

# STONEFIELD

October 10, 2019

**Revised: February 24, 2021**

Township of Verona Board of Adjustment  
Verona Community Center  
880 Bloomfield Avenue  
Verona, NJ 07044

**RE: Traffic & Parking Assessment Letter Report  
Proposed Multifamily Residential Development  
21-25 Grove Avenue  
Block 1702, Lot 22  
Township of Verona, Essex County, New Jersey  
SE&D Job No. S-19037**

Dear Board Members:

Stonefield Engineering and Design, LLC (“Stonefield”) has prepared this analysis to examine the potential traffic and parking impacts of the proposed multifamily residential development on the adjacent roadway network. The subject property is located along Grove Avenue in the Township of Verona, Essex County, New Jersey. The site location is shown on appended **Figure I**.

The subject property is designated as Block 1702, Lot 22 as depicted on the Township of Verona Tax Map. The site has approximately 145 feet of frontage along Grove Avenue. The existing site contains the Salon Grove nail salon and the Too Chic clothing store. Existing access is provided via one (1) full-movement driveway along Grove Avenue. Under the proposed development program, the existing structures would be razed and a four (4)-story, 35-unit multifamily residential building would be constructed. Access is proposed via one (1) full-movement driveway along Grove Avenue.

## **Existing Conditions**

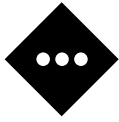
The subject property is located along Grove Avenue in the Township of Verona, Essex County, New Jersey. The subject property is designated as Block 1702, Lot 22 as depicted on the Township of Verona Tax Map. The site has approximately 145 feet of frontage along Grove Avenue. Land uses in the area are a mix of commercial and residential uses.

Grove Avenue (a.k.a. CR 639) is classified as an Urban Major Collector roadway with a general north-south orientation and is under the jurisdiction of Essex County. Along the site frontage, the roadway provides one (1) lane of travel in each direction and has a posted speed limit of 25 mph. Curb and sidewalk are provided along both sides of the roadway, shoulders are provided along both sides of the roadway, and two (2)-hour daytime and overnight on-street parking is permitted along both sides of the roadway. Grove Avenue provides north-south mobility in the Townships of Verona and Cedar Grove from Bloomfield Avenue at its southern terminus to Route 23 at its northern terminus for a mix of commercial and residential uses along its length.

Bloomfield Avenue (a.k.a. CR 506) is classified as an Urban Principal Arterial roadway with a general east-west orientation and is under the jurisdiction of Essex County. Proximate to the site, the roadway provides two (2) lanes of travel in each direction and has a posted speed limit of 25 mph. Curb and sidewalk are provided along both sides of the roadway, shoulders are not provided, and on-street parking is permitted along both sides

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**92 PARK AVENUE, RUTHERFORD, NJ 07070 201.340.4468 T. 201.340.4472 F.**



of the roadway. Bloomfield Avenue provides east-west mobility in the Township of Verona and surrounding municipalities for a mix of residential, commercial, recreational, and education uses along its length, and provides access to Route 23 and the Garden State Parkway to the east and Route 46 to the west.

South Prospect Street is a local roadway with a general north-south orientation and is under the jurisdiction of the Township of Verona. The roadway generally provides one (1) lane of travel in each direction and has a posted speed limit of 25 mph. Curb and sidewalk are provided along both sides of the roadway, shoulders are not provided, and on-street parking is permitted along both sides of the roadway. South Prospect Street provides north-south mobility and access for predominately single-family residential homes along its length.

Grove Avenue, Bloomfield Avenue, and South Prospect Street intersect to form a signalized four-leg intersection controlled by a four (4)-phase traffic signal operating on a 120-second background cycle, with the northbound/southbound approaches operating under split phasing. The eastbound and westbound approaches of Bloomfield Avenue each provide one (1) shared left-turn/through lane and one (1) shared through/right-turn lane, the northbound approach of South Prospect Street provides one (1) exclusive left-turn lane and one (1) shared through/right-turn lane, and the southbound approach of Grove Avenue provides one (1) exclusive left-turn lane and one (1) shared through/right-turn lane. Crosswalks and pedestrian signal heads are provided across all legs of the intersection.

The proposed development is located within 300 feet (one (1)-minute walk) from bus stops that service NJ Transit Bus Route 29 and DeCamp charter bus Route #33, with the nearest stops located at the intersection of Grove Avenue, Bloomfield Avenue, and South Prospect Street. NJ Transit Bus Route 29 provides service to Parsippany–Troy Hills, Montclair, Newark Penn Station, and various points of interest throughout Essex and Morris Counties. Newark Penn Station serves NJ Transit’s Northeast Corridor, North Jersey Coast Line, and Raritan Valley Line with direct service to Secaucus Junction and New York Penn stations and the Port Authority Trans-Hudson (PATH) trains with direct service to Hoboken Terminal and World Trade Center stations. DeCamp Route #33 provides service to New York Port Authority, Nutley, Bloomfield, Clifton, Montclair, West Orange, and Caldwell. It is noted that the DeCamp bus service is currently suspended due to the COVID-19 pandemic. **Table I** provides a summary of the nearby bus transit service.

**TABLE I – MULTI-MODAL TRANSPORTATION OPTIONS**

<b>Travel Mode</b>	<b>Proximity to Site</b>	<b>Peak Commuter Period Headways</b>	<b>Destination(s)</b>	<b>Time Travel to Major Destination</b>
NJ Transit Bus Route 29	300 Feet	Inbound: 5-30 minutes Outbound: 5-15 minutes	Newark Penn Station, Newark Light Rail, Bloomfield, Montclair, Caldwell, Parsippany	Newark Penn Station: 35-45 minutes
DeCamp #33	300 Feet	Inbound: 10-20 minutes Outbound: 5-20 minutes	NYC Port Authority, Nutley, Bloomfield, Clifton, Montclair, West Orange, Caldwell	NYC Port Authority: 45 minutes (express) 52 minutes (normal)

**Trip Generation**

Trip generation projections for the proposed four (4)-story, 35-unit multifamily residential building were prepared utilizing the ITE Trip Generation Manual, 10<sup>th</sup> Edition. Trip generation rates associated with Land Use 221 “Multifamily Housing (Mid-Rise)” were cited for the 35-unit multifamily residential building. **Table 2** provides the weekday morning, weekday evening, and Saturday midday trip generation volumes associated with the proposed development.



**TABLE 2 – PROPOSED TRIP GENERATION**

Land Use	Weekday Morning Peak Hour			Weekday Evening Peak Hour			Saturday Midday Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
35-Unit Multifamily Housing (Mid-Rise) <i>ITE Land Use 221</i>	3	10	13	9	6	15	7	8	15

The proposed development is expected to generate 13 new trips during the weekday morning peak hours, 15 new trips during the weekday evening peak hour, and 15 new trips during the Saturday midday peak hour. Based on Transportation Impact Analysis for Site Development published by ITE, a trip increase of less than 100 vehicle trips would likely not change the level of service of the adjacent roadway system or appreciably increase the volume-to-capacity ratio of an intersection approach. As such, the proposed development is not anticipated to significantly impact the operations of the adjacent roadway network.

It is noted that the existing commercial uses currently generate or previously generated trips to and from the adjacent roadway network. No trip credit was taken into account for these trips that would no longer access the adjacent roadway network. Further, no trip credit was taken to account for residents that would utilize public transit to provide for a conservative analysis.

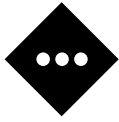
The proposed development is located within the Professional Offices and Business (C-2) Zone which permits professional office and day care center developments. As compared to the proposed residential development, a professional office would generate a comparable number of trips during each of the peak hours studied and a day care center would generate at least 95 more trips during the weekday peak hours. **Table 3** below compares the trip generation associated with the permitted uses and the proposed development.

**TABLE 3 – PERMITTED USE TRIP GENERATION COMPARISON**

Land Use	Weekday Morning Peak Hour			Weekday Evening Peak Hour			Saturday Midday Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
15,000 SF General Office Building <i>ITE Land Use 710</i>	15	2	17	3	14	17	4	4	8
Proposed Development	3	10	13	9	6	15	7	8	15
<b>Difference</b>	<b>+12</b>	<b>-8</b>	<b>+4</b>	<b>-6</b>	<b>+8</b>	<b>+2</b>	<b>-3</b>	<b>-4</b>	<b>-7</b>
10,000 SF Day Care <i>ITE Land Use 565</i>	58	52	110	52	59	111	11	6	17
Proposed Development	3	10	13	9	6	15	7	8	15
<b>Difference</b>	<b>+55</b>	<b>+42</b>	<b>+97</b>	<b>+43</b>	<b>+53</b>	<b>+96</b>	<b>+4</b>	<b>-2</b>	<b>+2</b>

**Level of Service/Capacity Analysis**

Due to the impracticality of conducting traffic counts, previously collected traffic counts were obtained from the Township Traffic Engineer, Joseph Fishinger (Bright View Engineering) and used as the basis for traffic analyses. These traffic counts are appended to this report. The traffic counts were conducted at the intersection of Bloomfield Avenue and Fairview Avenue/Pine Street/West Lincoln Street on Thursday, February 21, 2013. Based on a review of the 2013 counts, the weekday morning peak hour occurred from 7:30-8:30 a.m. and the weekday evening peak hour occurred from 4:45-5:45 p.m. The 2013 Traffic Volumes are shown on appended **Figure 2**.



