

# Traffic Impact Study

November 16, 2021

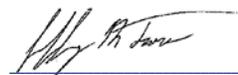
## Apartments at Verona

Block 2301, Lots 11, 12, 14 – 17, portion of 18, & 19  
Township of Verona, Essex County, New Jersey

Prepared for:

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Project No. 20000318A

# Table of Contents

Introduction .....	1
Existing Roadway Conditions.....	2
Existing Traffic Conditions.....	3
Trip Generation and Distribution.....	4
Future Traffic Conditions.....	6
HCM Capacity Analysis .....	7
Site Access and Parking Assessment.....	10
Summary and Conclusions .....	11

## Tables

Table 1 – Data Collection Efforts and Network Peak Hours .....	3
Table 2 – Trip Generation Comparison .....	4
Table 3 – HCM LOS/Delay Criteria.....	7
Table 4 – Level of Service Summary .....	8
Table 5 – Intersection Volume Comparison – Bloomfield Avenue (CR 506) & Linn Dr/Fells Rd.....	9

## Appendices

Appendix A.....	Traffic Figures
Appendix B.....	Traffic Count Data
Appendix C.....	Trip Generation Calculations
Appendix D.....	Capacity Analysis

# Introduction

The following report has been prepared for Verona LIHTC Urban Renewal LLC (“Applicant”) in association with the proposed multifamily residential development (“Project”) within the Township of Verona, Essex County, New Jersey. The site occupies Block 2301, Lots 11, 12, 14 – 17, portion of 18, & 19 as designated on the Verona Township Tax Maps and is currently developed with an approximately 18,000 SF industrial building. The Applicant proposes to raze the site and construct a 95-unit multifamily residential development. It is noted a *Traffic Assessment Letter* prepared by our office, last revised August 11, 2020, was previously submitted to the Verona Township Planning Board as part of the preliminary approval. The site is bounded by Linn Drive to the north, Pine Street to the south, and residential developments to the east and the west. The site is located with the Multi Family Mid Rise Redevelopment (A2-R) Overlay Zoning District as set forth by the *Amended Depot and Pine Development Area Redevelopment Plan* (“Amended Redevelopment Plan”). A site location map is included as **Figure 1** in **Appendix A**.

Access to the site is proposed via one (1) full-movement driveway along Linn Drive and one (1) right-in/right-out-only driveway along Pine Street. The proposed Site Layout and Dimension Plan is provided as **Figure 2** in **Appendix A**.

This study presents an evaluation of the current and future traffic conditions in the vicinity of the Project. Specific elements included in this study are:

- An inventory of the roadway facilities in the vicinity of the Project, including the existing physical and traffic operating characteristics;
- Determination of the Existing Conditions;
- Site Generated Trips as described in the ITE Trip Generation Manual, 11<sup>th</sup> Edition;
- Trip Distribution and Assignment;
- Forecast of 2024 No-Build Traffic Volumes;
- Peak Hour Capacity Analysis for the 2024 No-Build Conditions;
- Forecast of the 2024 Build Traffic Volumes;
- Peak Hour Capacity Analysis for the 2024 Build Conditions;
- Site Access and Parking Assessment; and
- Summary and Conclusions.

# Existing Roadway Conditions

A field investigation was conducted adjacent to the project site to obtain an inventory of existing roadway conditions, posted traffic controls, adjacent land uses, lane configurations, and existing vehicular/pedestrian traffic patterns.

## Roadways

**Bloomfield Avenue (CR 506)** is an urban principal arterial roadway under the jurisdiction of Essex County with an east-west orientation. The roadway provides two (2) travel lanes in each direction and the posted speed limit is 35 mph.

**Linn Drive** is a local roadway under the jurisdiction of Verona Township with a north-south orientation. The roadway provides one (1) travel lane in each direction and the posted speed limit is 25 mph.

**Pine Street** is a local roadway under the jurisdiction of Verona Township with a general east-west orientation. East of its intersection with Depot Street, the roadway provides one (1) travel lane in each direction. West of its intersection with Depot Street, the roadway provides one (1) one-way travel lane in the westbound direction. The speed limit is not posted.

**Fells Road** is a local roadway under the jurisdiction of Verona Township with a general east-west orientation. The roadway provides one (1) travel lane in each direction. The speed limit is not posted.

## Intersections

**Bloomfield Avenue (CR 506) & Linn Drive/Fells Road** is a three-phase signalized intersection operating on an 120-second cycle length. The eastbound and westbound approaches of Bloomfield Avenue (CR 506) each provide one (1) dedicated left-turn lane, one (1) dedicated through lane, and one (1) shared through/right-turn lane. The northbound approach of Fells Road provides one (1) shared left-turn/through lane and one (1) dedicated right-turn lane. The southbound approach of Linn Drive provides one (1) shared lane for all turning movements. Pedestrian accommodation is provided with crosswalks and pedestrian signal heads. Phasing is recalled via pushbutton actuation.

**Bloomfield Avenue (CR 506) & Pine Street** is an unsignalized t-intersection. The eastbound and westbound approaches of Bloomfield Avenue (CR 506) each provide two (2) dedicated through lanes. The southbound approach of Pine Street provides one (1) dedicated right-turn lane under stop-control.

## Public Transit Availability

NJ Transit bus stops 19357 and 19381 are located along the eastbound and westbound sides of Bloomfield Avenue (CR 506), respectively, west of its intersection with Linn Drive and Fells Road. These stops are serviced by NJ Transit Route 29, which travels through Parsippany-Troy Hills, Montville, Fairfield, West Caldwell, Caldwell, Verona, Montclair, Glen Ridge, Bloomfield, and Newark. There are approximately 50 buses on this route throughout a typical weekday.

# Existing Traffic Conditions

Traffic volume data was collected within the study area to gain an understanding of the existing roadway conditions and operations through turning movement counts (“TMC”). Data was collected on Thursday, October 28, 2021 from 7:00 AM to 9:00 AM and from 2:00 PM to 6:00 PM at the following intersections:

- Bloomfield Avenue (CR 506) & Linn Drive/Fells Road; and
- Bloomfield Avenue (CR 506) & Pine Street.

The data collection efforts are detailed in **Table 1**. A Volume Flow Diagram illustrating the 2021 Existing Conditions is provided as **Figure 3** in **Appendix A**. The processed TMC data is provided in **Appendix B**.

**Table 1 – Data Collection Efforts and Network Peak Hours**

Peak Period	Date Collected	Traffic Count Time Frame	Network Peak Hour
Weekday Morning	Thursday, October 28, 2021	7:00 AM – 9:00 AM	7:30 AM – 8:30 AM
Weekday Evening		2:00 PM – 6:00 PM	5:00 PM – 6:00 PM

# Trip Generation and Distribution

## Trip Generation

The ability of any roadway network to serve anticipated traffic volumes is measured by comparing peak hour traffic volumes to roadway capacities. Thus, it is essential to determine the hourly traffic volumes to be generated by the Project and to add them to the No-Build traffic volumes during the peak hours.

Trip generation estimates for the existing and proposed developments were made utilizing data published under Land Use Codes 110 – General Light Industrial and 220 – Multifamily Housing (Low-Rise) in the Institute of Transportation Engineers’ (ITE) publication, *Trip Generation Manual, 11<sup>th</sup> Edition*. This publication sets forth trip generation rates based on traffic counts conducted at research sites throughout the country. A comparison between the trip generation of the existing development and the proposed development is provided in **Table 2**.

**Table 2 – Trip Generation Comparison**

	ITE Land Use	Size	AM Peak Hour			PM Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total
Existing	LUC 110 – General Light Industrial	18,000 SF	11	2	13	2	10	12
Proposed	LUC 220 – Multifamily Housing (Low-Rise)	95 units	12	40	52	38	23	61
	<b>Difference</b>		<b>+1</b>	<b>+38</b>	<b>+39</b>	<b>+36</b>	<b>+13</b>	<b>+49</b>

As illustrated in the table above, the proposed development will generate a maximum of 49 new peak hour trips compared to the existing development. It is noted both NJDOT and ITE define a significant increase in traffic to be 100 or more trips added to the adjacent roadway network during the peak hours of traffic. Therefore, it is our opinion the Project will not produce a significant increase in traffic.

Section 1B of the Amended Redevelopment Plan discusses that the Plan is intended to “promote an environment accentuating the Township’s proximity and access to mass transit and to integrate a future development project with the surrounding neighborhood through appropriate building scale, location, artistic elements, bikeways, walkways, and landscaping.” As previously discussed, the nearby bus stops along Bloomfield Avenue (CR 506) are serviced by NJ Transit Bus Route 29, which runs between Parsippany-Troy Hills and Newark. Further, Section 5A of the Plan specifies a reduced off-street parking requirement that is “justified since the redevelopment area is within walking distance to a nearby bus transit line and because the residential units have unique characteristics, specifically, qualified affordable income households.” No trip credits were taken for the nearby public transit access or for the former industrial land use; therefore, the ITE trip generation estimates utilized in this report represent the most conservative analysis.

## Trip Distribution

Trip distribution methodology is developed based on a variety of factors. These factors include the existing travel patterns within the adjacent roadway network, adjacent land uses, proposed land uses, development locations, driveway locations, and the proximity of major arterials within the project vicinity. The following trip distribution pattern was established for the Project:

- To/From Bloomfield Avenue (CR 506), West of Site – 35%;
- To/From Bloomfield Avenue (CR 506), East of Site – 60%; and
- To/From Linn Drive, North of Site – 5%.

Volume Flow Diagrams illustrating the Trip Distribution and the Site Generated Trips are provided as **Figures 4** and **5** in **Appendix A**.

# Future Traffic Conditions

To determine the traffic impact of the proposed development, an estimation of the operational traffic characteristics at the Build date, without the construction of the Project (or “No-Build” condition), is made. The existing volumes have been projected to the Build year of 2024.

## Base Conditions

The NJDOT Annual Background Growth Rate Table recommends growth rates to account for general increases in traffic due to regional population and employment growth by the build year. The table recommends a rate of 1.00% for urban principal arterial roadways within Essex County and a rate of 1.50% for local roadways within Essex County. To provide a conservative analysis, a growth rate of 1.50% was utilized to estimate the 2024 baseline conditions.

