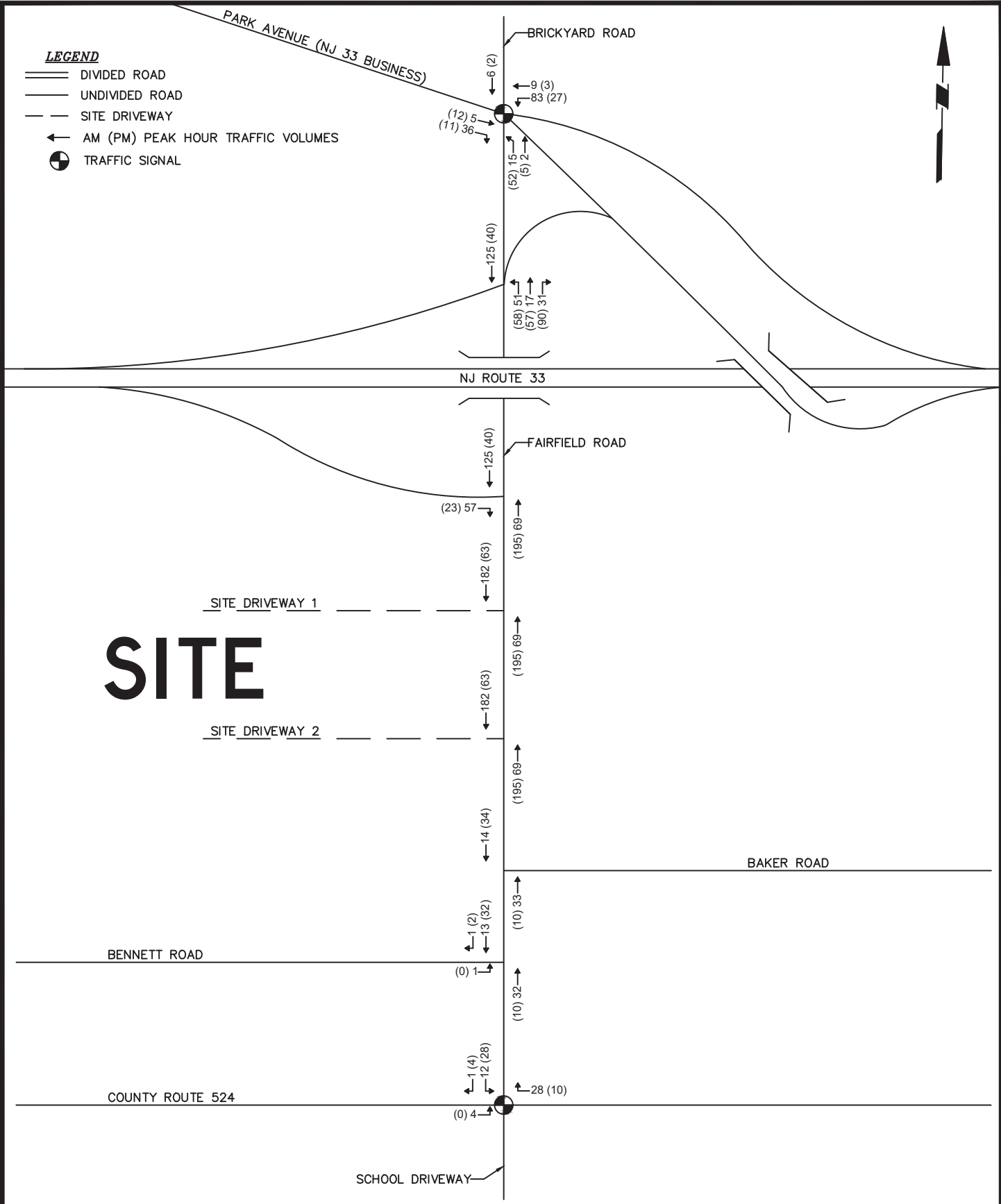
**LANGAN**  
 Langan Engineering and Environmental Services, Inc.  
 989 Lenox Drive, Suite 124  
 Lawrenceville, NJ 08648  
 T: 609.282.8000 F: 609.282.8001 www.langan.com  
 NJ Certificate of Authorization No.24GA27996400

Project  
**PROPOSED WAREHOUSE DEVELOPMENT**  
 BLOCK No. 168, LOT Nos. 17, 18, 19.02, 19.04, & 19.08  
 TOWNSHIP OF HOWELL  
 MONMOUTH COUNTY NEW JERSEY

Drawing Title  
**2023 BASE TRAFFIC VOLUMES**

Project No.  
 130176701  
 Date  
 11/18/2021  
 Drawn By  
 EJV  
 Submission Date  
 NOVEMBER 2021