In order to estimate the traffic volumes at the study intersection, it was assumed that Grove Avenue would have equal volumes to Fairview Avenue. Both of these roadways are County Routes that connect with Route 23 and are classified as Urban Major Collectors. It should be noted that based on NJDOT traffic counts from January 2017 (appended), the AADT along Grove Avenue (7,416) was less than the AADT along Fairview Avenue (8,045) which means that Grove Avenue is slightly less travelled than Fairview Avenue. As such, the analysis provided herein is conservative by assuming equal volumes. It was assumed that 20% of the Grove Avenue traffic volumes would travel along South Prospect Street. Further, the South Prospect Street approach was assumed to carry 50% of traffic volumes on Grove Street. Note that South Prospect Street is a local roadway that primarily serves single-family residential homes and would not be expected to carry significant traffic volumes.

In order to determine traffic growth between 2013 and 2017, the 2013 traffic counts were compared to the NJDOT counts from Thursday, January 19, 2017 along Fairview Avenue. It was found that the weekday morning peak-hour volumes experienced a slight negative growth and the weekday evening peak-hour volumes experienced a total positive growth of approximately 32%. As such, no growth was applied in the weekday morning peak hour (conservatively) and a 7.15% annual growth rate was applied in the weekday evening peak hour for four (4) years. The 2017 Traffic Volumes are provided on appended **Figure 3**.

The 2017 Traffic Volumes were grown to a future horizon year of 2023, which is a conservative estimate for when the proposed development is expected to be fully constructed. In accordance with industry guidelines, the 2017 volumes were increased by 1.00% annually for six (6) years to create the 2023 No-Build Traffic Volumes, which are illustrated on appended **Figure 4**. As mentioned previously, no reductions were applied to account for removal of the existing development on-site. The 1.00% background growth was obtained from the NJDOT Annual Background Growth Rate Table.

The proposed site-generated trips shown in Table I were distributed according to the 2013 travel patterns along Fairview Avenue and its intersection with Bloomfield Avenue. Appended **Figure 5** provides the “new” site-generated traffic volumes associated with the proposed development during the weekday morning, weekday evening, and Saturday midday peak hours. The site-generated traffic volumes were added to the 2023 No-Build Traffic Volumes to create the 2023 Build Traffic Volumes, which are depicted on appended **Figure 6**.

A Level of Service analysis was conducted at the signalized intersection of Bloomfield Avenue and Grove Avenue/South Prospect Street and at the proposed site driveway during the weekday morning and weekday evening peak hours for the 2023 No-Build and 2023 Build Conditions. The analyses were conducted utilizing the Synchro 10 software and the Highway Capacity Manual (HCM) methodology. The results of the analysis are summarized in **Tables 4, 5 and 6**.



Comparative Level of Service (Delay) Tables

**BLOOMFIELD AVENUE & GROVE AVENUE/SOUTH PROSPECT STREET**

EB (Eastbound) and WB (Westbound) approaches are the Bloomfield Avenue approaches  
 NB (Northbound) approach is the South Prospect Street approach  
 SB (Southbound) approach is the Grove Avenue approach  
 X (n) = Level of Service (seconds of delay)

**TABLE 4 – WEEKDAY MORNING PEAK HOUR**

Lane Group	2023 No-Build	2023 Build
EB Left/Through/Right	C (27.4)	C (27.5)
WB Left/Through/Right	C (25.2)	C (25.3)
NB Left	D (47.4)	D (47.4)
NB Through/Right	D (51.9)	D (51.9)
SB Left	D (47.4)	D (47.4)
SB Through/Right	E (62.9)	E (63.0)
<b>Intersection</b>	<b>C (31.1)</b>	<b>C (31.2)</b>

**TABLE 5 – WEEKDAY EVENING PEAK HOUR**

Lane Group	2023 No-Build	2023 Build
EB Left/Through/Right	F (215.1)	F (215.5)
WB Left/Through/Right	F (316.3)	F (318.6)
NB Left	D (48.4)	D (48.3)
NB Through/Right	E (55.3)	E (55.3)
SB Left	D (54.4)	D (54.9)
SB Through/Right	E (68.0)	E (68.5)
<b>Intersection</b>	<b>F (240.2)</b>	<b>F (241.3)</b>

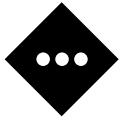
**GROVE AVENUE & SITE DRIVEWAY**

WB (Westbound) approach is the Site Driveway approach  
 SB (Southbound) approach is the Grove Avenue approach  
 X (n) = Level of Service (seconds of delay)

**TABLE 6 – 2023 BUILD CONDITION**

Lane Group	Weekday Morning Peak Hour	Weekday Evening Peak Hour
WB Left/Right	B (12.5)	C (17.5)
SB Left	A (8.3)	A (9.5)

As shown above, the study intersection is calculated to operate acceptably during the weekday morning peak hour and under capacity constraints during the weekday evening peak hour. However, the change in delay between the 2023 No-Build and 2023 Build Conditions is minimal as there are only 4 and 5 new trips added to the study intersection during the weekday morning and weekday evening peak hours, respectively, as a result of the proposed development. The turning movements at the proposed site driveway are calculated to operate at Level of Service B or better during the weekday morning peak hour and Level of Service C or better during the weekday evening peak hour. As such, the proposed development would not result in significant traffic impacts on the adjacent roadway network.



### **Site Circulation/Parking Supply**

A review was conducted of the proposed multifamily residential building using the Site Plan prepared by Stonefield Engineering & Design, dated July 31, 2020. In completing this review, particular attention was focused on the site access, circulation, and parking supply.

Under the proposed development program, the existing structures would be razed and a four (4)-story, 35-unit multifamily residential building would be constructed. Access is proposed via one (1) full-movement driveway along Grove Avenue. Two-way vehicular circulation throughout the site would be provided via a minimum of 22-foot-wide drive aisles with 24-foot-wide two-way drive aisles provided in the vicinity of the proposed right-angle surface and garage parking spaces.

Regarding the parking requirements for the proposed development, the New Jersey Administrative Code Residential Site Improvements Standards (RSIS) (NJAC 5:21) requires 1.8 parking spaces per one (1)-bedroom dwelling unit, 2.0 parking spaces per two (2)-bedroom dwelling unit, and 2.1 parking spaces per three (3)-bedroom dwelling unit. For the proposed development consisting of 14 one (1)-bedroom units, 20 two (2)-bedroom units, and one (1) three (3)-bedroom unit, this equates to 68 required spaces. The site would provide 59 total parking spaces, inclusive of three (3) ADA accessible parking spaces. The proposed parking spaces would be 8.5 feet wide by 18.5 feet deep, in accordance with industry standards for residential multifamily developments.

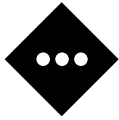
Additionally, Section 5:21-4.14(c) of the RSIS intends for there to be flexibility in the parking requirements. Specifically:

*“Alternative standards to those shown in Table 4.4 shall be accepted if the applicant demonstrates these standards better reflect local conditions. Factors affecting minimum number of parking spaces include household characteristics, availability of mass transit, urban versus suburban location, and available off-site parking.”*

Based on American Community Survey data provided by the U.S. Census Bureau, approximately 11.9% of Township of Verona working residents use public transportation, carpool, walk, or use means other than single-passenger vehicles to commute to work, and 5.9% work from home. Additionally, based on the published census data, the vehicles ownership rate for renter-occupied dwelling units in the Township of Verona is calculated to be approximately 1.37 vehicles per unit (equates to 48 spaces for the proposed 35-unit development) as opposed to 2.07 vehicles per unit calculated for owner-occupied dwelling units. The U.S. Census Bureau data is appended at the end of this report. The location of the proposed development is particularly suited to provide transit options for its occupants as it is located within a one (1)-minute walk from bus stops serving NJ Transit Bus Route 29 and the DeCamp charter Bus Route #33.