## Adjacent Developments

Colliers Engineering & Design contacted the planning boards of both the Township of Verona and the neighboring Borough of Caldwell to determine if there are any planned or approved developments within the vicinity of the project site that would generate traffic on the adjacent roadway network. It was determined there are no such developments.

## 2024 No-Build Conditions

The 2024 No-Build traffic volumes were forecasted by applying the background growth rate to the existing traffic volumes. A Volume Flow Diagram illustrating the 2024 No-Build Conditions is provided as **Figure 7** in **Appendix A**.

## 2024 Build Conditions

The 2024 Build traffic volumes were forecasted by adding the site generated traffic to the 2024 No-Build traffic volumes within the roadway network. A Volume Flow Diagram illustrating the 2024 Build Conditions is provided as **Figure 8** in **Appendix A**.

# HCM Capacity Analysis

The peak hour traffic operations within the project vicinity were evaluated at the study intersection. The analyses were performed using the latest version of *Synchro Trafficware*, a traffic analysis and simulation program. The results of these analyses provide Levels of Service ("LOS"), volume/capacity descriptions, and average seconds of delay for the intersection movements.

The efficiency with which an intersection operates is a function of volume and capacity. The capacity of an intersection is the volume of vehicles it can accommodate during a given time period. LOS is a qualitative measure describing operational conditions within a traffic stream in terms of traffic characteristics, such as freedom to maneuver, traffic interruption, comfort, and convenience. Six (6) LOS are defined for each type of facility with analysis procedures available. Levels of Service range from "A" through "F," with Level "A" representing excellent conditions with no delays, and failure and deficient operations denoted by Level "F." The HCM LOS criteria for signalized and unsignalized intersections are summarized in **Table 3**.

**Table 3 – HCM LOS/Delay Criteria**

Level of Service	Average Control Delay (sec/veh)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10	≤ 10
B	> 10 – 20	> 10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

The Levels of Service for the 2024 No-Build and Build Conditions are detailed in **Table 4**. The capacity analysis calculation worksheets are provided in **Appendix D**.

**Table 4 – Level of Service Summary**

Intersection	Movement	2024 No-Build				2024 Build				
		AM Peak		PM Peak		AM Peak		PM Peak		
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	
Bloomfield Avenue (CR 506) (EB/WB) & Linn Drive (SB)/ Fells Road (NB)	EB	L	A	8.1	A	7.6	A	8.0	A	7.7
		TR	B	12.6	B	15.0	B	12.6	B	15.0
	WB	L	A	8.0	B	10.7	A	8.0	B	10.7
		TR	A	10.0	B	11.6	B	10.4	B	12.1
	NB	LT	D	46.9	D	50.7	D	45.9	D	49.7
		R	D	44.4	D	47.6	D	44.4	D	47.6
	SB	LTR	E	61.3	F	307.5	E	77.7	F	364.9
	<b>Overall</b>		<b>B</b>	<b>17.2</b>	<b>D</b>	<b>37.7</b>	<b>B</b>	<b>19.0</b>	<b>D</b>	<b>43.4</b>
Bloomfield Avenue (CR 506) (EB/WB) & Pine Street (SB)	SB	R	b	14.6	b	14.3	b	14.8	b	14.6
Linn Drive (NB/SB) & Site Driveway (WB)	WB	LR	-	-	-	-	a	9.5	b	11.0
	SB	L	-	-	-	-	a	7.3	a	7.6
Pine Street (EB/WB) & Site Driveway (SB)	SB	R	-	-	-	-	a	9.2	a	9.1

Note: Uppercase indicates signalized intersections; lowercase indicates unsignalized intersections.

## Bloomfield Avenue (CR 506) & Linn Drive/Fells Road

### 2024 No-Build Analysis

Under the No-Build condition, all intersection movements will operate at Levels of Service “D” or better during both peak hours studied, with the exception of the southbound movement, which will operate above capacity during both peak hours studied. The intersection will operate at overall Levels of Service “D” or better during both peak hours studied.

### 2024 Build Analysis

Under the Build condition, all intersection movements will operate at or near No-Build Levels of Service during both peak hours studied. The overall intersection Levels of Service will be maintained during both peak hours studied. **Table 5** illustrates that the number of site generated trips at the intersection of Bloomfield Avenue (CR 506) & Linn Drive/Fells Road is approximately 2% of the overall traffic; therefore, the impact of the site generated trips at the intersection is negligible. The impact is equivalent to less than one (1) trip every minute during the peak periods, or less than two (2) additional vehicles during each cycle of the traffic signal.

**Table 5 – Intersection Volume Comparison – Bloomfield Avenue (CR 506) & Linn Drive/Fells Road**

Time Period	2024 No-Build Traffic Volume	Site Generated Trips	2024 Build Traffic Volume	Percent Change
AM Peak Hour	2,180	47	2,227	+2.16%
PM Peak Hour	2,806	49	2,855	+1.75%

## Bloomfield Avenue (CR 506) & Pine Street

### 2024 No-Build Analysis

Under the No-Build condition, the southbound right-turn movement will operate at a Level of Service “B” during both peak hours studied.

### 2024 Build Analysis

Under the Build condition, the southbound right-turn movement will continue to operate at or near No-Build Levels of Service during both peak hours studied.

## Linn Drive & Site Driveway

### 2024 Build Analysis

Under the Build condition, all intersection movements will operate at Levels of Service “B” or better during both peak hours studied. The estimated 95<sup>th</sup> percentile queue lengths will be less than one (1) vehicle during both peak hours studied, which can be accommodated within the layout of the site.

## Pine Street & Site Driveway

### 2024 Build Analysis

Under the Build condition the southbound right-turn movement will operate at a Level of Service “A” during both peak hours studied. The estimated 95<sup>th</sup> percentile queue lengths will be less than one (1) vehicle during both peak hours studied, which can be accommodated within the layout of the site.

# Site Access and Parking Assessment

## Site Access

Access to the site is proposed via one (1) full-movement driveway along Linn Drive and one (1) right-in/right-out-only driveway along Pine Street. All parking spaces will be 9' x 18' in size and will have aisle widths of 24', complying with the Residential Site Improvement Standards (RSIS). The proposed site plan provides sufficient circulation for a garbage truck, delivery truck, and emergency vehicle to efficiently maneuver throughout the site.

## Parking Assessment

Section 5.A.1 within the *Amended Depot and Pine Redevelopment Area Redevelopment Plan* specifies the following parking requirements:

§150-12.6 "Off Street Parking" provisions shall NOT generally be applicable to the A-2R Overlay Zone but a deviation from the New Jersey Residential Site Improvement Standards ("R.S.I.S.") as described in this paragraph shall be complied with. The deviation from RSIS is justified since the redevelopment area is within walking distance to a nearby bus transit line and because the residential units have unique characteristics, specifically, qualified affordable income households. Further, given the size and shape of the property the parking resources serving the A-2R Overlay Zone, the number of on-site parking spaces appropriate for each affordable residential unit and therefore required in the A-2R Overlay Zone shall be 1.5 vehicles per unit.

For the proposed 95-unit multifamily residential development, this equates to a parking requirement of 143 spaces. It is proposed to provide 143 parking spaces, thus satisfying the requirement of the Amended Redevelopment Plan.

Additionally, parking estimates for the Project were made utilizing data published under Land Use Code 223 – Affordable Housing in the ITE publication, *Parking Generation, 5<sup>th</sup> Edition*. Based on the ITE data, the 85<sup>th</sup> percentile peak parking demand ratio is 1.33 spaces per dwelling unit. For the proposed 95-unit development, this equates to an 85<sup>th</sup> percentile parking demand of 127 spaces. As previously mentioned, it is proposed to provide 143 parking spaces. Based on the parking demand estimated from published industry standards, adequate parking will be provided.

# Summary and Conclusions

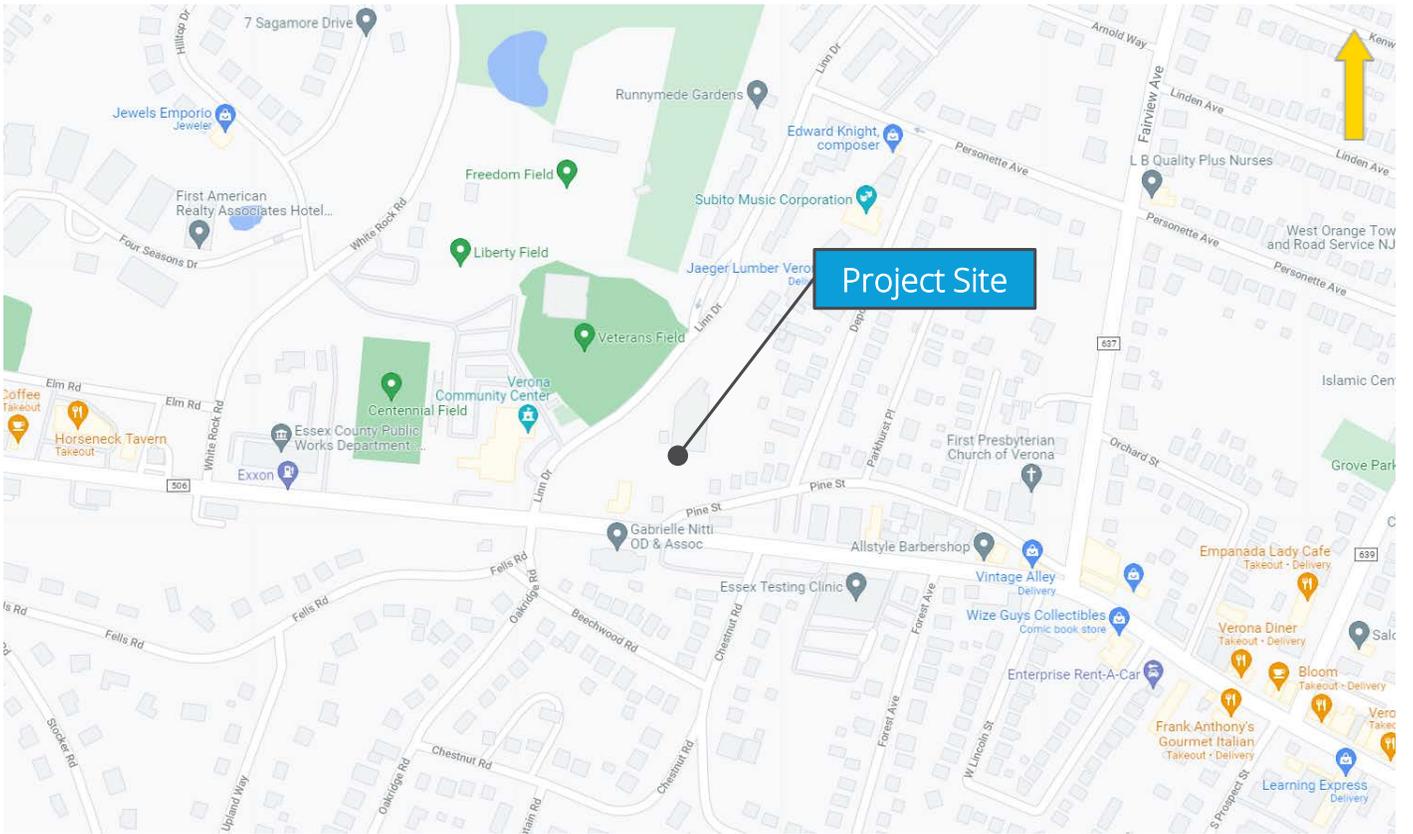
The Traffic Impact Study evaluated the proposed multifamily residential development within the Township of Verona, Essex County, New Jersey. The findings of the Traffic Impact Study are summarized as follows:

1. The Applicant proposes to raze the site and construct a 95-unit multifamily residential development.
2. Access to the site is proposed via one (1) full-movement driveway along Linn Drive and one (1) right-in/right-out-only driveway along Pine Street.
3. Under the Build condition, the overall Levels of Service at the intersection of Bloomfield Avenue (CR 506) & Linn Drive/Fells Road will be maintained during both peak hours studied.
4. Under the Build condition, the southbound right-turn movement at the intersection of Bloomfield Avenue (CR 506) & Pine Street will continue to operate at or near No-Build Levels of Service during both peak hours studied.
5. Under the Build condition, all movements at the site driveway along Linn Drive will operate at Levels of Service "B" or better during both peak hours studied.
6. Under the Build condition, the southbound right-turn movement at the site driveway along Pine Street will operate at a Level of Service "A" during both peak hours studied.
7. The proposed parking supply of 143 spaces satisfies the Amended Redevelopment Plan requirement and exceeds the estimated demand based on published industry standards.

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# Traffic Impact Study

## Appendix A | Traffic Figures



Engineering & Design

Apartments at Verona

Project No. 20000318A

Township of Verona, Essex County, New Jersey

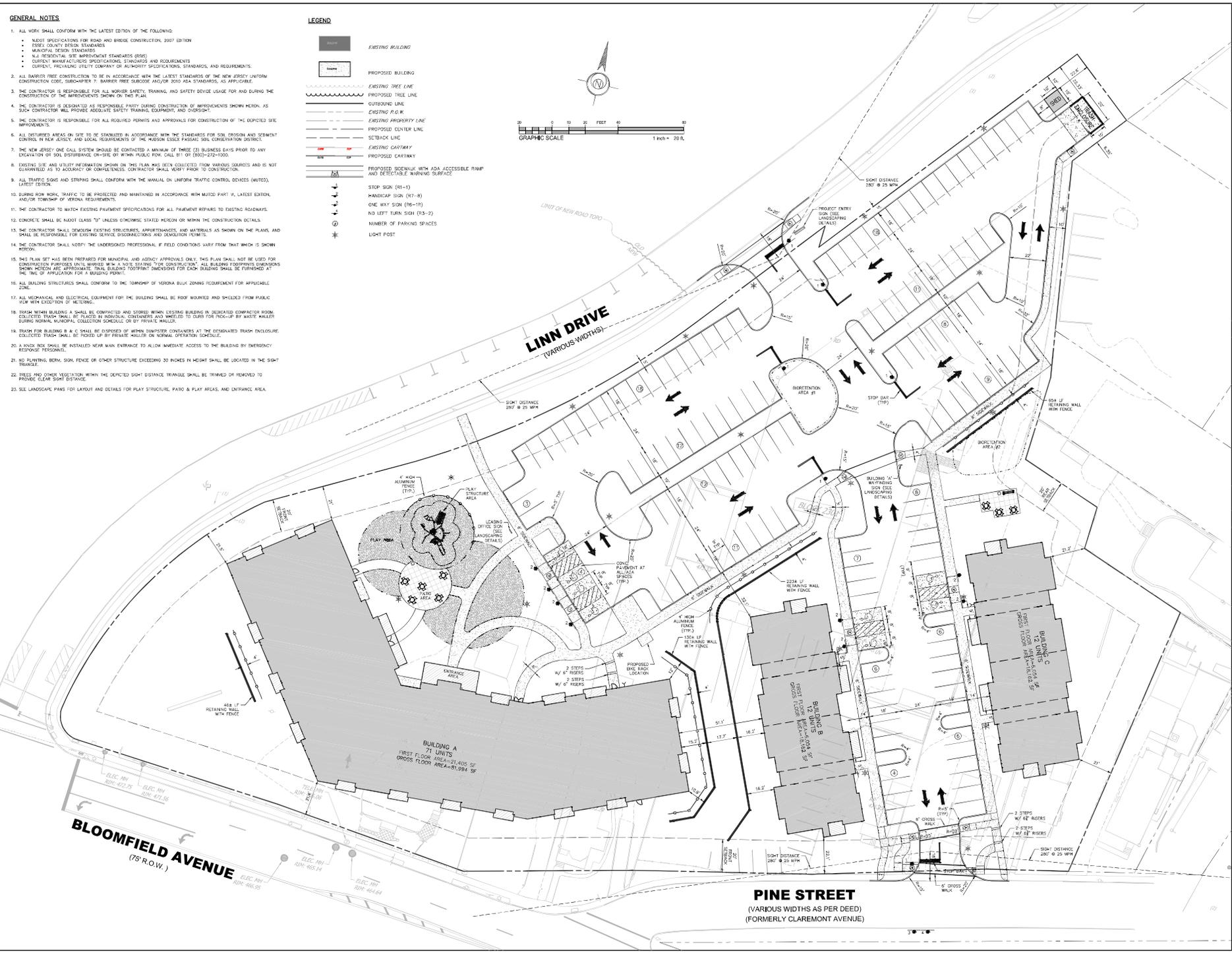
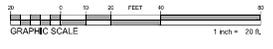
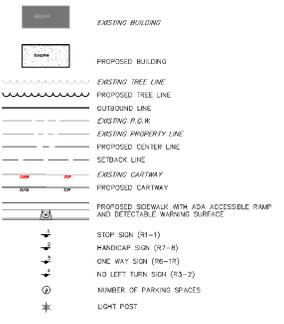
Figure 1