Figure  
**5**  
 Sheet 5 of 13



# SITE

SITE DRIVEWAY 1

SITE DRIVEWAY 2

BAKER ROAD

BENNETT ROAD

COUNTY ROUTE 524

SCHOOL DRIVEWAY

**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  
**PROPOSED WAREHOUSE DEVELOPMENT**  
 BLOCK No. 168, LOT Nos. 17, 18, 19.02, 19.04, & 19.08  
 TOWNSHIP OF HOWELL  
 MONMOUTH COUNTY NEW JERSEY

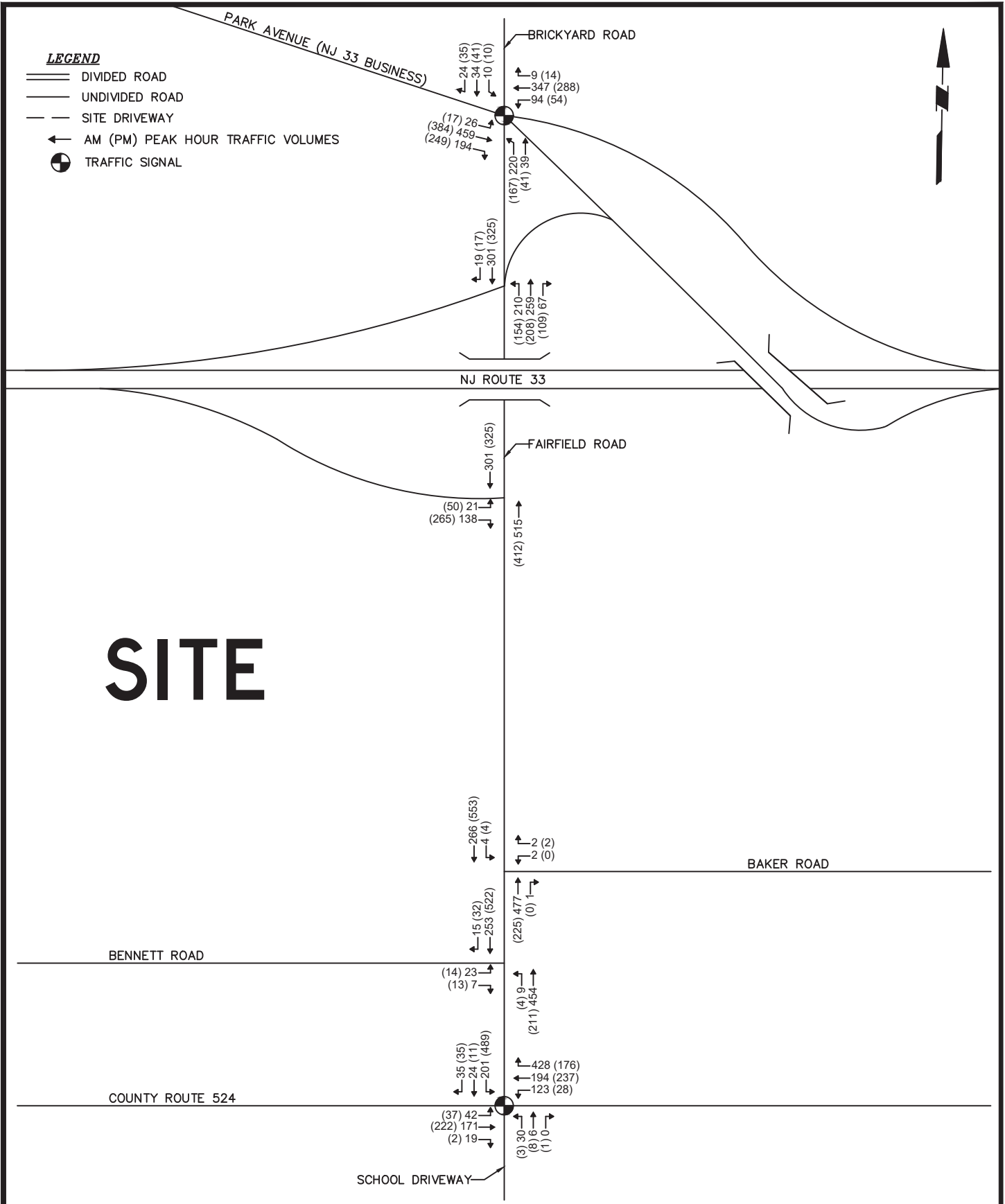
Drawing Title  
**TOTAL ADJACENT DEVELOPMENT TRAFFIC VOLUMES**

Project No.  
130176701  
 Date  
11/18/2021  
 Drawn By  
EJV  
 Submission Date  
NOVEMBER 2021