Additionally, Stonefield has conducted parking utilization counts to evaluate the parking demand rates at various residential developments within New Jersey that share similar characteristics with the proposed development in that the properties are located in close proximity to NJ Transit bus lines. A table summarizing the observed parking demand rates is appended to this report. Based on the results of this data collection effort, residential developments in areas similar to the proposed development were found to have an average parking demand ratio of approximately 1.03 spaces per occupied dwelling unit and 0.69 spaces per bedroom. As the proposed development would provide 1.44 parking spaces per unit and 0.83 parking spaces per bedroom, the proposed parking supply is anticipated to be sufficient to support the proposed development.

The parking supply was also evaluated with respect to data published within the ITE's Parking Generation, 5<sup>th</sup> Edition, for Land Use 221 “Multifamily Housing (Mid-Rise).” Specifically, parking generation rates for “General Urban/Suburban” locations were utilized, conservatively. The average parking demand rate during the peak weekday overnight period for Land Use 221 “Multifamily Housing (Mid-Rise)” is 1.31 vehicles per dwelling unit. For the proposed 35-unit development, this equates to a projected peak parking demand of 46 vehicles. As such, the proposed parking supply of 59 parking spaces would be sufficient to support the parking demand of the site.



Based on nearby transit options for the site's residents, published census data, previous parking utilization counts at similar developments, and published ITE parking demand rates, the proposed parking supply of 59 spaces would be sufficient to support the expected parking demand of the proposed development.

### **Conclusions**

This report was prepared to examine the potential traffic impact of the proposed four (4)-story, 35-unit multifamily residential building. The analysis findings, which have been based on historic traffic volume counts and industry standard guidelines, indicate that the proposed development would not have a significant impact on the traffic operations of the adjacent roadway network. It is noted that the intersection of Bloomfield Avenue and Grove Avenue/South Prospect Street is calculated to operate under capacity constraints during the weekday evening peak hour, however, the proposed development would not significantly worsen this existing condition. The site driveways and on-site layout have been designed to provide for effective access to and from the subject property. Based on characteristics of the development project, adjacent transit options, parking counts at similar developments, and published ITE parking demand rates, the parking supply would be sufficient to support this project.

Please do not hesitate to contact our office if there are any questions.

Best regards,

Matthew J. Seckler, PE, PP, PTOE  
**Stonefield Engineering and Design, LLC**

## **TECHNICAL APPENDIX**

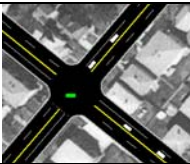
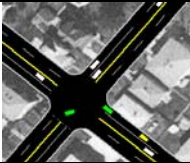


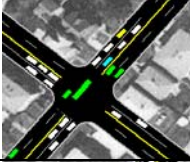
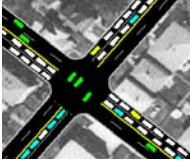


**LEVEL OF SERVICE/AVERAGE CONTROL DELAY CRITERIA**

## LEVEL OF SERVICE /AVERAGE CONTROL DELAY CRITERIA

The ability of a roadway to effectively accommodate traffic demand is determined through an assessment of the volume-to-capacity ratio, delay and Level of Service of the lane group and/or intersection. The volume-to-capacity ratio is the ratio of traffic flow rate to capacity for a given transportation facility. As defined within the Highway Capacity Manual, 6<sup>th</sup> Edition (HCM), intersection delay is the total additional travel time experienced by drivers, passengers, or pedestrians as a result of control measures and interaction with other users of the facility, divided by the volume departing from the corresponding cross section of the facility. Level of service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience.

For an unsignalized intersection, LOS A indicates operations with delay less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 50 seconds per vehicle. For a signalized intersection, LOS A indicates operations with delay less than 10 seconds per vehicle and LOS F denotes operations with delay in excess of 80 seconds per vehicle.

	Level Of Service (LOS)	Signalized Delay Range (average control delay in sec/veh)	Unsignalized Delay Range (average control delay in sec/veh)
	A	<=10	<=10
	B	>10 and <=20	>10 and <=15
	C	>20 and <=35	>15 and <=25
	D	>35 and <=55	>25 and <=35
	E	>55 and <=80	>35 and <=50
	F	>80	>50

Source: Highway Capacity Manual, 6<sup>th</sup> Edition

**TURNING MOVEMENT COUNT DATA**

# New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 01/19/2017 to 01/25/2017

Site names: 160728\_CO 637 Fairview Ave-0.16,07000637\_\_  
 County: ESSEX  
 Funct Class: Urban Major Collector  
 Location: Bet Orchard St and Personette Ave

Seasonal Factor Grp: rg1\_5U  
 Daily Factor Grp: rg1\_5U  
 Axle Factor Grp: rg1\_5U  
 Growth Factor Grp: rg1\_5U

	Sun, Jan 15, 2017		Mon, Jan 16, 2017		Tue, Jan 17, 2017		Wed, Jan 18, 2017		Thu, Jan 19, 2017		Fri, Jan 20, 2017		Sat, Jan 21, 2017				
	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S		
00:00									27	16	11	24	16	8	65	40	25
01:00									9	4	5	12	7	5	27	22	5
02:00									6	3	3	5	4	1	17	9	8
03:00									10	5	5	10	5	5	17	11	6
04:00									15	11	4	11	8	3	9	3	6
05:00									39	19	20	36	22	14	14	10	4
06:00									192	115	77	167	98	69	53	28	25
07:00									651	420	231	603	386	217	164	109	55
08:00									704	392	312	692	390	302	277	161	116
09:00									432	244	188	479	304	175	383	277	106
10:00									442	307	135	442	294	148	533	352	181
11:00									401	253	148	502	323	179	589	367	222
12:00									423	263	160	482	312	170	616	396	220
13:00									456	306	150	477	318	159	592	371	221
14:00									537	338	199	554	375	179	607	383	224
15:00									661	414	247	687	460	227	566	344	222
16:00									785	547	238	760	546	214	479	281	198
17:00									932	669	263	886	620	266	432	283	149
18:00									693	479	214	677	462	215	359	216	143
19:00									491	316	175	429	291	138	279	162	117
20:00									320	183	137	306	181	125	213	137	76
21:00									249	158	91	245	177	68	175	112	63
22:00									126	79	47	168	119	49	148	94	54
23:00									57	39	18	114	72	42	110	64	46
Total									8,658	5,580	3,078	8,768	5,790	2,978	6,724	4,232	2,492
AM Peak Vol									784	481	326	752	479	302	594	392	224
AM Peak Fct									.813	.802	.896	.87	.788	.888	.9	.867	.949
AM Peak Hr									7:45	7:30	7:45	7:45	7:30	8:00	10:30	10:45	
PM Peak Vol									932	669	263	903	631	272	629	401	239
PM Peak Fct									.971	.899	.822	.907	.813	.829	.947	.864	.818
PM Peak Hr									17:00	17:00	17:00	17:15	17:15	17:15	12:15	12:30	13:15
Seasonal Fct									1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047
Daily Fct									.870	.870	.870	.847	.847	.847	.847	.847	.847
Axle Fct									.494	.494	.494	.494	.494	.494	.494	.494	.494
Pulse Fct									2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000