Site Location Map

### GENERAL NOTES

- ALL WORK SHALL CONFORM WITH THE LATEST EDITION OF THE FOLLOWING:
  - NAD 83 SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2007 EDITION
  - ESSEX COUNTY DESIGN STANDARDS
  - MUNICIPAL DESIGN STANDARDS
  - A.S.I. RESIDENTIAL SITE IMPROVEMENT STANDARDS (SIS)
  - CURRENT MANUFACTURER'S SPECIFICATIONS, STANDARDS AND REQUIREMENTS
  - CURRENT, PREVAILING UTILITY COMPANY OR AGENCY SPECIFICATIONS, STANDARDS, AND REQUIREMENTS
- ALL BARRIER FREE CONSTRUCTION TO BE IN ACCORDANCE WITH THE LATEST STANDARD OF THE NEW JERSEY UNIFORM CONSTRUCTION CODE, SUBCHAPTER 7, BARRIER FREE SUBCODE AND/OR 2010 ADA STANDARDS, AS APPLICABLE.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL WORKER SAFETY, TRAINING, AND SAFETY DEVICE USAGE FOR AND DURING THE CONSTRUCTION OF THE IMPROVEMENTS SHOWN ON THIS PLAN.
- THE CONTRACTOR IS RESPONSIBLE AS RESPONSIBLE PARTY DURING CONSTRUCTION OF IMPROVEMENTS SHOWN HEREIN, AS SUCH CONTRACTOR WILL PROVIDE ADEQUATE SAFETY TRAINING, EQUIPMENT, AND OVERSIGHT.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL REQUIRED PERMITS AND APPROVALS FOR CONSTRUCTION OF THE DEPICTED SITE IMPROVEMENTS.
- ALL DISTURBED AREAS ON SITE TO BE STABILIZED IN ACCORDANCE WITH THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY AND LOCAL REQUIREMENTS OF THE HUDSON SLIC PACIFIC SOIL CONSERVATION DISTRICT.
- THE NEW JERSEY ONE CALL SYSTEM SHOULD BE CONTACTED A MINIMUM OF THREE (3) BUSINESS DAYS PRIOR TO ANY EXCAVATION OR SOIL DISTURBANCE ON-SITE OR WITHIN PUBLIC ROW. CALL 811 OR (800)-272-1000.
- EXISTING SITE AND UTILITY INFORMATION SHOWN ON THIS PLAN HAS BEEN COLLECTED FROM VARIOUS SOURCES AND IS NOT GUARANTEED AS TO ACCURACY OR COMPLETENESS. CONTRACTOR SHALL VERIFY PRIOR TO CONSTRUCTION.
- ALL TRAFFIC SIGNS AND STRIPES SHALL CONFORM WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION.
- DURING ROW WORK, TRAFFIC TO BE PROTECTED AND MAINTAINED IN ACCORDANCE WITH MUTCD PART V, LATEST EDITION, AND/OR TOWNSHIP OF VERONA REQUIREMENTS.
- THE CONTRACTOR TO MATCH EXISTING PAVEMENT SPECIFICATIONS FOR ALL PAVEMENT REPAIRS TO EXISTING ROADWAYS.
- CONCRETE SHALL BE MINIMUM CLASS "SP" UNLESS OTHERWISE STATED HEREON OR WITHIN THE CONSTRUCTION DETAILS.
- THE CONTRACTOR SHALL DEMOLISH EXISTING STRUCTURES, APPURTENANCES, AND MATERIALS AS SHOWN ON THE PLANS, AND SHALL BE RESPONSIBLE FOR EXISTING SERVICE DISCONTINUATIONS AND DEDICATIONS TO TOWNSHIP.
- THE CONTRACTOR SHALL NOTIFY THE UNDERSIGNED PROFESSIONAL IF FIELD CONDITIONS VARY FROM THAT WHICH IS SHOWN HEREON.
- THIS PLAN SET HAS BEEN PREPARED FOR MUNICIPAL AND AGENCY APPROVAL ONLY. THIS PLAN SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS MANAGED BY A PROFESSIONAL ENGINEER. ALL BUILDING FOOTPRINT DIMENSIONS SHOWN HEREON ARE APPROXIMATE. FINAL BUILDING FOOTPRINT DIMENSIONS FOR EACH BUILDING SHALL BE FURNISHED AT THE TIME OF APPLICATION FOR A BUILDING PERMIT.
- ALL BUILDING STRUCTURES SHALL CONFORM TO THE TOWNSHIP OF VERONA BULK ZONING REQUIREMENT FOR APPLICABLE ZONING.
- ALL MECHANICAL AND ELECTRICAL EQUIPMENT FOR THE BUILDING SHALL BE ROOF MOUNTED AND SHIELDED FROM PUBLIC VIEW WITH EXCEPTION OF METEORING.
- TRASH FROM BUILDING SHALL BE COMPACTED AND STORED WITHIN EXISTING BUILDING IN DESIGNATED COMPACTOR ROOM. COLLECTED TRASH SHALL BE PLACED IN INDIVIDUAL CONTAINERS AND WHELED TO CURB FOR PICKUP BY WASTE HAULER DURING NORMAL MUNICIPAL COLLECTION SCHEDULE OR BY PRIVATE HAULER.
- TRASH FOR BUILDING B & C SHALL BE DEPOSITED AT WASTE SHEDDERS CONTAINERS AT THE DESIGNATED TRASH ENCLOSURE. COLLECTED TRASH SHALL BE PICKED UP BY PRIVATE HAULER ON NORMAL OPERATION SCHEDULE.
- A HAZARD BOX SHALL BE INSTALLED NEAR MAIN ENTRANCE TO ALLOW IMMEDIATE ACCESS TO THE BUILDING BY EMERGENCY RESPONSE PERSONNEL.
- NO PLANTING, BERM, SIGN, FENCE OR OTHER STRUCTURE EXCEEDING 30 INCHES IN HEIGHT SHALL BE LOCATED IN THE SIGHT TRIANGLE.
- TREES AND OTHER VEGETATION WITHIN THE DEPICTED SIGHT DISTANCE TRIANGLE SHALL BE TRIMMED OR REMOVED TO PROVIDE CLEAR SIGHT DISTANCE.
- SEE LANDSCAPE PLANS FOR LAYOUT AND DETAILS FOR PLAY STRUCTURE, PAVED & PLAY AREAS, AND ENTRANCE AREA.

### LEGEND



**ESE CONSULTANTS**  
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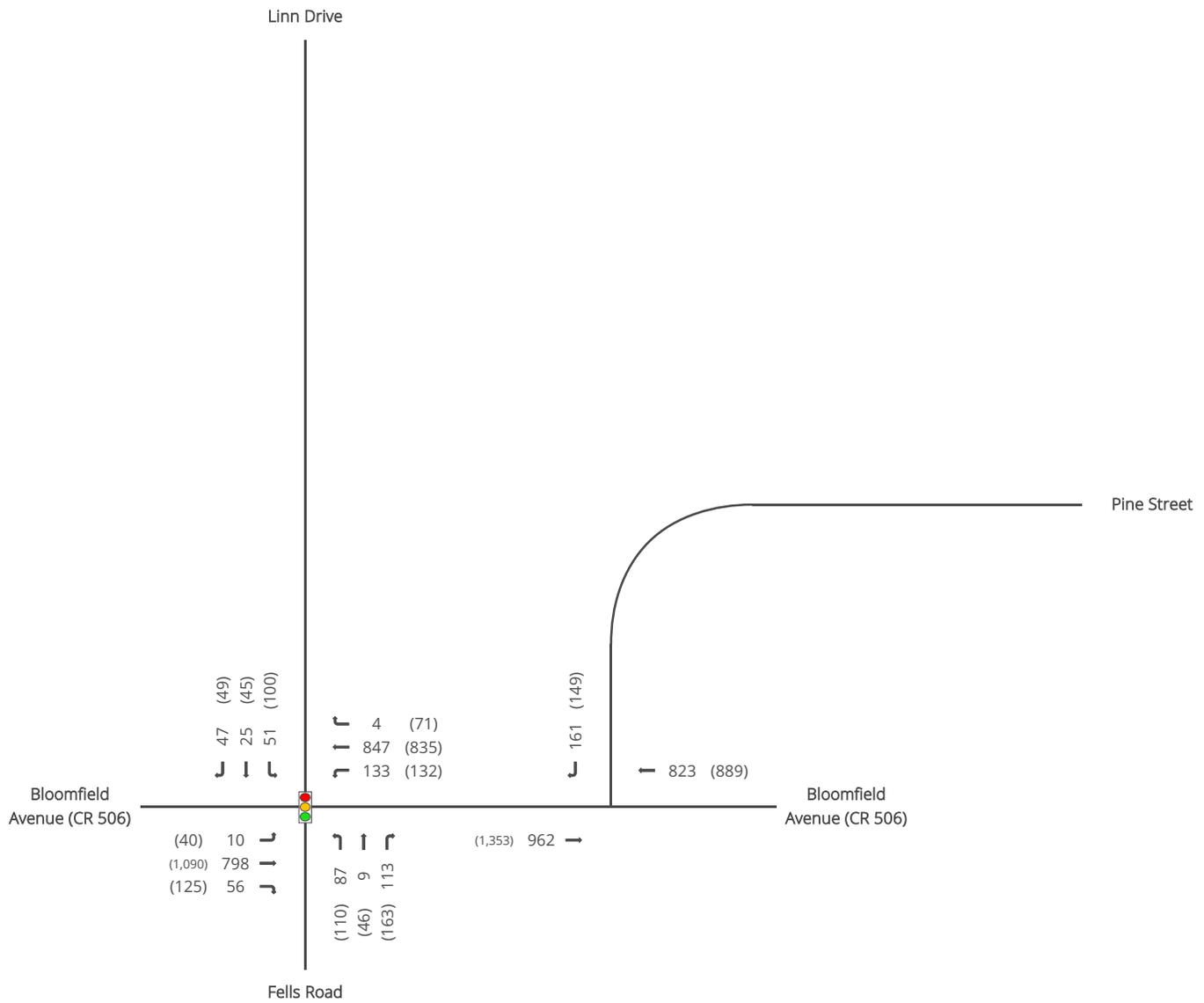
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NO.	DATE	DESCRIPTION
1	08/28/2013	ISSUED FOR PERMITTING
2	09/10/2013	ISSUED FOR PERMITTING
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99	09/10/2013	ISSUED FOR PERMITTING
100	09/10/2013	ISSUED FOR PERMITTING

New Jersey State Seal  
 State of New Jersey  
 Department of Transportation  
 1000 Pine Street, Suite 200  
 Verona, NJ 07093  
 Phone: 973-261-1111  
 Fax: 973-261-1112  
 Website: www.nj.gov

**SITE LAYOUT AND DIMENSION PLAN**  
 MAJOR SITE PLAN  
**APARTMENTS AT VERONA**  
 BLOCK 100, TOWNSHIP OF VERONA, ESSEX COUNTY, NEW JERSEY