Figure  
**6**  
 Sheet 6 of 13

**LEGEND**

- ==== DIVIDED ROAD
- UNDIVIDED ROAD
- - - SITE DRIVEWAY
- ← AM (PM) PEAK HOUR TRAFFIC VOLUMES
- ⊕ TRAFFIC SIGNAL



**SITE**

**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  
**PROPOSED WAREHOUSE DEVELOPMENT**  
 BLOCK No. 168, LOT Nos. 17, 18, 19.02, 19.04, & 19.08  
 TOWNSHIP OF HOWELL  
 MONMOUTH COUNTY NEW JERSEY

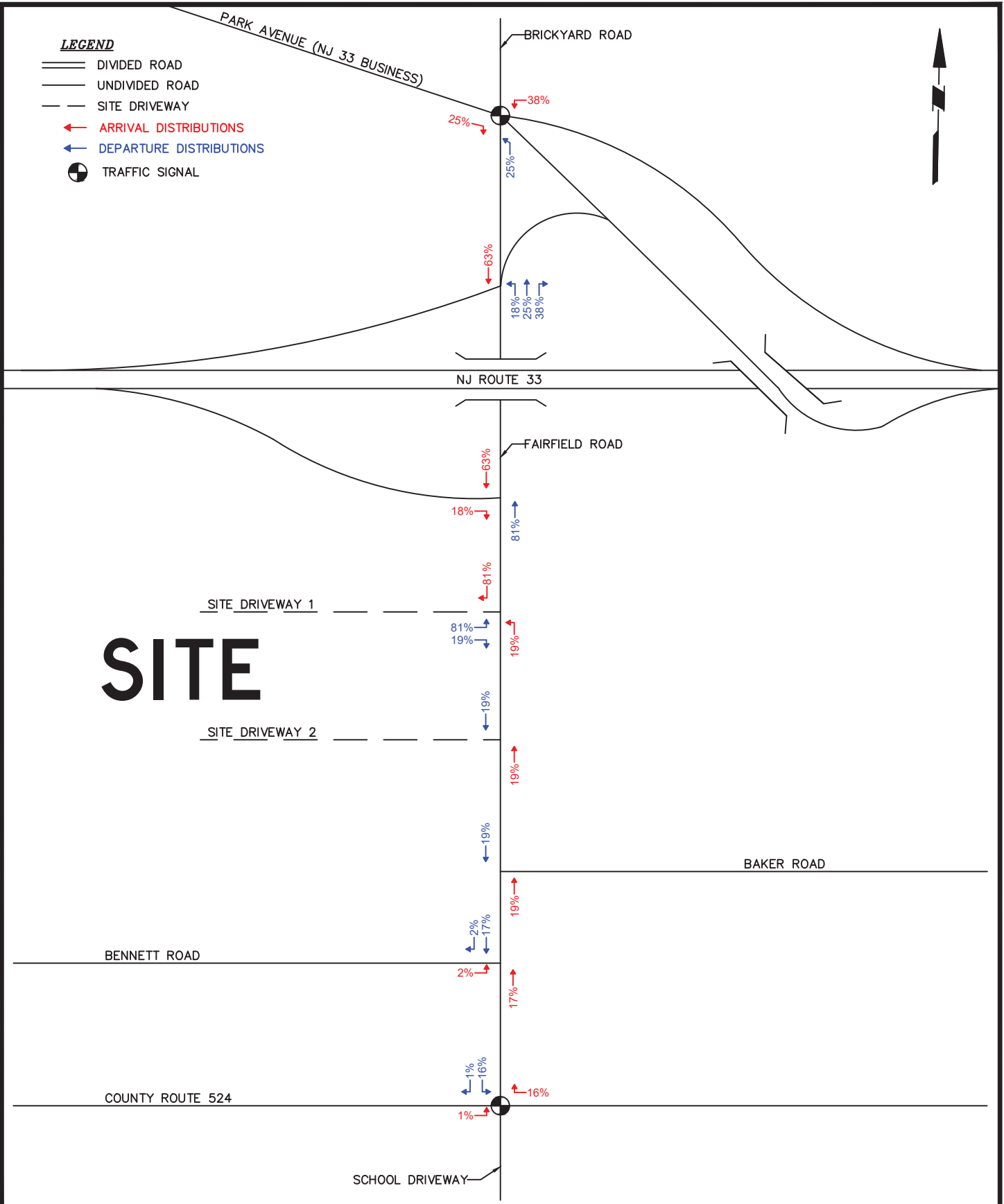
Drawing Title  
**2023 NO-BUILD TRAFFIC VOLUMES**

Project No.  
130176701  
 Date  
11/18/2021  
 Drawn By  
EJV  
 Submission Date  
NOVEMBER 2021

Figure  
**7**  
 Sheet 7 of 13

**LEGEND**

-  DIVIDED ROAD
-  UNDIVIDED ROAD
-  SITE DRIVEWAY
-  ARRIVAL DISTRIBUTIONS
-  DEPARTURE DISTRIBUTIONS
-  TRAFFIC SIGNAL



**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  
**PROPOSED WAREHOUSE DEVELOPMENT**  
 BLOCK No. 168, LOT Nos. 17, 18, 19.02, 19.04, & 19.08  
 TOWNSHIP OF HOWELL  
 MONMOUTH COUNTY NEW JERSEY