# New Jersey Department of Transportation

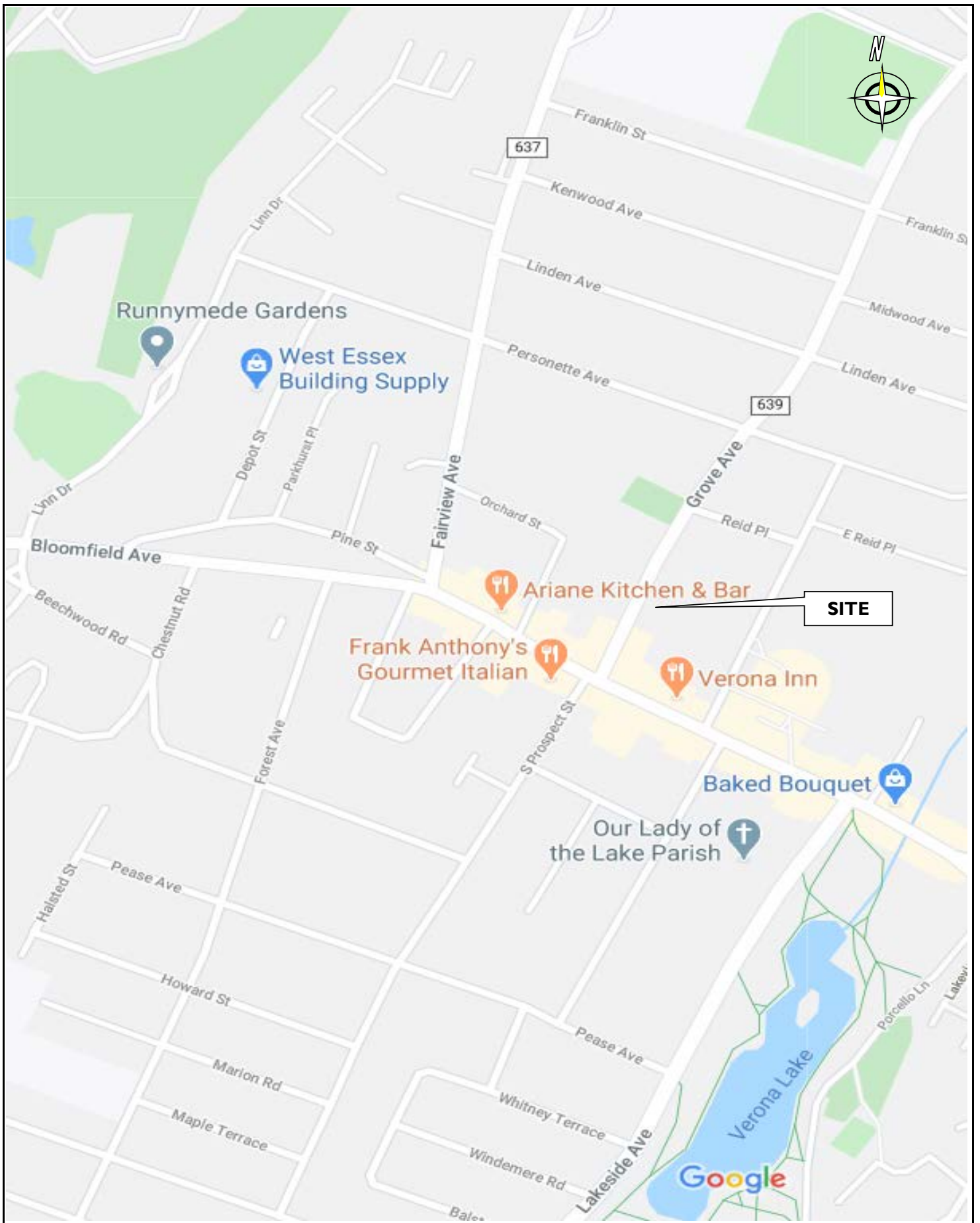
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Site names: 160728\_CO 637 Fairview Ave-0.16,07000637 \_\_  
 County: ESSEX  
 Funct Class: Urban Major Collector  
 Location: Bet Orchard St and Personette Ave

Seasonal Factor Grp: rg1\_5U  
 Daily Factor Grp: rg1\_5U  
 Axle Factor Grp: rg1\_5U  
 Growth Factor Grp: rg1\_5U

	Sun, Jan 22, 2017			Mon, Jan 23, 2017			Tue, Jan 24, 2017			Wed, Jan 25, 2017			Thu, Jan 26, 2017			Fri, Jan 27, 2017			Sat, Jan 28, 2017			
	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	
00:00	67	35	32	23	10	13	16	12	4	23	15	8										
01:00	21	11	10	13	5	8	10	6	4	7	3	4										
02:00	24	17	7	4	3	1	3	0	3	4	2	2										
03:00	17	7	10	6	1	5	4	2	2	2	2	4										
04:00	11	8	3	13	8	5	15	10	5	11	8	3										
05:00	11	6	5	44	25	19	43	26	17	44	28	16										
06:00	28	16	12	180	107	73	171	102	69	182	103	79										
07:00	74	47	27	614	395	219	597	376	221	640	403	237										
08:00	154	98	56	657	379	278	648	392	256	721	424	297										
09:00	269	176	93	391	239	152	403	254	149	477	309	168										
10:00	323	217	106	417	276	141	377	226	151	422	281	141										
11:00	416	298	118	407	253	154	435	278	157	399	267	132										
12:00	458	275	183	412	261	151	429	274	155	472	315	157										
13:00	505	301	204	392	273	119	487	332	155	479	314	165										
14:00	490	322	168	508	347	161	511	354	157	542	377	165										
15:00	387	256	131	616	395	221	603	390	213	643	433	210										
16:00	347	231	116	658	448	210	694	497	197	701	486	215										
17:00	284	174	110	727	518	209	838	621	217	853	630	223										
18:00	300	180	120	480	340	140	628	407	221	703	489	214										
19:00	241	162	79	260	181	79	412	289	123	477	307	170										
20:00	193	136	57	161	102	59	317	210	107	348	214	134										
21:00	111	63	48	125	89	36	210	134	76	262	172	90										
22:00	67	48	19	53	32	21	104	75	29	139	71	68										
23:00	38	23	15	31	14	17	39	29	10	50	34	16										
Total	4,836	3,107	1,729	7,192	4,701	2,491	7,994	5,296	2,698	8,605	5,687	2,918										
AM Peak Vol	416	298	118	741	466	284	721	444	277	784	470	319										
AM Peak Fct	.963	.92	.922	.792	.737	.934	.816	.793	.855	.86	.822	.858										
AM Peak Hr	11:00	11:00	11:00	7:45	7:30	7:45	7:45	7:45	7:45	7:45	7:30	7:45										
PM Peak Vol	527	327	204	751	523	236	838	621	251	866	635	251										
PM Peak Fct	.839	.852	.836	.973	.961	.868	.895	.97	.848	.945	.934	.923										
PM Peak Hr	12:45	12:45	13:00	16:45	16:45	16:30	17:00	17:00	17:15	16:45	16:45	16:30										
Seasonal Fct	1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047										
Daily Fct	1.771	1.771	1.771	1.003	1.003	1.003	.904	.904	.904	.866	.866	.866										
Axle Fct	.494	.494	.494	.494	.494	.494	.494	.494	.494	.494	.494	.494										
Pulse Fct	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000										