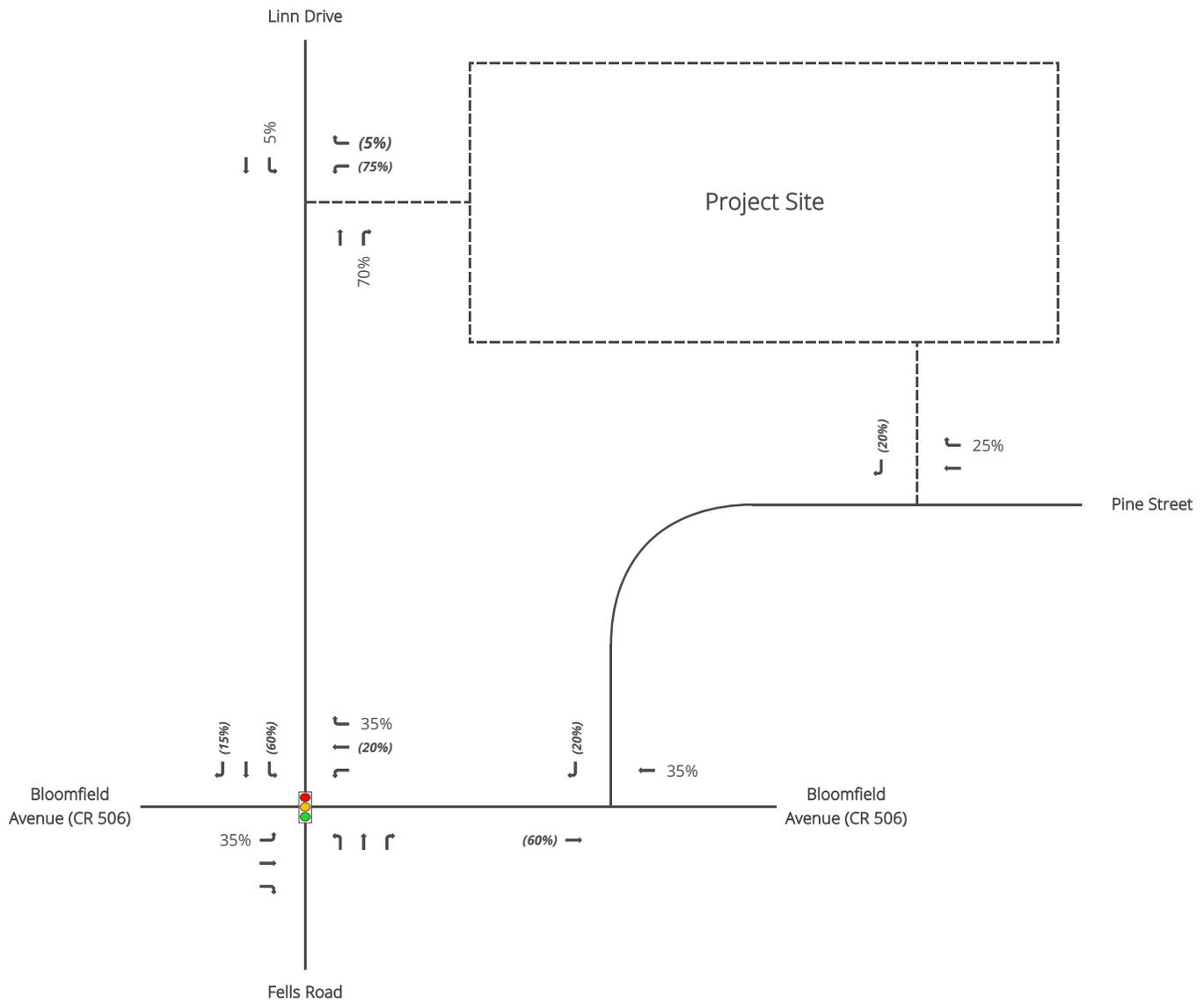
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DESIGN	DATE
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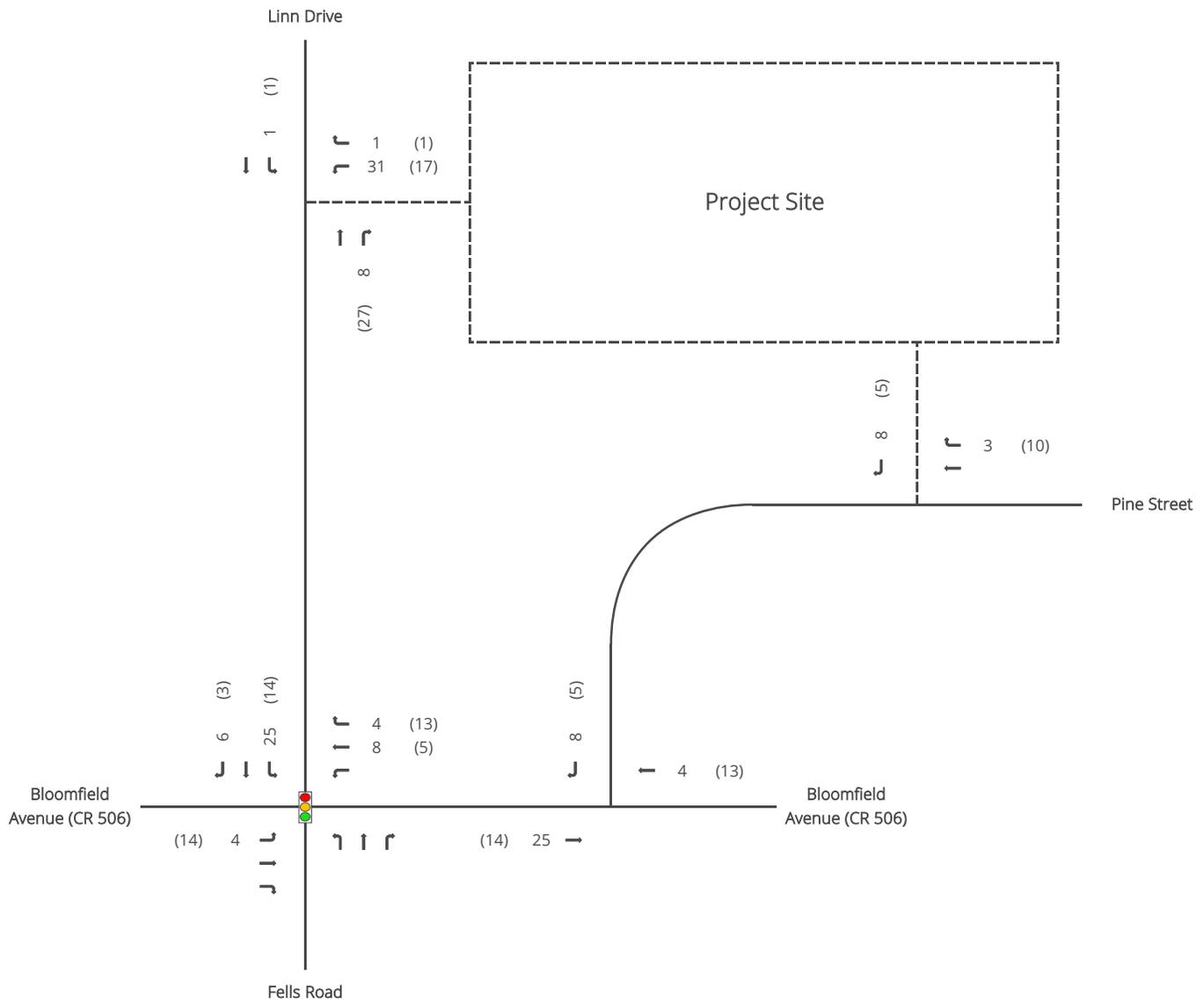


Apartments at Verona  
 Project No. 20000318A  
 Township of Verona, Essex County, New Jersey

Legend	
AM Peak Hour: ###	Through Movement: ←
PM Peak Hour: (###)	Turning Movement: ↙ ↘
	Signalized Intersection: 🚦

**Figure 3**  
**2021 Existing Conditions**  
**AM & PM Peak Hours**





Peak Hour	Enter	Exit	Total
AM	12	40	52
PM	38	23	61

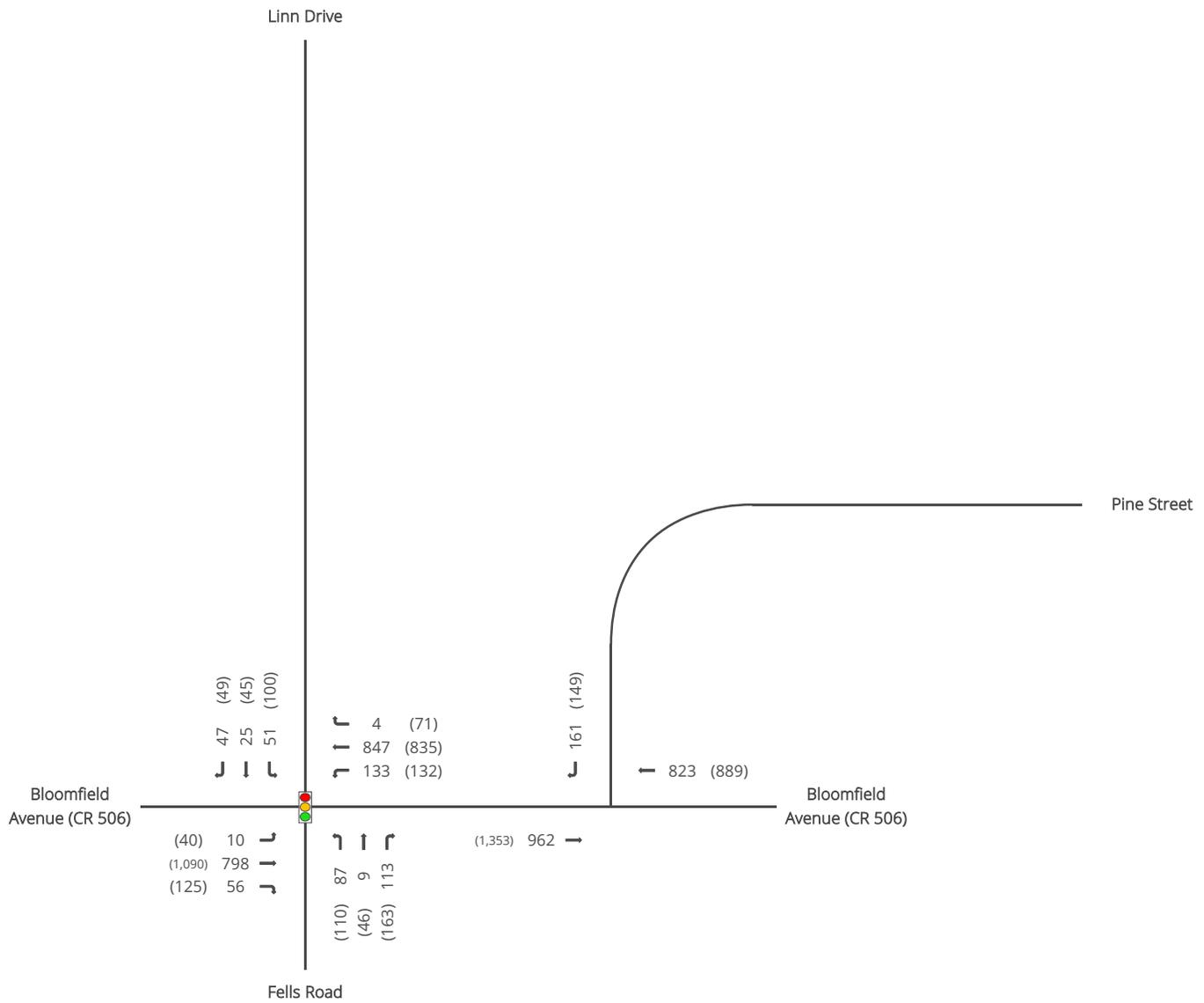


Apartments at Verona  
 Project No. 20000318A  
 Township of Verona, Essex County, New Jersey

Legend

AM Peak Hour: ###	Through Movement:	←
PM Peak Hour: (###)	Turning Movement:	↘
	Signalized Intersection:	🚦