Drawing Title  
**PASSENGER VEHICLE ARRIVAL AND DEPARTURE DISTRIBUTIONS**

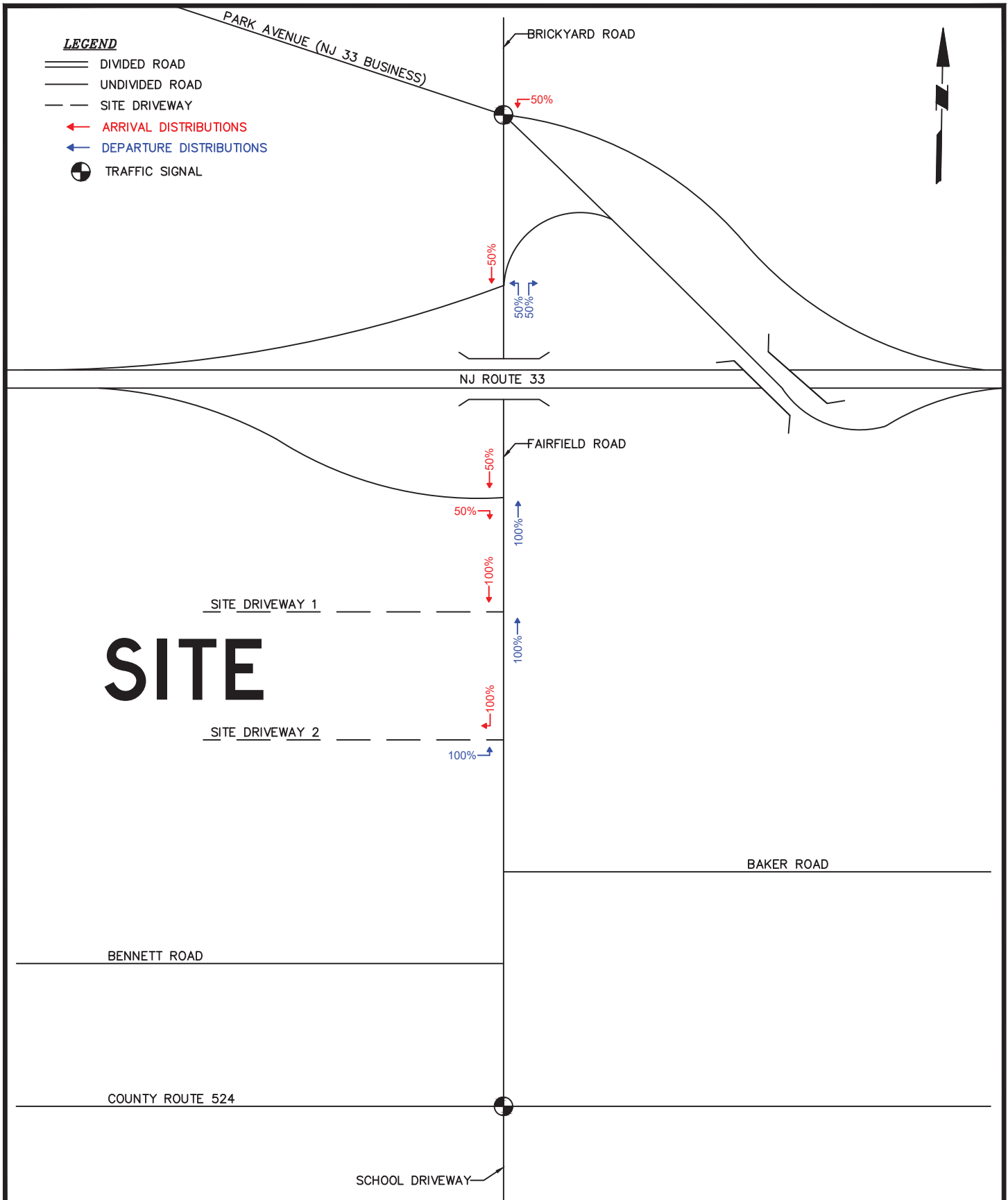
Project No.  
130176701  
 Date  
11/18/2021  
 Drawn By  
EJV  
 Submission Date  
NOVEMBER 2021

Figure  
**8**  
 Sheet 8 of 13



**LEGEND**

- ==== DIVIDED ROAD
- UNDIVIDED ROAD
- SITE DRIVEWAY
- ← ARRIVAL DISTRIBUTIONS
- ← DEPARTURE DISTRIBUTIONS
- TRAFFIC SIGNAL