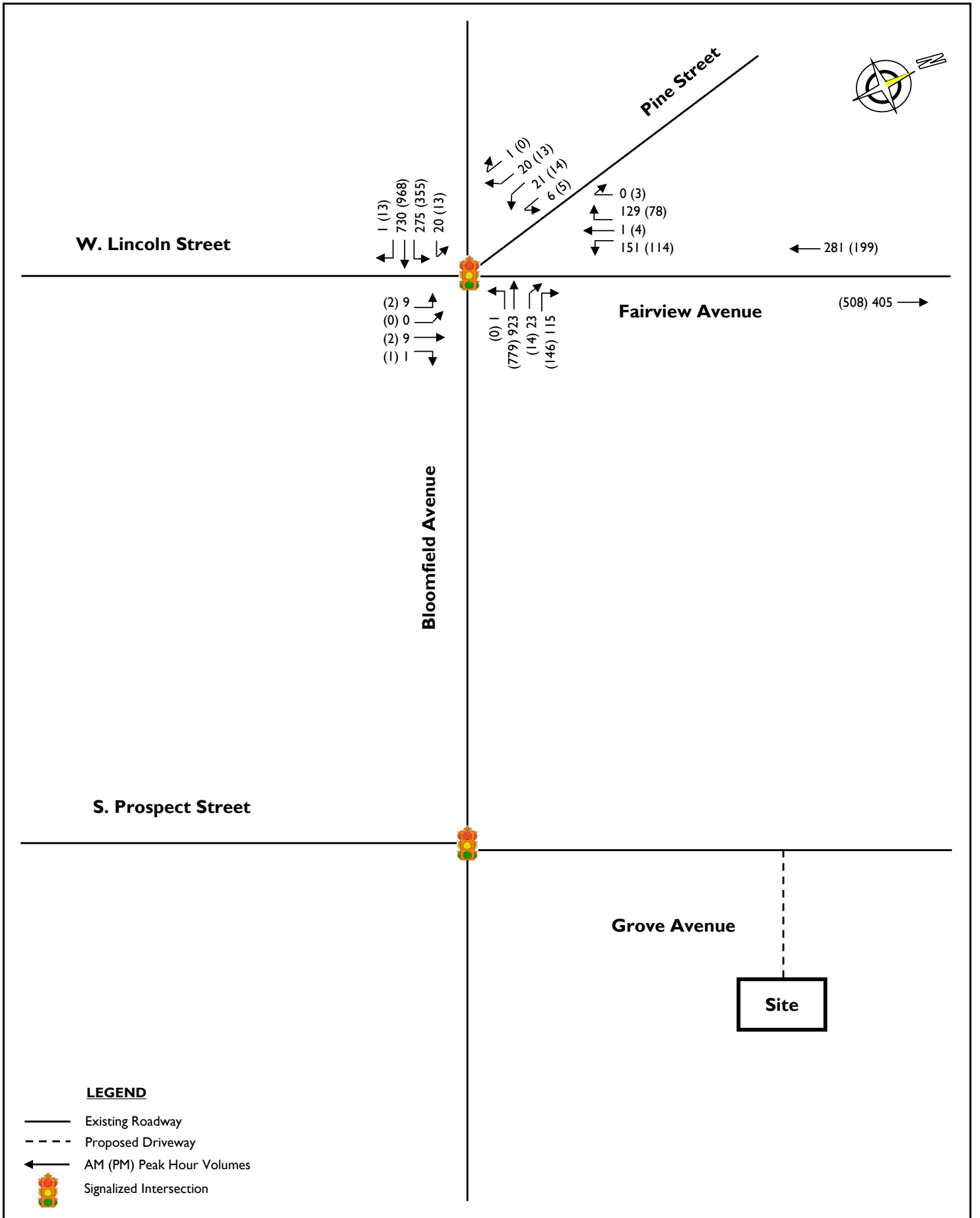
## **FIGURES**



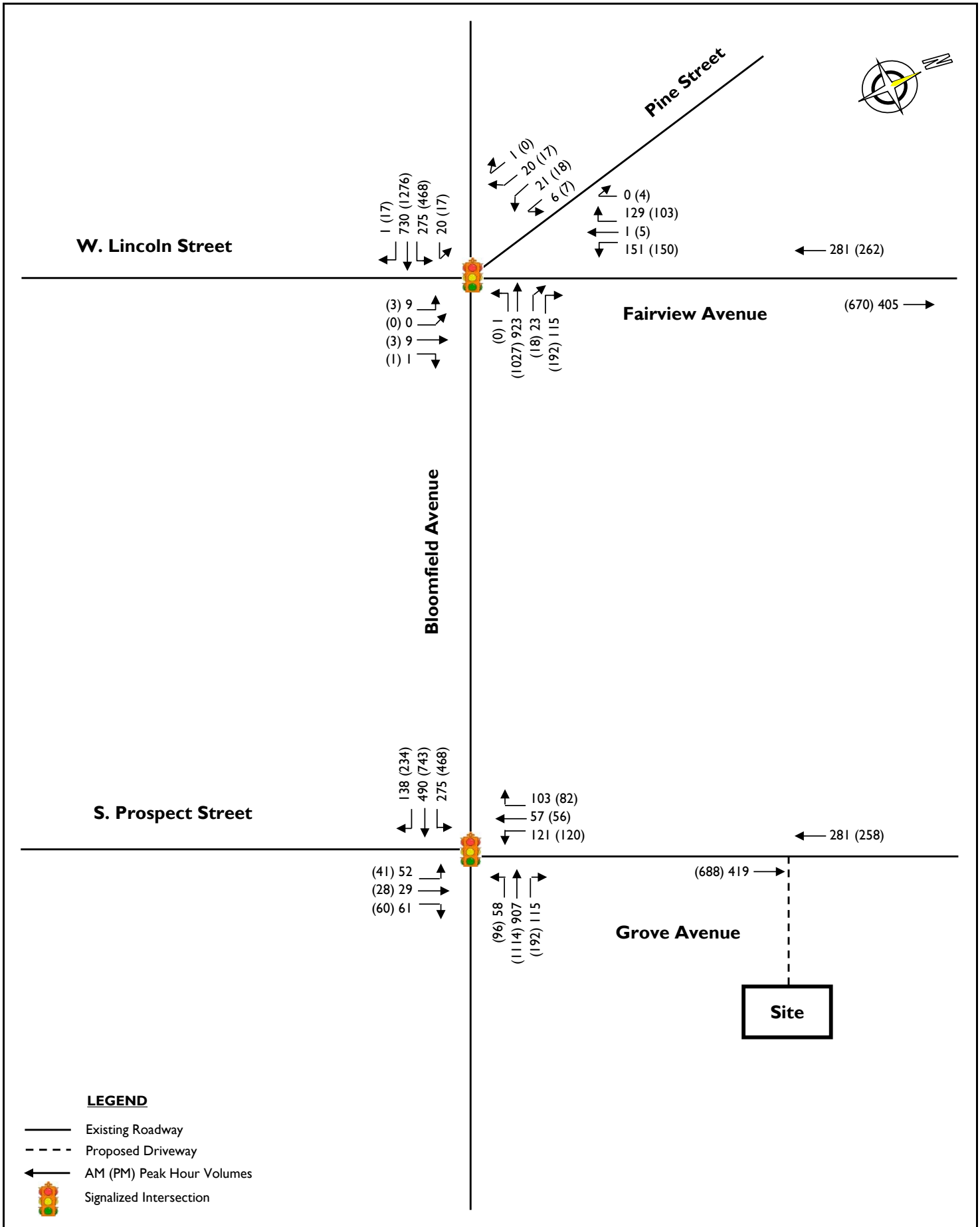
**STONEFIELD**

**Proposed Multifamily Residential Development  
21-25 Grove Street  
Township of Verona, Essex County, New Jersey  
Traffic & Parking Assessment Letter Report**

**FIGURE I  
Site Location Map**



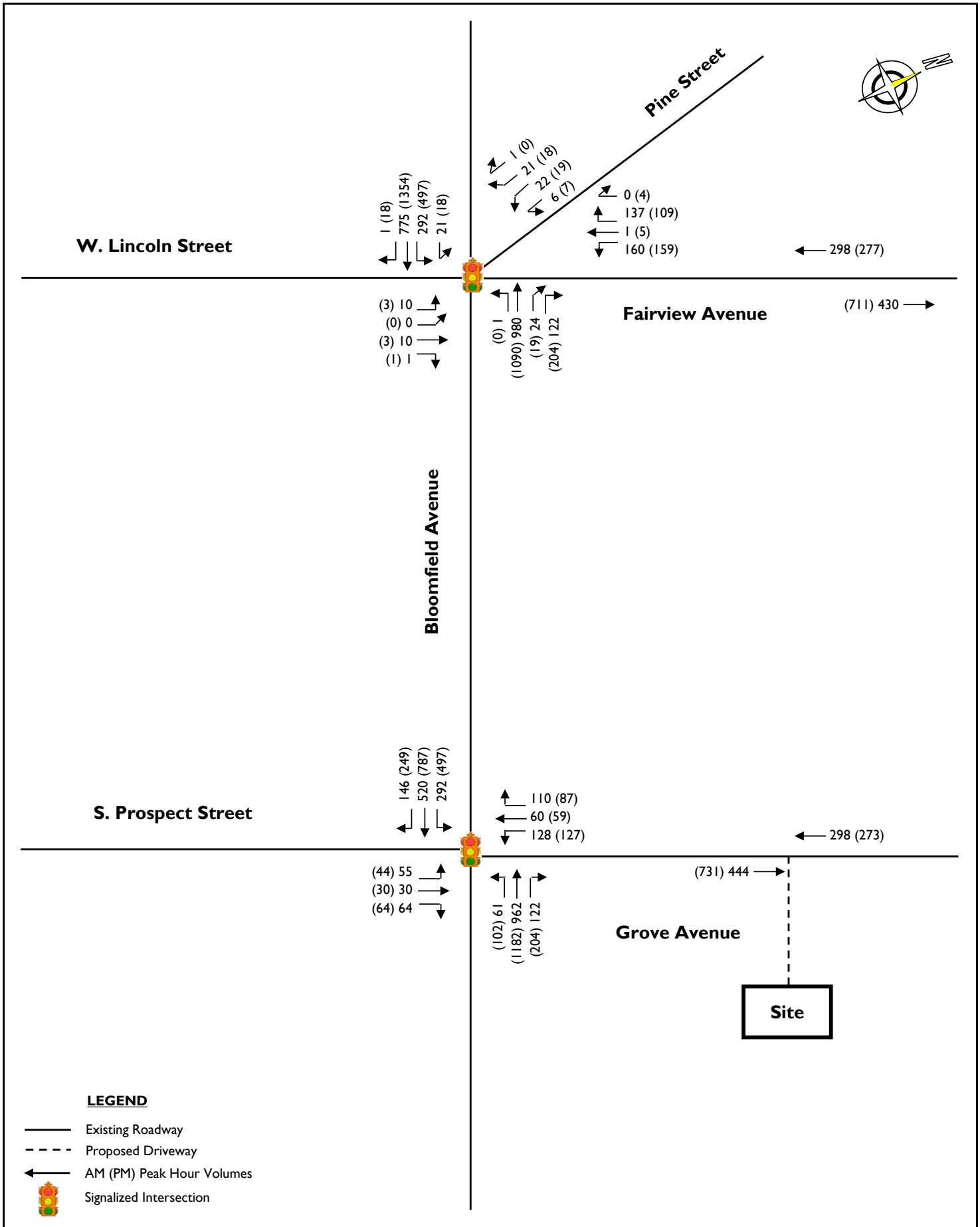




**STONEFIELD**

**Proposed Multifamily Residential Development  
21-25 Grove Street  
Township of Verona, Essex County, New Jersey  
Traffic & Parking Assessment Letter Report**