**Figure 5**  
**Site Generated Trips**  
**AM & PM Peak Hours**



**Build-Year Growth Rate**

Growth Rate:	1.50%
Years:	3
Growth Factor:	1.046

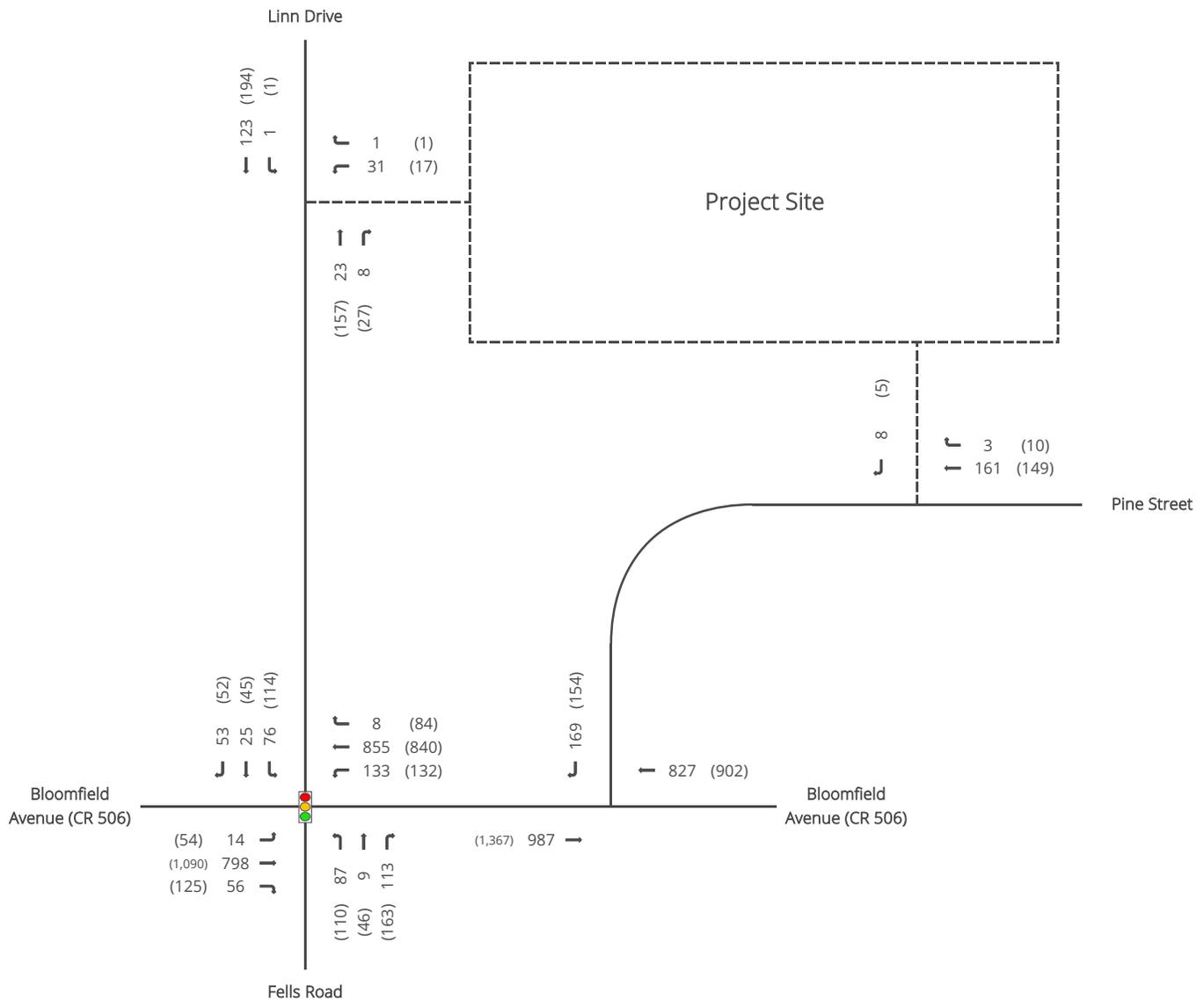


Apartments at Verona  
 Project No. 20000318A  
 Township of Verona, Essex County, New Jersey

**Legend**

AM Peak Hour: ###	Through Movement:	←
PM Peak Hour: (###)	Turning Movement:	↙ ↘
	Signalized Intersection:	🚦

**Figure 6**  
**2024 No-Build Conditions**  
**AM & PM Peak Hours**



# Traffic Impact Study

## Appendix B | Traffic Count Data



Imperial Traffic & Data Collection  
 www.imperialtdc.com  
 PO BOX 4637  
 Cherry Hill, New Jersey, United States 08034  
 609-706-6100 lklein@imperialtdc.com

Project: Bloomfield Avenue  
 Municipality: Verona, Essex County, NJ  
 Setup: NR  
 Location: 40.834574, -74.256397

Count Name: 1. Bloomfield Avenue & Linn  
 Drive/Fells Road  
 Site Code: 1  
 Start Date: 10/28/2021  
 Page No: 1

### Turning Movement Data

Start Time	Bloomfield Avenue Eastbound						Bloomfield Avenue Westbound						Fells Road Northbound						Linn Drive Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	1	126	9	0	136	0	15	104	0	0	119	0	4	0	15	0	19	0	8	1	2	0	11	285
7:15 AM	0	1	152	7	0	160	0	9	118	1	0	128	0	10	1	29	0	40	0	9	4	2	0	15	343
7:30 AM	0	2	222	15	0	239	0	29	193	1	0	223	0	18	2	27	2	47	0	16	10	10	1	36	545
7:45 AM	0	1	236	13	3	250	0	28	215	2	0	245	0	22	2	37	2	61	0	14	7	12	0	33	589
Hourly Total	0	5	736	44	3	785	0	81	630	4	0	715	0	54	5	108	4	167	0	47	22	26	1	95	1762
8:00 AM	1	4	184	17	1	206	0	37	225	1	0	263	0	17	3	23	0	43	0	12	3	13	0	28	540
8:15 AM	0	2	156	11	2	169	0	39	212	0	0	251	0	30	2	26	0	58	0	9	5	12	3	26	504
8:30 AM	0	0	201	21	0	222	0	36	179	0	0	215	0	13	3	28	0	44	0	6	5	5	0	16	497
8:45 AM	0	5	192	20	0	217	0	26	230	2	0	258	0	22	1	21	0	44	0	10	8	10	0	28	547
Hourly Total	1	11	733	69	3	814	0	138	846	3	0	987	0	82	9	98	0	189	0	37	21	40	3	98	2088
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	1	201	9	0	211	0	15	196	2	0	213	0	11	0	23	0	34	0	6	3	3	0	12	470
2:15 PM	0	4	198	13	1	215	0	16	167	4	0	187	0	16	4	24	0	44	1	11	1	7	0	20	466
2:30 PM	0	3	196	16	1	215	0	17	221	4	0	242	0	15	0	23	0	38	0	12	4	10	1	26	521
2:45 PM	0	3	230	19	0	252	0	28	190	1	0	219	0	26	1	24	0	51	0	2	3	5	0	10	532
Hourly Total	0	11	825	57	2	893	0	76	774	11	0	861	0	68	5	94	0	167	1	31	11	25	1	68	1989
3:00 PM	0	4	215	20	0	239	0	34	206	3	0	243	0	9	3	17	0	29	0	12	7	11	0	30	541
3:15 PM	0	7	188	15	0	210	0	27	233	2	0	262	0	19	2	31	1	52	0	10	4	13	0	27	551
3:30 PM	0	4	180	14	0	198	0	28	228	4	0	260	0	17	10	27	0	54	0	8	7	7	0	22	534
3:45 PM	0	6	194	13	0	213	0	27	214	6	0	247	0	24	11	39	0	74	0	14	4	12	0	30	564
Hourly Total	0	21	777	62	0	860	0	116	881	15	0	1012	0	69	26	114	1	209	0	44	22	43	0	109	2190
4:00 PM	0	1	250	16	0	267	0	26	209	10	0	245	0	23	10	32	0	65	0	10	3	6	0	19	596
4:15 PM	0	6	293	17	0	316	0	22	184	5	0	211	0	24	8	46	0	78	0	7	3	12	0	22	627
4:30 PM	1	5	249	13	1	268	0	23	204	5	0	232	0	26	12	36	0	74	0	12	7	7	0	26	600
4:45 PM	0	6	236	23	0	265	0	24	198	15	0	237	0	23	15	45	0	83	0	13	11	9	0	33	618
Hourly Total	1	18	1028	69	1	1116	0	95	795	35	0	925	0	96	45	159	0	300	0	42	24	34	0	100	2441
5:00 PM	0	7	285	26	0	318	0	29	214	18	0	261	0	36	8	35	0	79	2	31	6	9	0	48	706
5:15 PM	1	6	292	29	1	328	0	27	214	19	0	260	0	32	12	54	1	98	0	11	8	15	0	34	720
5:30 PM	0	13	268	40	0	321	0	38	201	17	0	256	0	20	4	36	0	60	0	27	16	9	0	52	689
5:45 PM	0	13	243	30	2	286	0	38	206	17	0	261	0	22	22	38	1	82	0	29	15	16	0	60	689
Hourly Total	1	39	1088	125	3	1253	0	132	835	71	0	1038	0	110	46	163	2	319	2	98	45	49	0	194	2804
Grand Total	3	105	5187	426	12	5721	0	638	4761	139	0	5538	0	479	136	736	7	1351	3	299	145	217	5	664	13274
Approach %	0.1	1.8	90.7	7.4	-	-	0.0	11.5	86.0	2.5	-	-	0.0	35.5	10.1	54.5	-	-	0.5	45.0	21.8	32.7	-	-	-