# SITE

SITE DRIVEWAY 1

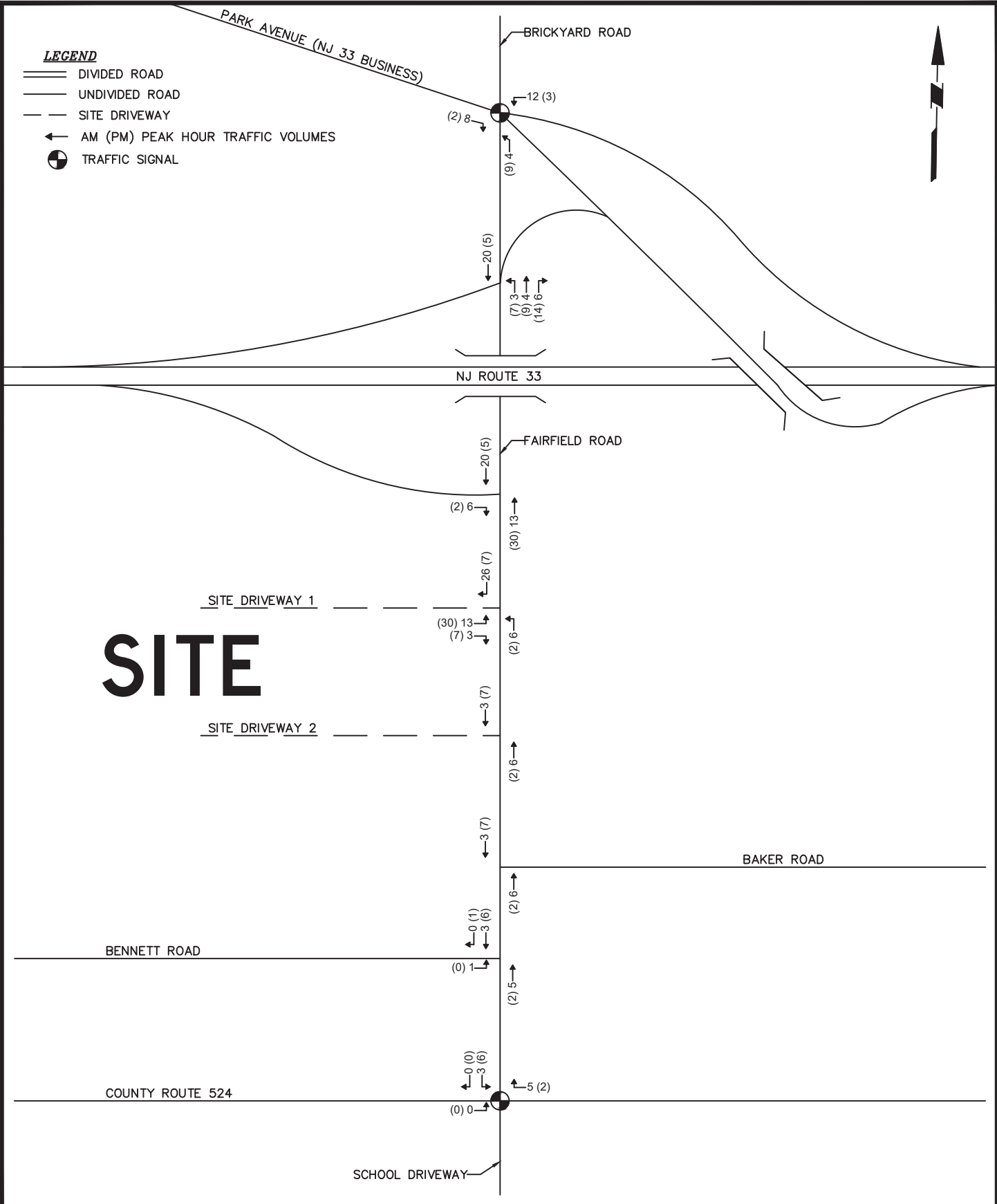
SITE DRIVEWAY 2

**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  
**PROPOSED WAREHOUSE DEVELOPMENT**  
 BLOCK No. 168, LOT Nos. 17, 18, 19.02, 19.04, & 19.08  
 TOWNSHIP OF HOWELL  
 MONMOUTH COUNTY NEW JERSEY

Drawing Title  
**TRUCK ARRIVAL AND DEPARTURE DISTRIBUTIONS**

Project No. 130176701	<b>9</b>
Date 11/18/2021	
Drawn By EJV	
Submission Date NOVEMBER 2021	
Sheet 9 of 13	