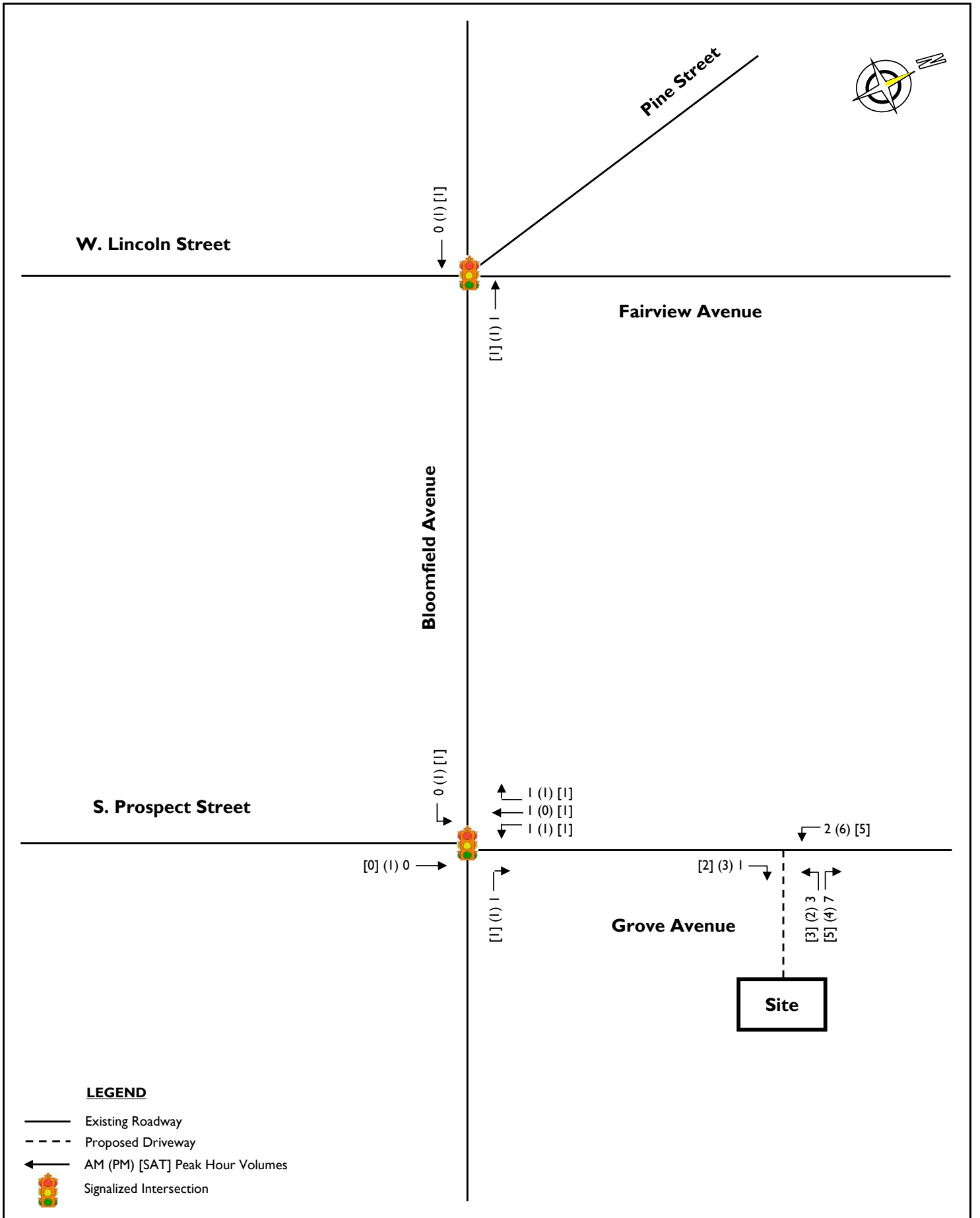
**FIGURE 3  
2017 Traffic Volumes**

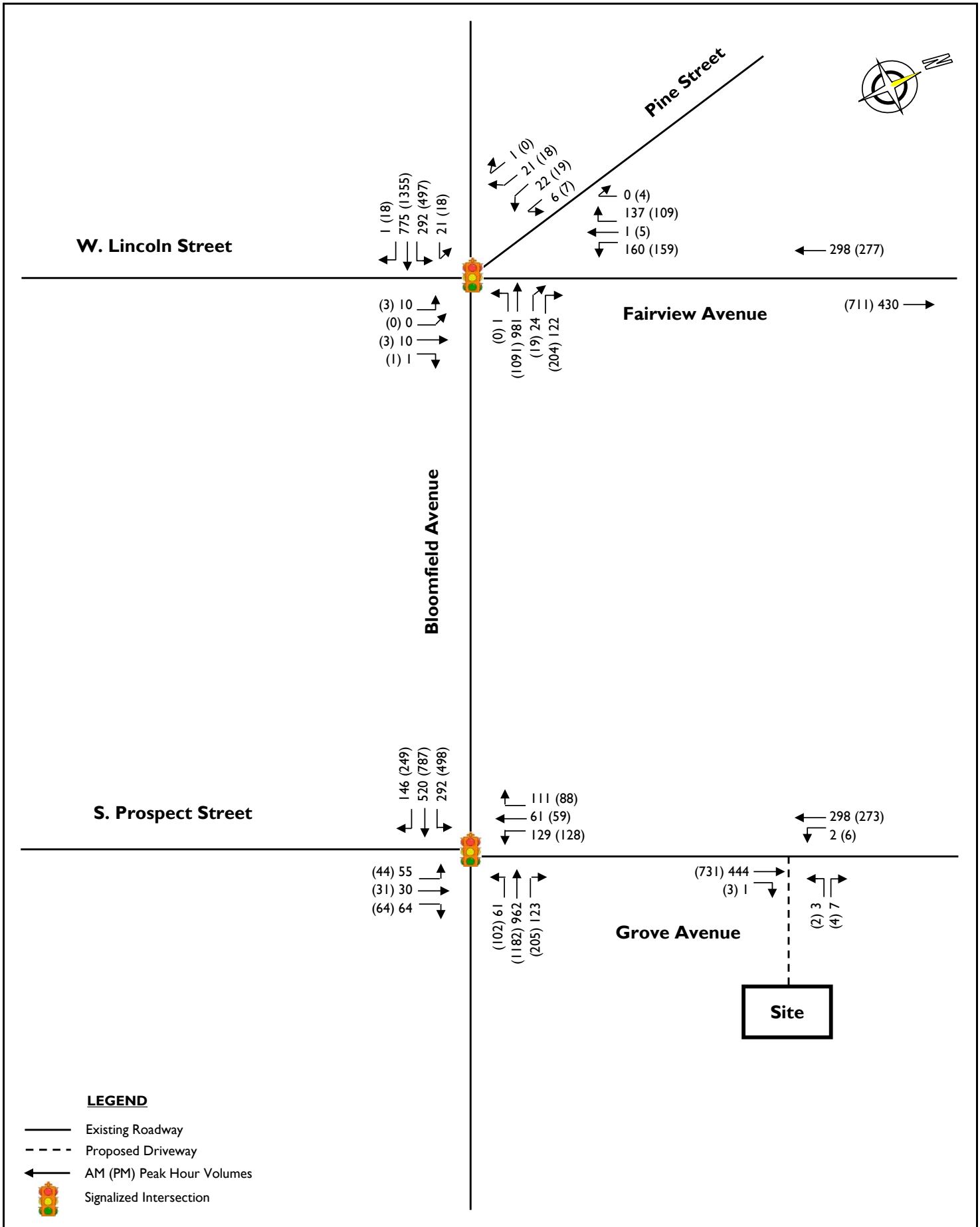


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**Proposed Multifamily Residential Development  
21-25 Grove Street  
Township of Verona, Essex County, New Jersey  
Traffic & Parking Assessment Letter Report**

**FIGURE 4  
2023 No-Build  
Traffic Volumes**





**STONEFIELD**

**Proposed Multifamily Residential Development  
21-25 Grove Street  
Township of Verona, Essex County, New Jersey  
Traffic & Parking Assessment Letter Report**



