Total %	0.0	0.8	39.1	3.2	-	43.1	0.0	4.8	35.9	1.0	-	41.7	0.0	3.6	1.0	5.5	-	10.2	0.0	2.3	1.1	1.6	-	5.0	-
Lights	3	103	5058	419	-	5583	0	626	4629	139	-	5394	0	468	136	721	-	1325	3	296	143	212	-	654	12956
% Lights	100.0	98.1	97.5	98.4	-	97.6	-	98.1	97.2	100.0	-	97.4	-	97.7	100.0	98.0	-	98.1	100.0	99.0	98.6	97.7	-	98.5	97.6
Mediums	0	2	117	6	-	125	0	10	119	0	-	129	0	11	0	14	-	25	0	3	2	5	-	10	289
% Mediums	0.0	1.9	2.3	1.4	-	2.2	-	1.6	2.5	0.0	-	2.3	-	2.3	0.0	1.9	-	1.9	0.0	1.0	1.4	2.3	-	1.5	2.2
Articulated Trucks	0	0	12	1	-	13	0	2	13	0	-	15	0	0	0	1	-	1	0	0	0	0	-	0	29
% Articulated Trucks	0.0	0.0	0.2	0.2	-	0.2	-	0.3	0.3	0.0	-	0.3	-	0.0	0.0	0.1	-	0.1	0.0	0.0	0.0	0.0	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	8.3	-	-	-	-	-	-	-	-	-	-	14.3	-	-	-	-	-	-	20.0	-	-
Pedestrians	-	-	-	-	11	-	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	91.7	-	-	-	-	-	-	-	-	-	-	85.7	-	-	-	-	-	-	80.0	-	-



TRAFFIC & DATA COLLECTION

Imperial Traffic & Data Collection

www.imperialtdc.com

PO BOX 4637

Cherry Hill, New Jersey, United States 08034

609-706-6100 lklein@imperialtdc.com

Count Name: 1. Bloomfield Avenue & Linn

Drive/Fells Road

Site Code: 1

Start Date: 10/28/2021

Page No: 4

Project: Bloomfield Avenue  
Municipality: Verona, Essex County, NJ  
Setup: NR  
Location: 40.834574, -74.256397

### Turning Movement Peak Hour Data (7:30 AM)

Start Time	Bloomfield Avenue Eastbound						Bloomfield Avenue Westbound						Fells Road Northbound						Linn Drive Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:30 AM	0	2	222	15	0	239	0	29	193	1	0	223	0	18	2	27	2	47	0	16	10	10	1	36	545
7:45 AM	0	1	236	13	3	250	0	28	215	2	0	245	0	22	2	37	2	61	0	14	7	12	0	33	589
8:00 AM	1	4	184	17	1	206	0	37	225	1	0	263	0	17	3	23	0	43	0	12	3	13	0	28	540
8:15 AM	0	2	156	11	2	169	0	39	212	0	0	251	0	30	2	26	0	58	0	9	5	12	3	26	504
<b>Total</b>	<b>1</b>	<b>9</b>	<b>798</b>	<b>56</b>	<b>6</b>	<b>864</b>	<b>0</b>	<b>133</b>	<b>845</b>	<b>4</b>	<b>0</b>	<b>982</b>	<b>0</b>	<b>87</b>	<b>9</b>	<b>113</b>	<b>4</b>	<b>209</b>	<b>0</b>	<b>51</b>	<b>25</b>	<b>47</b>	<b>4</b>	<b>123</b>	<b>2178</b>
Approach %	0.1	1.0	92.4	6.5	-	-	0.0	13.5	86.0	0.4	-	-	0.0	41.6	4.3	54.1	-	-	0.0	41.5	20.3	38.2	-	-	-
Total %	0.0	0.4	36.6	2.6	-	39.7	0.0	6.1	38.8	0.2	-	45.1	0.0	4.0	0.4	5.2	-	9.6	0.0	2.3	1.1	2.2	-	5.6	-
PHF	0.250	0.563	0.845	0.824	-	0.864	0.000	0.853	0.939	0.500	-	0.933	0.000	0.725	0.750	0.764	-	0.857	0.000	0.797	0.625	0.904	-	0.854	0.924
Lights	1	9	768	56	-	834	0	129	810	4	-	943	0	86	9	111	-	206	0	51	25	45	-	121	2104
% Lights	100.0	100.0	96.2	100.0	-	96.5	-	97.0	95.9	100.0	-	96.0	-	98.9	100.0	98.2	-	98.6	-	100.0	100.0	95.7	-	98.4	96.6
Mediums	0	0	24	0	-	24	0	3	30	0	-	33	0	1	0	2	-	3	0	0	0	2	-	2	62
% Mediums	0.0	0.0	3.0	0.0	-	2.8	-	2.3	3.6	0.0	-	3.4	-	1.1	0.0	1.8	-	1.4	-	0.0	0.0	4.3	-	1.6	2.8
Articulated Trucks	0	0	6	0	-	6	0	1	5	0	-	6	0	0	0	0	-	0	0	0	0	0	-	0	12
% Articulated Trucks	0.0	0.0	0.8	0.0	-	0.7	-	0.8	0.6	0.0	-	0.6	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	25.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	75.0	-	-



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PO BOX 4637

Cherry Hill, New Jersey, United States 08034

609-706-6100 lklein@imperialtdc.com

Project: Bloomfield Avenue  
 Municipality: Verona, Essex County, NJ  
 Setup: NR  
 Location: 40.834574, -74.256397

Count Name: 1. Bloomfield Avenue & Linn  
 Drive/Fells Road  
 Site Code: 1  
 Start Date: 10/28/2021  
 Page No: 6

### Turning Movement Peak Hour Data (5:00 PM)

Start Time	Bloomfield Avenue Eastbound						Bloomfield Avenue Westbound						Fells Road Northbound						Linn Drive Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
5:00 PM	0	7	285	26	0	318	0	29	214	18	0	261	0	36	8	35	0	79	2	31	6	9	0	48	706
5:15 PM	1	6	292	29	1	328	0	27	214	19	0	260	0	32	12	54	1	98	0	11	8	15	0	34	720
5:30 PM	0	13	268	40	0	321	0	38	201	17	0	256	0	20	4	36	0	60	0	27	16	9	0	52	689
5:45 PM	0	13	243	30	2	286	0	38	206	17	0	261	0	22	22	38	1	82	0	29	15	16	0	60	689
<b>Total</b>	<b>1</b>	<b>39</b>	<b>1088</b>	<b>125</b>	<b>3</b>	<b>1253</b>	<b>0</b>	<b>132</b>	<b>835</b>	<b>71</b>	<b>0</b>	<b>1038</b>	<b>0</b>	<b>110</b>	<b>46</b>	<b>163</b>	<b>2</b>	<b>319</b>	<b>2</b>	<b>98</b>	<b>45</b>	<b>49</b>	<b>0</b>	<b>194</b>	<b>2804</b>
Approach %	0.1	3.1	86.8	10.0	-	-	0.0	12.7	80.4	6.8	-	-	0.0	34.5	14.4	51.1	-	-	1.0	50.5	23.2	25.3	-	-	-
Total %	0.0	1.4	38.8	4.5	-	44.7	0.0	4.7	29.8	2.5	-	37.0	0.0	3.9	1.6	5.8	-	11.4	0.1	3.5	1.6	1.7	-	6.9	-
PHF	0.250	0.750	0.932	0.781	-	0.955	0.000	0.868	0.975	0.934	-	0.994	0.000	0.764	0.523	0.755	-	0.814	0.250	0.790	0.703	0.766	-	0.808	0.974
Lights	1	39	1077	123	-	1240	0	131	819	71	-	1021	0	108	46	161	-	315	2	98	43	48	-	191	2767
% Lights	100.0	100.0	99.0	98.4	-	99.0	-	99.2	98.1	100.0	-	98.4	-	98.2	100.0	98.8	-	98.7	100.0	100.0	95.6	98.0	-	98.5	98.7
Mediums	0	0	10	2	-	12	0	1	14	0	-	15	0	2	0	2	-	4	0	0	2	1	-	3	34
% Mediums	0.0	0.0	0.9	1.6	-	1.0	-	0.8	1.7	0.0	-	1.4	-	1.8	0.0	1.2	-	1.3	0.0	0.0	4.4	2.0	-	1.5	1.2
Articulated Trucks	0	0	1	0	-	1	0	0	2	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	3
% Articulated Trucks	0.0	0.0	0.1	0.0	-	0.1	-	0.0	0.2	0.0	-	0.2	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	33.3	-	-	-	-	-	-	-	-	-	-	-	50.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	66.7	-	-	-	-	-	-	-	-	-	-	-	50.0	-	-	-	-	-	-	-	-



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Cherry Hill, New Jersey, United States 08034

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Count Name: 2. Bloomfield Avenue & Pine

Street

Site Code: 2

Start Date: 10/28/2021

Page No: 1

Project: Bloomfield Avenue  
Municipality: Verona, Essex County, NJ  
Setup: NR  
Location: 40.834461, -74.255065