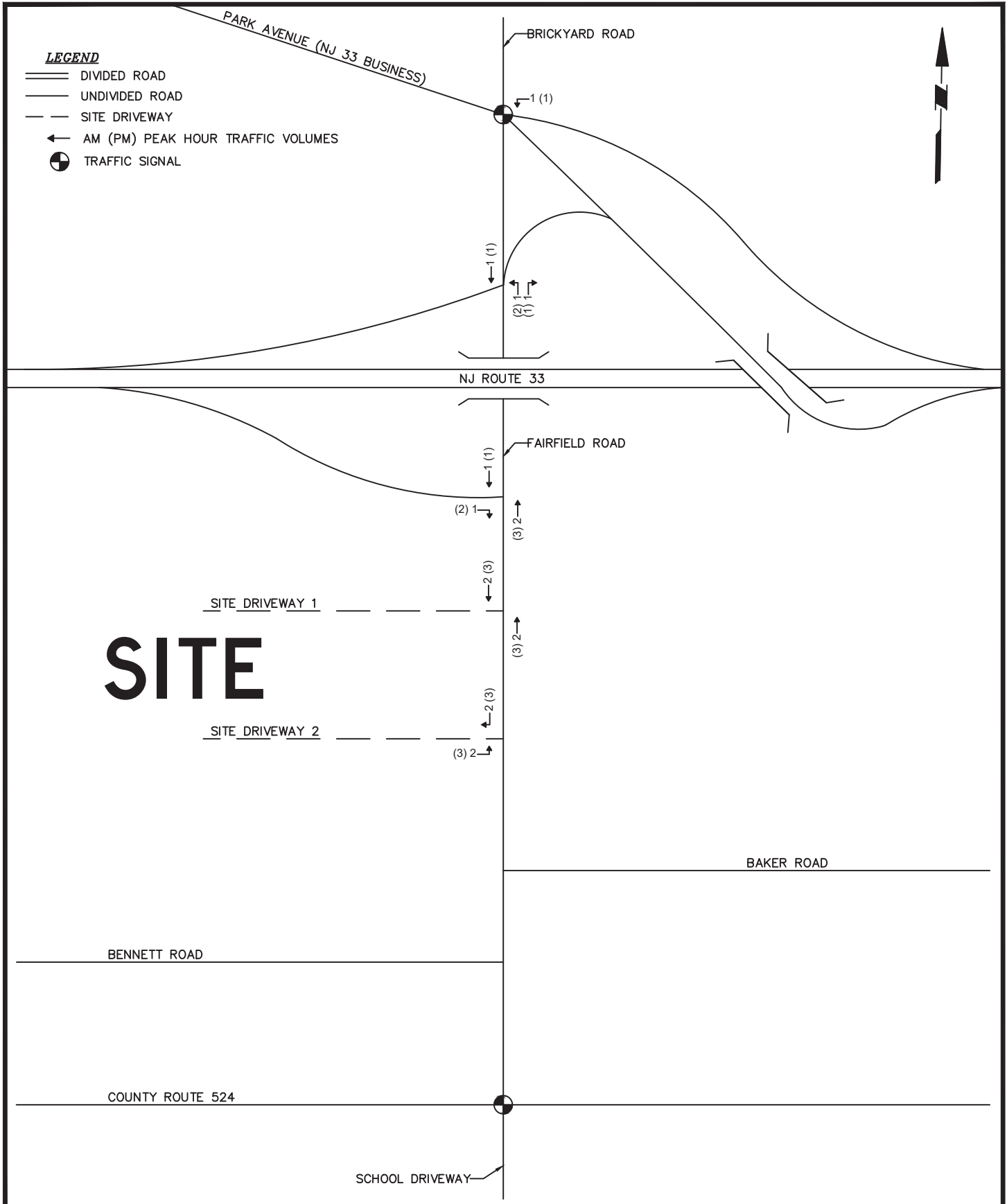


# SITE

SITE DRIVEWAY 1

SITE DRIVEWAY 2

<p>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.	Figure
	<b>PROPOSED WAREHOUSE DEVELOPMENT</b>	<b>PASSENGER VEHICLE SITE-GENERATED TRIPS</b>	130176701	10
	BLOCK No. 168, LOT Nos. 17, 18, 19.02, 19.04, & 19.08		Date	
	TOWNSHIP OF HOWELL		11/18/2021	
MONMOUTH COUNTY NEW JERSEY			Drawn By	Sheet 10 of 13
			EJV	
			Submission Date	
			NOVEMBER 2021	



- LEGEND**
- ==== DIVIDED ROAD
  - UNDIVIDED ROAD
  - - - SITE DRIVEWAY
  - ← AM (PM) PEAK HOUR TRAFFIC VOLUMES
  - ⊙ TRAFFIC SIGNAL