**FIGURE 6  
2023 Build  
Traffic Volumes**

**HIGHWAY CAPACITY ANALYSIS DETAIL SHEETS**

# HCM Signalized Intersection Capacity Analysis

## 2: S. Prospect Street/Grove Avenue & Bloomfield Avenue

2023 No-Build Condition  
Weekday Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	292	520	146	61	962	122	55	30	64	128	60	110
Future Volume (vph)	292	520	146	61	962	122	55	30	64	128	60	110
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.90		1.00	0.90	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3546			3594		1862	1760		1862	1769	
Flt Permitted		0.50			0.80		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1805			2878		1862	1760		1862	1769	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	317	565	159	66	1046	133	60	33	70	139	65	120
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1041	0	0	1245	0	60	103	0	139	185	0
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases	1	6			2		4	4		8	8	
Permitted Phases	6			2								
Actuated Green, G (s)		68.2			60.7		11.1	11.1		14.8	14.8	
Effective Green, g (s)		68.2			60.7		11.1	11.1		14.8	14.8	
Actuated g/C Ratio		0.61			0.54		0.10	0.10		0.13	0.13	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		1168			1558		184	174		245	233	
v/s Ratio Prot		c0.04					0.03	c0.06		0.07	c0.10	
v/s Ratio Perm		c0.51			0.43							
v/c Ratio		1.79dl			0.80		0.33	0.59		0.57	0.79	
Uniform Delay, d1		18.8			20.8		47.0	48.3		45.6	47.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		8.6			4.4		0.4	3.6		1.8	15.8	
Delay (s)		27.4			25.2		47.4	51.9		47.4	62.9	
Level of Service		C			C		D	D		D	E	
Approach Delay (s)		27.4			25.2			50.2			56.3	
Approach LOS		C			C			D			E	

### Intersection Summary




















HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	112.1	Sum of lost time (s)	21.0
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 2: S. Prospect Street/Grove Avenue & Bloomfield Avenue

2023 No-Build Condition  
 Weekday Evening Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	497	787	249	102	1182	204	44	30	64	127	59	87
Future Volume (vph)	497	787	249	102	1182	204	44	30	64	127	59	87
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.90		1.00	0.91	
Flt Protected		0.98			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3557			3606		1862	1759		1862	1785	
Flt Permitted		0.52			0.51		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1884			1842		1862	1759		1862	1785	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	571	905	286	117	1359	234	51	34	74	146	68	100
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1762	0	0	1710	0	51	108	0	146	168	0
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases	1	6			2		4	4		8	8	
Permitted Phases	6			2								
Actuated Green, G (s)		72.1			65.1		11.2	11.2		13.5	13.5	
Effective Green, g (s)		72.1			65.1		11.2	11.2		13.5	13.5	
Actuated g/C Ratio		0.63			0.57		0.10	0.10		0.12	0.12	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		1241			1044		181	171		218	209	
v/s Ratio Prot		c0.05					0.03	c0.06		0.08	c0.09	
v/s Ratio Perm		0.84			c0.93							
v/c Ratio		6.49dl			1.64		0.28	0.63		0.67	0.80	
Uniform Delay, d1		21.4			24.9		48.1	49.8		48.5	49.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		193.7			291.4		0.3	5.5		5.9	18.6	
Delay (s)		215.1			316.3		48.4	55.3		54.4	68.0	
Level of Service		F			F		D	E		D	E	
Approach Delay (s)		215.1			316.3			53.1			61.7	
Approach LOS		F			F			D			E	

Intersection Summary		
HCM 2000 Control Delay	240.2	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	1.39	F
Actuated Cycle Length (s)	114.8	Sum of lost time (s)
Intersection Capacity Utilization	111.5%	21.0
Analysis Period (min)	15	ICU Level of Service
		H




















dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: S. Prospect Street/Grove Avenue & Bloomfield Avenue

2023 Build Condition  
Weekday Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	292	520	146	61	962	123	55	30	64	129	61	111
Future Volume (vph)	292	520	146	61	962	123	55	30	64	129	61	111
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.90		1.00	0.90	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3546			3594		1862	1760		1862	1770	
Flt Permitted		0.50			0.80		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1806			2877		1862	1760		1862	1770	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	317	565	159	66	1046	134	60	33	70	140	66	121
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1041	0	0	1246	0	60	103	0	140	187	0
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases	1	6			2		4	4		8	8	
Permitted Phases	6			2								
Actuated Green, G (s)		68.2			60.7		11.1	11.1		14.9	14.9	
Effective Green, g (s)		68.2			60.7		11.1	11.1		14.9	14.9	
Actuated g/C Ratio		0.61			0.54		0.10	0.10		0.13	0.13	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		1167			1556		184	174		247	235	
v/s Ratio Prot		c0.04					0.03	c0.06		0.08	c0.11	
v/s Ratio Perm		c0.51			0.43							
v/c Ratio		1.79dl			0.80		0.33	0.59		0.57	0.80	
Uniform Delay, d1		18.8			20.9		47.1	48.4		45.6	47.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		8.7			4.4		0.4	3.6		1.8	15.8	
Delay (s)		27.5			25.3		47.4	51.9		47.4	63.0	
Level of Service		C			C		D	D		D	E	
Approach Delay (s)		27.5			25.3			50.3			56.3	
Approach LOS		C			C			D			E	

### Intersection Summary

HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	112.2	Sum of lost time (s)	21.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group



HCM 6th TWSC  
3: Grove Avenue & Site Driveway

2023 Build Condition  
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑↑		↑			↑
Traffic Vol, veh/h	3	7	444	1	2	298
Future Vol, veh/h	3	7	444	1	2	298
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	8	483	1	2	324

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	812	484	0	0	484	0
Stage 1	484	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	351	587	-	-	1089	-
Stage 1	624	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	350	587	-	-	1089	-
Mov Cap-2 Maneuver	350	-	-	-	-	-
Stage 1	624	-	-	-	-	-
Stage 2	733	-	-	-	-	-




















Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	488	1089
HCM Lane V/C Ratio	-	-	0.022	0.002
HCM Control Delay (s)	-	-	12.5	8.3
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

# HCM Signalized Intersection Capacity Analysis

## 2: S. Prospect Street/Grove Avenue & Bloomfield Avenue

2023 Build Condition  
Weekday Evening Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	498	787	249	102	1182	205	44	31	64	128	59	88
Future Volume (vph)	498	787	249	102	1182	205	44	31	64	128	59	88
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.90		1.00	0.91	
Flt Protected		0.98			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3557			3606		1862	1762		1862	1784	
Flt Permitted		0.52			0.51		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1885			1840		1862	1762		1862	1784	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	572	905	286	117	1359	236	51	36	74	147	68	101
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1763	0	0	1712	0	51	110	0	147	169	0
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases	1	6			2		4	4		8	8	
Permitted Phases	6			2								
Actuated Green, G (s)		72.1			65.1		11.3	11.3		13.5	13.5	
Effective Green, g (s)		72.1			65.1		11.3	11.3		13.5	13.5	
Actuated g/C Ratio		0.63			0.57		0.10	0.10		0.12	0.12	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		1241			1042		183	173		218	209	
v/s Ratio Prot		c0.05					0.03	c0.06		0.08	c0.09	
v/s Ratio Perm		0.84			c0.93							
v/c Ratio		6.50dl			1.64		0.28	0.64		0.67	0.81	
Uniform Delay, d1		21.4			24.9		48.0	49.8		48.6	49.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		194.1			293.7		0.3	5.5		6.3	19.1	
Delay (s)		215.5			318.6		48.3	55.3		54.9	68.5	
Level of Service		F			F		D	E		D	E	
Approach Delay (s)		215.5			318.6			53.1			62.2	
Approach LOS		F			F			D			E	

### Intersection Summary

HCM 2000 Control Delay	241.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	114.9	Sum of lost time (s)	21.0
Intersection Capacity Utilization	111.7%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM 6th TWSC  
3: Grove Avenue & Site Driveway

2023 Build Condition  
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑			↑
Traffic Vol, veh/h	2	4	731	3	6	273
Future Vol, veh/h	2	4	731	3	6	273
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	5	840	3	7	314

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1170	842	0	0	843
Stage 1	842	-	-	-	-
Stage 2	328	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	215	367	-	-	802
Stage 1	426	-	-	-	-
Stage 2	734	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	213	367	-	-	802
Mov Cap-2 Maneuver	213	-	-	-	-
Stage 1	426	-	-	-	-
Stage 2	726	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.5	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	296	802
HCM Lane V/C Ratio	-	-	0.023	0.009
HCM Control Delay (s)	-	-	17.5	9.5
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.1	0

**U.S. CENSUS DATA**



Note: This is a modified view of the original table produced by the U.S. Census Bureau.

Note: This download or printed version may have missing information from the original table.