# SITE

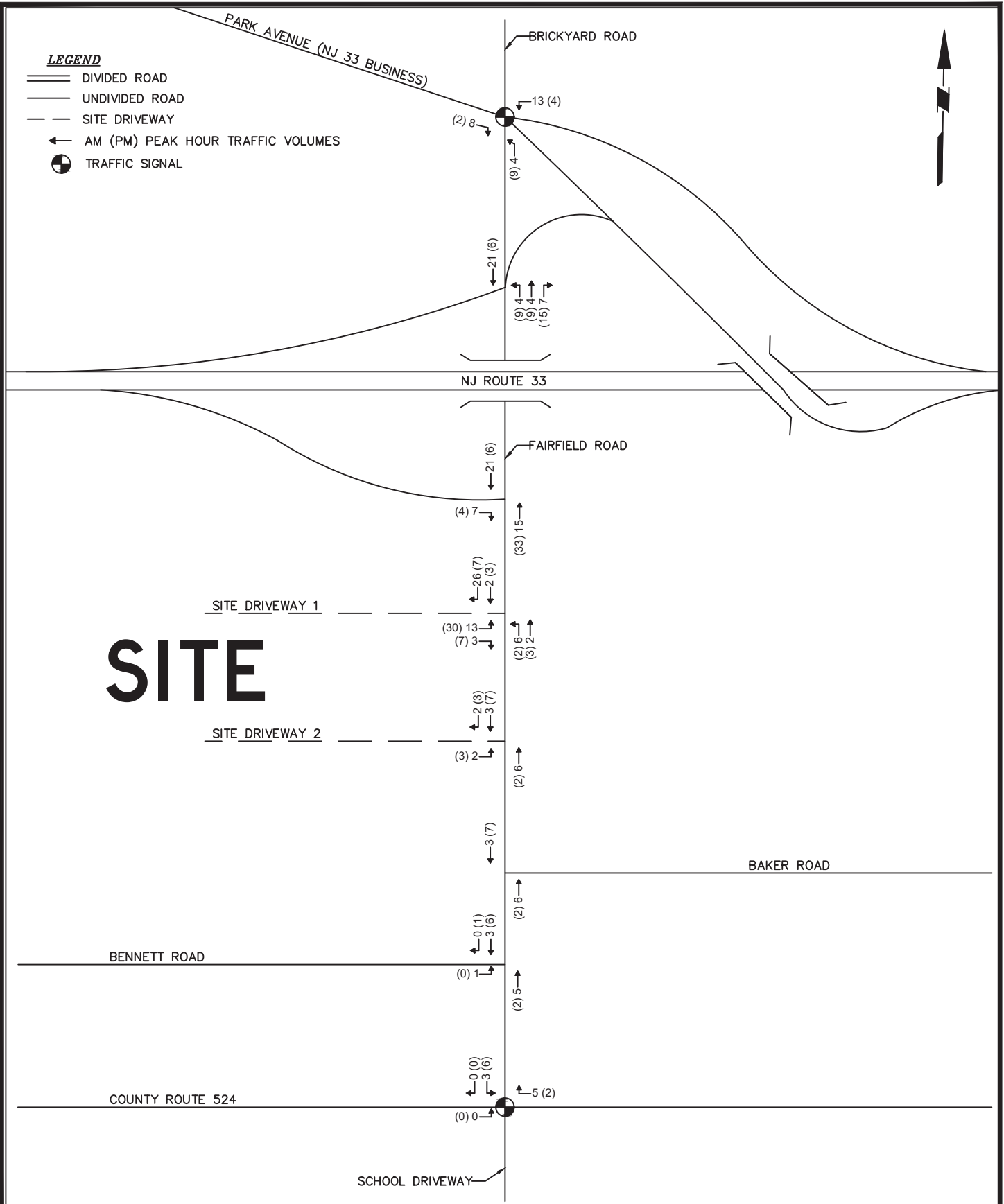
SITE DRIVEWAY 1

SITE DRIVEWAY 2

<p>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>	<p>Project <b>PROPOSED WAREHOUSE DEVELOPMENT</b> BLOCK No. 168, LOT Nos. 17, 18, 19.02, 19.04, &amp; 19.08 TOWNSHIP OF HOWELL MONMOUTH COUNTY NEW JERSEY</p>	<p>Drawing Title <b>TRUCK SITE-GENERATED TRIPS</b></p>	<p>Project No. 130176701</p>	<p>Figure <b>11</b></p>
			<p>Date 11/18/2021</p>	
			<p>Drawn By EJV</p>	
				<p>Submission Date NOVEMBER 2021</p>

**LEGEND**

- ==== DIVIDED ROAD
- UNDIVIDED ROAD
- - - SITE DRIVEWAY
- ← AM (PM) PEAK HOUR TRAFFIC VOLUMES
- ⊕ TRAFFIC SIGNAL



**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  
**PROPOSED WAREHOUSE DEVELOPMENT**  
 BLOCK No. 168, LOT Nos. 17, 18, 19.02, 19.04, & 19.08  
 TOWNSHIP OF HOWELL  
 MONMOUTH COUNTY NEW JERSEY