**COMMUTING CHARACTERISTICS BY SEX**

Survey/Program:  
American Community Survey  
Year:  
2018  
Estimates:  
5-Year  
Table ID:  
S0801

Verona township, Essex County, New Jersey

	Total		Male		Female	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Workers 16 years and over	6,786	+/-384	3,474	+/-206	3,312	+/-277
MEANS OF TRANSPORTATION TO WORK						
Car, truck, or van	84.5%	+/-3.0	82.5%	+/-4.2	86.7%	+/-3.8
Drove alone	82.1%	+/-3.3	79.5%	+/-4.8	84.9%	+/-3.8
Carpooled	2.4%	+/-1.6	2.9%	+/-1.9	1.8%	+/-1.5
In 2-person carpool	1.9%	+/-1.4	2.0%	+/-1.5	1.8%	+/-1.5
In 3-person carpool	0.0%	+/-0.5	0.0%	+/-0.9	0.0%	+/-1.0
In 4-or-more person carpool	0.5%	+/-0.7	0.9%	+/-1.3	0.0%	+/-1.0
Workers per car, truck, or van	1.02	+/-0.01	1.02	+/-0.02	1.01	+/-0.01
Public transportation (excluding taxicab, motorcycle, or other means)	8.4%	+/-2.0	9.4%	+/-2.8	7.5%	+/-3.0
Walked	0.9%	+/-0.8	0.0%	+/-0.1	1.8%	+/-1.7
Bicycle	0.0%	+/-0.5	0.0%	+/-0.9	0.0%	+/-1.0
Taxicab, motorcycle, or other means	0.2%	+/-0.3	0.4%	+/-0.4	0.1%	+/-0.2
Worked at home	5.9%	+/-1.9	7.8%	+/-3.1	4.0%	+/-1.9
PLACE OF WORK						
Worked in state of residence	87.3%	+/-2.3	86.6%	+/-3.2	88.1%	+/-3.7
Worked in county of residence	50.4%	+/-4.1	50.4%	+/-5.3	50.4%	+/-5.7
Worked outside county of residence	36.9%	+/-3.7	36.2%	+/-5.4	37.7%	+/-5.7
Worked outside state of residence	12.7%	+/-2.3	13.4%	+/-3.2	11.9%	+/-3.7
Living in a place	0.0%	+/-0.5	0.0%	+/-0.9	0.0%	+/-1.0
Worked in place of residence	0.0%	+/-0.5	0.0%	+/-0.9	0.0%	+/-1.0
Worked outside place of residence	0.0%	+/-0.5	0.0%	+/-0.9	0.0%	+/-1.0
Not living in a place	100.0%	+/-0.5	100.0%	+/-0.9	100.0%	+/-1.0
Living in 12 selected states	100.0%	+/-0.5	100.0%	+/-0.9	100.0%	+/-1.0
Worked in minor civil division of	14.9%	+/-2.7	18.9%	+/-4.6	10.8%	+/-3.4
Worked outside minor civil division	85.1%	+/-2.7	81.1%	+/-4.6	89.2%	+/-3.4
Not living in 12 selected states	0.0%	+/-0.5	0.0%	+/-0.9	0.0%	+/-1.0
Workers 16 years and over who did not work	6,383	+/-385	3,204	+/-200	3,179	+/-288
TIME LEAVING HOME TO GO TO WORK						
12:00 a.m. to 4:59 a.m.	0.7%	+/-0.6	1.4%	+/-1.2	0.0%	+/-1.0
5:00 a.m. to 5:29 a.m.	1.0%	+/-1.1	0.4%	+/-0.6	1.7%	+/-2.1
5:30 a.m. to 5:59 a.m.	1.7%	+/-0.8	2.4%	+/-1.4	0.9%	+/-0.9
6:00 a.m. to 6:29 a.m.	3.3%	+/-1.2	4.4%	+/-2.0	2.2%	+/-1.6
6:30 a.m. to 6:59 a.m.	6.2%	+/-2.2	7.1%	+/-3.2	5.3%	+/-2.6
7:00 a.m. to 7:29 a.m.	16.5%	+/-2.9	18.3%	+/-4.5	14.7%	+/-4.1
7:30 a.m. to 7:59 a.m.	19.6%	+/-2.8	16.4%	+/-3.6	22.8%	+/-4.5
8:00 a.m. to 8:29 a.m.	18.6%	+/-2.9	15.3%	+/-5.1	21.9%	+/-3.9
8:30 a.m. to 8:59 a.m.	9.5%	+/-2.4	7.2%	+/-2.6	11.8%	+/-4.1
9:00 a.m. to 11:59 p.m.	22.9%	+/-3.1	27.1%	+/-5.2	18.7%	+/-3.4
TRAVEL TIME TO WORK						
Less than 10 minutes	10.7%	+/-2.8	10.7%	+/-3.7	10.7%	+/-3.5



Note: This is a modified view of the original table produced by the U.S. Census Bureau.

Note: This download or printed version may have missing information from the original table.

**TENURE BY VEHICLES AVAILABLE**

**Survey/Program:**  
American Community Survey  
**Universe:**  
Occupied housing units  
**Year:**  
2018  
**Estimates:**  
5-Year  
**Table ID:**  
B25044

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.

Source: U.S. Census Bureau, 2014-2018 American Community Survey 5-Year Estimates

When information is missing or inconsistent, the Census Bureau logically assigns an acceptable value using the response to a related question or questions. If a logical assignment is not possible, data are filled using a statistical process called allocation, which uses a similar individual or household to provide a donor value. The "Allocated" section is the number of respondents who received an allocated value for a particular subject.

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see ACS Technical Documentation ). The effect of nonsampling error is not represented in these tables.

The 12 selected states are Connecticut, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin.

Workers include members of the Armed Forces and civilians who were at work last week.

While the 2014-2018 American Community Survey (ACS) data generally reflect the February 2013 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.

Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

**Explanation of Symbols:**  
An "\*\*\*" entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.  
An "-" entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution, or the margin of error associated with a median was larger than the median itself.  
An "--" following a median estimate means the median falls in the lowest interval of an open-ended distribution.  
An "+-" following a median estimate means the median falls in the upper interval of an open-ended distribution.  
An "\*\*\*\*" entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.  
An "\*\*\*\*\*" entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.  
An "N" entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.  
An "(X)" means that the estimate is not applicable or not available.

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

**Verona township, Essex County, New Jersey**

	Estimate	Margin of Error
✓ Total:	5,006	+/-137
✓ Owner occupied:	3,997	+/-183
No vehicle available	92	+/-54
1 vehicle available	869	+/-176
2 vehicles available	2,137	+/-221
3 vehicles available	558	+/-126
4 vehicles available	259	+/-84
5 or more vehicles available	82	+/-56
✓ Renter occupied:	1,009	+/-146
No vehicle available	59	+/-49
1 vehicle available	575	+/-120
2 vehicles available	318	+/-107
3 vehicles available	57	+/-72
4 vehicles available	0	+/-19
5 or more vehicles available	0	+/-19

59 x 0 = 0  
575 x 1 = 575  
318 x 2 = 632  
57 x 3 = 171  
**1,378 vehicles**

**1,378 / 1,009 = 1.37 vehicles per unit**

**STONEFIELD CASE STUDY DATA**

# STONEFIELD

## Local Parking Demand Survey

Proposed Multifamily Residential Development  
 209 East 2nd Street  
 Borough of Bound Brook, Somerset County, New Jersey

### Parking Demand Summary

Property Location	Occupancy	Units	On-Site Parking Supply	Parking Supply Rate (stalls/unit)	Parking Demand	Parking Demand Rate (stalls/total units)	Parking Demand Rate (stalls/occupied units)
Cranford, NJ	92%	50	68	1.36	46	0.92	1.00
Lyndhurst, NJ	94%	296	455	1.54	333	1.13	1.20
Montclair, NJ	98%	163	192	1.18	156	0.96	0.98
Morristown, NJ	99%	215	258	1.20	133	0.62	0.62
New Brunswick, NJ	98%	118	158	1.34	113	0.96	0.98
East Rutherford, NJ	98%	108	194	1.80	89	0.82	0.84
Kearny, NJ	97%	150	242	1.61	233	1.55	1.60
<b>Average</b>	<b>97%</b>	<b>157</b>	<b>223</b>	<b>1.43</b>	<b>158</b>	<b>0.99</b>	<b>1.03</b>

Property Location	Occupancy	Bedrooms	On-Site Parking Supply	Parking Supply Rate (stalls/unit)	Parking Demand	Demand Rate (stalls/total Bedrooms)	Demand Rate (stalls/occupied Bedrooms)
Cranford, NJ	92%	78	68	1.36	46	0.59	0.64
Lyndhurst, NJ	94%	433	455	1.54	333	0.77	0.79
Montclair, NJ	98%	233	192	1.18	156	0.67	0.68
Morristown, NJ	99%	294	258	1.20	133	0.45	0.46
New Brunswick, NJ	98%	148	158	1.34	113	0.76	0.78
East Rutherford, NJ	98%	173	194	1.80	89	0.51	0.55
Kearny, NJ	97%	222	242	1.61	233	1.05	1.08
<b>Average</b>	<b>97%</b>	<b>226</b>	<b>224</b>	<b>1.43</b>	<b>158</b>	<b>0.69</b>	<b>0.71</b>