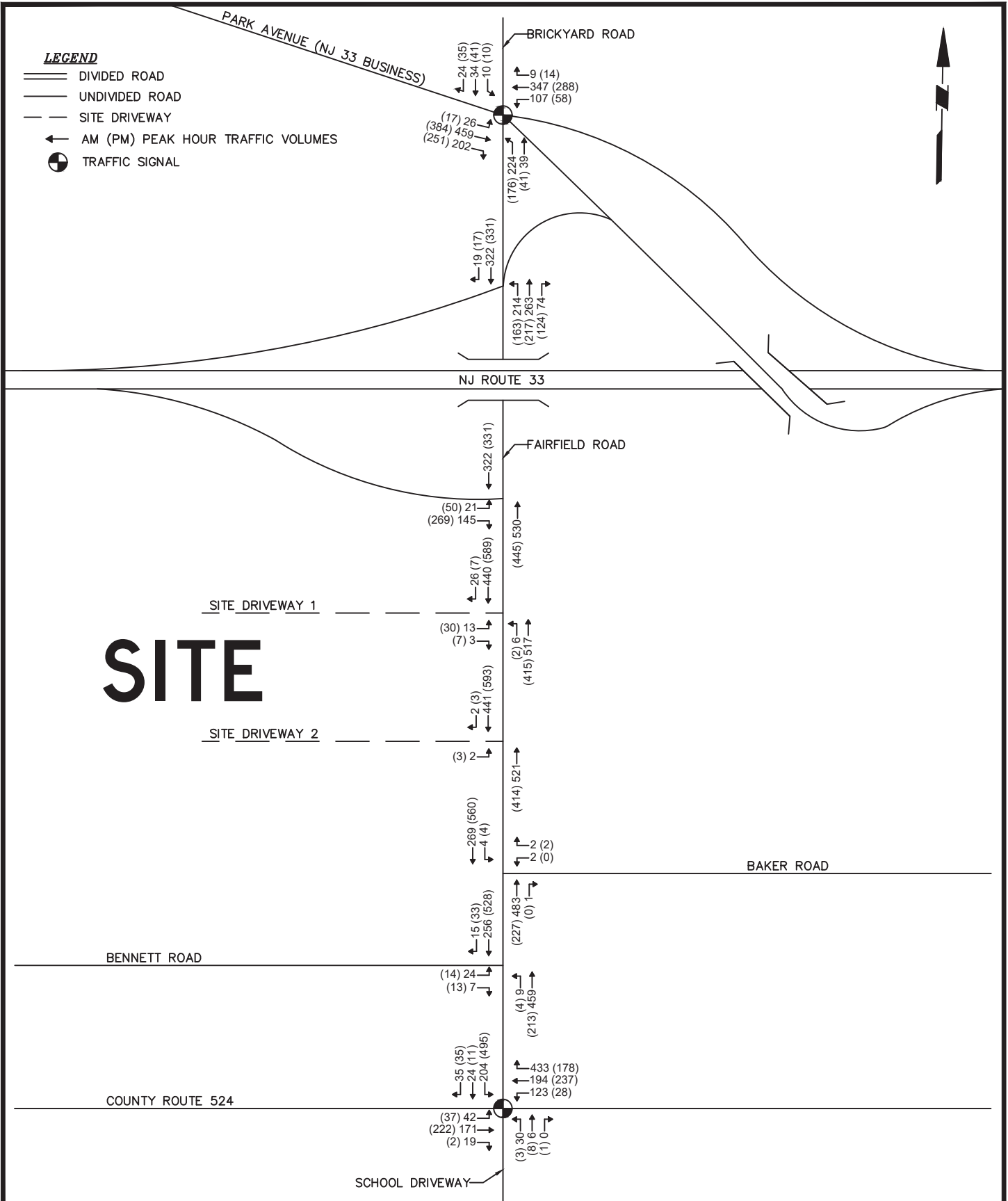
Drawing Title  
**TOTAL SITE-GENERATED TRIPS**

Project No.  
 130176701  
 Date  
 11/18/2021  
 Drawn By  
 EJV  
 Submission Date  
 NOVEMBER 2021

Figure  
**12**  
 Sheet 12 of 13

**LEGEND**

- DIVIDED ROAD
- UNDIVIDED ROAD
- SITE DRIVEWAY
- AM (PM) PEAK HOUR TRAFFIC VOLUMES
- TRAFFIC SIGNAL



**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  
**PROPOSED WAREHOUSE DEVELOPMENT**  
 BLOCK No. 168, LOT Nos. 17, 18, 19.02, 19.04, & 19.08  
 TOWNSHIP OF HOWELL  
 MONMOUTH COUNTY NEW JERSEY

Drawing Title  
**2023 BUILD TRAFFIC VOLUMES**

Project No. 130176701	Figure <b>13</b>
Date 11/18/2021	
Drawn By EJV	Sheet 13 of 13
Submission Date NOVEMBER 2021	