### Turning Movement Data

Start Time	Bloomfield Avenue Eastbound						Bloomfield Avenue Westbound						Business Access Northbound						Pine Street Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	0	150	0	0	150	0	0	98	0	0	98	0	0	0	0	0	0	0	0	0	22	0	22	270
7:15 AM	0	0	191	0	0	191	0	1	116	0	0	117	0	0	0	0	0	0	0	0	0	18	1	18	326
7:30 AM	0	0	263	1	0	264	0	0	190	0	0	190	0	0	0	0	0	0	0	0	0	36	1	36	490
7:45 AM	0	0	275	1	0	276	0	0	210	0	1	210	0	0	0	0	1	0	0	0	0	41	0	41	527
Hourly Total	0	0	879	2	0	881	0	1	614	0	1	615	0	0	0	0	1	0	0	0	0	117	2	117	1613
8:00 AM	0	0	213	0	0	213	0	1	221	0	0	222	0	0	0	0	0	0	0	0	0	38	0	38	473
8:15 AM	0	0	178	1	0	179	0	0	202	0	0	202	0	0	0	1	1	1	0	0	0	46	2	46	428
8:30 AM	0	0	227	2	0	229	0	0	177	0	0	177	0	0	0	0	0	0	0	0	0	37	0	37	443
8:45 AM	0	0	209	0	0	209	0	0	224	0	0	224	0	0	0	0	0	0	0	0	0	32	1	32	465
Hourly Total	0	0	827	3	0	830	0	1	824	0	0	825	0	0	0	1	1	1	0	0	0	153	3	153	1809
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:00 PM	0	0	229	1	0	230	0	1	194	0	0	195	0	0	0	1	0	1	0	0	0	24	0	24	450
2:15 PM	0	0	237	0	0	237	0	1	169	0	0	170	0	0	0	2	1	2	0	0	0	21	2	21	430
2:30 PM	0	0	230	3	0	233	0	1	218	0	0	219	0	0	0	2	1	2	0	0	0	24	2	24	478
2:45 PM	0	0	249	0	0	249	0	1	190	0	0	191	0	0	0	0	0	0	0	0	0	34	1	34	474
Hourly Total	0	0	945	4	0	949	0	4	771	0	0	775	0	0	0	5	2	5	0	0	0	103	5	103	1832
3:00 PM	0	0	244	0	0	244	0	3	204	0	0	207	0	1	0	0	2	1	0	0	0	38	0	38	490
3:15 PM	0	0	231	1	0	232	0	1	226	1	0	228	0	0	0	1	5	1	0	0	0	34	0	34	495
3:30 PM	0	0	215	1	0	216	0	2	221	0	0	223	0	1	0	2	1	3	0	0	0	42	2	42	484
3:45 PM	0	0	249	0	0	249	0	1	207	0	0	208	0	0	0	0	2	0	0	0	0	33	0	33	490
Hourly Total	0	0	939	2	0	941	0	7	858	1	0	866	0	2	0	3	10	5	0	0	0	147	2	147	1959
4:00 PM	0	0	279	1	0	280	0	0	215	0	0	215	0	0	0	1	0	1	0	0	0	37	0	37	533
4:15 PM	0	0	342	0	0	342	0	3	190	0	0	193	0	0	0	0	2	0	0	0	0	25	0	25	560
4:30 PM	0	0	293	1	0	294	0	0	194	0	0	194	0	0	0	0	1	0	0	0	0	26	0	26	514
4:45 PM	0	0	288	0	0	288	0	0	194	0	0	194	0	0	0	0	0	0	0	0	0	47	1	47	529
Hourly Total	0	0	1202	2	0	1204	0	3	793	0	0	796	0	0	0	1	3	1	0	0	0	135	1	135	2136
5:00 PM	0	0	338	0	0	338	0	1	223	0	0	224	0	0	0	4	1	4	0	0	0	35	0	35	601
5:15 PM	0	0	360	3	0	363	0	1	222	0	0	223	0	0	0	4	1	4	0	0	0	40	0	40	630
5:30 PM	0	0	325	0	0	325	0	0	210	0	0	210	0	0	0	1	0	1	0	0	0	34	0	34	570
5:45 PM	0	0	327	0	0	327	0	1	219	0	0	220	0	0	0	2	0	2	0	0	0	40	0	40	589
Hourly Total	0	0	1350	3	0	1353	0	3	874	0	0	877	0	0	0	11	2	11	0	0	0	149	0	149	2390
Grand Total	0	0	6142	16	0	6158	0	19	4734	1	1	4754	0	2	0	21	19	23	0	0	0	804	13	804	11739
Approach %	0.0	0.0	99.7	0.3	-	-	0.0	0.4	99.6	0.0	-	-	0.0	8.7	0.0	91.3	-	-	0.0	0.0	0.0	100.0	-	-	-
Total %	0.0	0.0	52.3	0.1	-	52.5	0.0	0.2	40.3	0.0	-	40.5	0.0	0.0	0.0	0.2	-	0.2	0.0	0.0	0.0	6.8	-	6.8	-
Lights	0	0	6003	16	-	6019	0	19	4605	1	-	4625	0	2	0	21	-	23	0	0	0	797	-	797	11464

% Lights	-	-	97.7	100.0	-	97.7	-	100.0	97.3	100.0	-	97.3	-	100.0	-	100.0	-	100.0	-	-	-	99.1	-	99.1	97.7
Mediums	0	0	125	0	-	125	0	0	115	0	-	115	0	0	0	0	-	0	0	0	0	7	-	7	247
% Mediums	-	-	2.0	0.0	-	2.0	-	0.0	2.4	0.0	-	2.4	-	0.0	-	0.0	-	0.0	-	-	-	0.9	-	0.9	2.1
Articulated Trucks	0	0	14	0	-	14	0	0	14	0	-	14	0	0	0	0	-	0	0	0	0	0	-	0	28
% Articulated Trucks	-	-	0.2	0.0	-	0.2	-	0.0	0.3	0.0	-	0.3	-	0.0	-	0.0	-	0.0	-	-	-	0.0	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	7.7	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	1	-	-	-	-	-	19	-	-	-	-	-	-	12	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	92.3	-	-



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Project: Bloomfield Avenue  
 Municipality: Verona, Essex County, NJ  
 Setup: NR  
 Location: 40.834461, -74.255065

Count Name: 2. Bloomfield Avenue & Pine Street  
 Site Code: 2  
 Start Date: 10/28/2021  
 Page No: 4

### Turning Movement Peak Hour Data (7:30 AM)

Start Time	Bloomfield Avenue Eastbound						Bloomfield Avenue Westbound						Business Access Northbound						Pine Street Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:30 AM	0	0	263	1	0	264	0	0	190	0	0	190	0	0	0	0	0	0	0	0	0	36	1	36	490
7:45 AM	0	0	275	1	0	276	0	0	210	0	1	210	0	0	0	0	1	0	0	0	0	41	0	41	527
8:00 AM	0	0	213	0	0	213	0	1	221	0	0	222	0	0	0	0	0	0	0	0	0	38	0	38	473
8:15 AM	0	0	178	1	0	179	0	0	202	0	0	202	0	0	0	1	1	1	0	0	0	46	2	46	428
<b>Total</b>	0	0	929	3	0	932	0	1	823	0	1	824	0	0	0	1	2	1	0	0	0	161	3	161	1918
Approach %	0.0	0.0	99.7	0.3	-	-	0.0	0.1	99.9	0.0	-	-	0.0	0.0	0.0	100.0	-	-	0.0	0.0	0.0	100.0	-	-	-
Total %	0.0	0.0	48.4	0.2	-	48.6	0.0	0.1	42.9	0.0	-	43.0	0.0	0.0	0.0	0.1	-	0.1	0.0	0.0	0.0	8.4	-	8.4	-
PHF	0.000	0.000	0.845	0.750	-	0.844	0.000	0.250	0.931	0.000	-	0.928	0.000	0.000	0.000	0.250	-	0.250	0.000	0.000	0.000	0.875	-	0.875	0.910
Lights	0	0	901	3	-	904	0	1	790	0	-	791	0	0	0	1	-	1	0	0	0	157	-	157	1853
% Lights	-	-	97.0	100.0	-	97.0	-	100.0	96.0	-	-	96.0	-	-	-	100.0	-	100.0	-	-	-	97.5	-	97.5	96.6
Mediums	0	0	27	0	-	27	0	0	28	0	-	28	0	0	0	0	-	0	0	0	0	4	-	4	59
% Mediums	-	-	2.9	0.0	-	2.9	-	0.0	3.4	-	-	3.4	-	-	-	0.0	-	0.0	-	-	-	2.5	-	2.5	3.1
Articulated Trucks	0	0	1	0	-	1	0	0	5	0	-	5	0	0	0	0	-	0	0	0	0	0	-	0	6
% Articulated Trucks	-	-	0.1	0.0	-	0.1	-	0.0	0.6	-	-	0.6	-	-	-	0.0	-	0.0	-	-	-	0.0	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: 2. Bloomfield Avenue & Pine

Street

Site Code: 2

Start Date: 10/28/2021

Page No: 6

Project: Bloomfield Avenue  
 Municipality: Verona, Essex County, NJ  
 Setup: NR  
 Location: 40.834461, -74.255065

### Turning Movement Peak Hour Data (5:00 PM)

Start Time	Bloomfield Avenue Eastbound						Bloomfield Avenue Westbound						Business Access Northbound						Pine Street Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
5:00 PM	0	0	338	0	0	338	0	1	223	0	0	224	0	0	0	4	1	4	0	0	0	35	0	35	601
5:15 PM	0	0	360	3	0	363	0	1	222	0	0	223	0	0	0	4	1	4	0	0	0	40	0	40	630
5:30 PM	0	0	325	0	0	325	0	0	210	0	0	210	0	0	0	1	0	1	0	0	0	34	0	34	570
5:45 PM	0	0	327	0	0	327	0	1	219	0	0	220	0	0	0	2	0	2	0	0	0	40	0	40	589
<b>Total</b>	<b>0</b>	<b>0</b>	<b>1350</b>	<b>3</b>	<b>0</b>	<b>1353</b>	<b>0</b>	<b>3</b>	<b>874</b>	<b>0</b>	<b>0</b>	<b>877</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>2</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>149</b>	<b>0</b>	<b>149</b>	<b>2390</b>
Approach %	0.0	0.0	99.8	0.2	-	-	0.0	0.3	99.7	0.0	-	-	0.0	0.0	0.0	100.0	-	-	0.0	0.0	0.0	100.0	-	-	-
Total %	0.0	0.0	56.5	0.1	-	56.6	0.0	0.1	36.6	0.0	-	36.7	0.0	0.0	0.0	0.5	-	0.5	0.0	0.0	0.0	6.2	-	6.2	-
PHF	0.000	0.000	0.938	0.250	-	0.932	0.000	0.750	0.980	0.000	-	0.979	0.000	0.000	0.000	0.688	-	0.688	0.000	0.000	0.000	0.931	-	0.931	0.948
Lights	0	0	1338	3	-	1341	0	3	858	0	-	861	0	0	0	11	-	11	0	0	0	148	-	148	2361
% Lights	-	-	99.1	100.0	-	99.1	-	100.0	98.2	-	-	98.2	-	-	-	100.0	-	100.0	-	-	-	99.3	-	99.3	98.8
Mediums	0	0	11	0	-	11	0	0	14	0	-	14	0	0	0	0	-	0	0	0	0	1	-	1	26
% Mediums	-	-	0.8	0.0	-	0.8	-	0.0	1.6	-	-	1.6	-	-	-	0.0	-	0.0	-	-	-	0.7	-	0.7	1.1
Articulated Trucks	0	0	1	0	-	1	0	0	2	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	3
% Articulated Trucks	-	-	0.1	0.0	-	0.1	-	0.0	0.2	-	-	0.2	-	-	-	0.0	-	0.0	-	-	-	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

# Traffic Impact Study

## Appendix C | Trip Generation Calculations

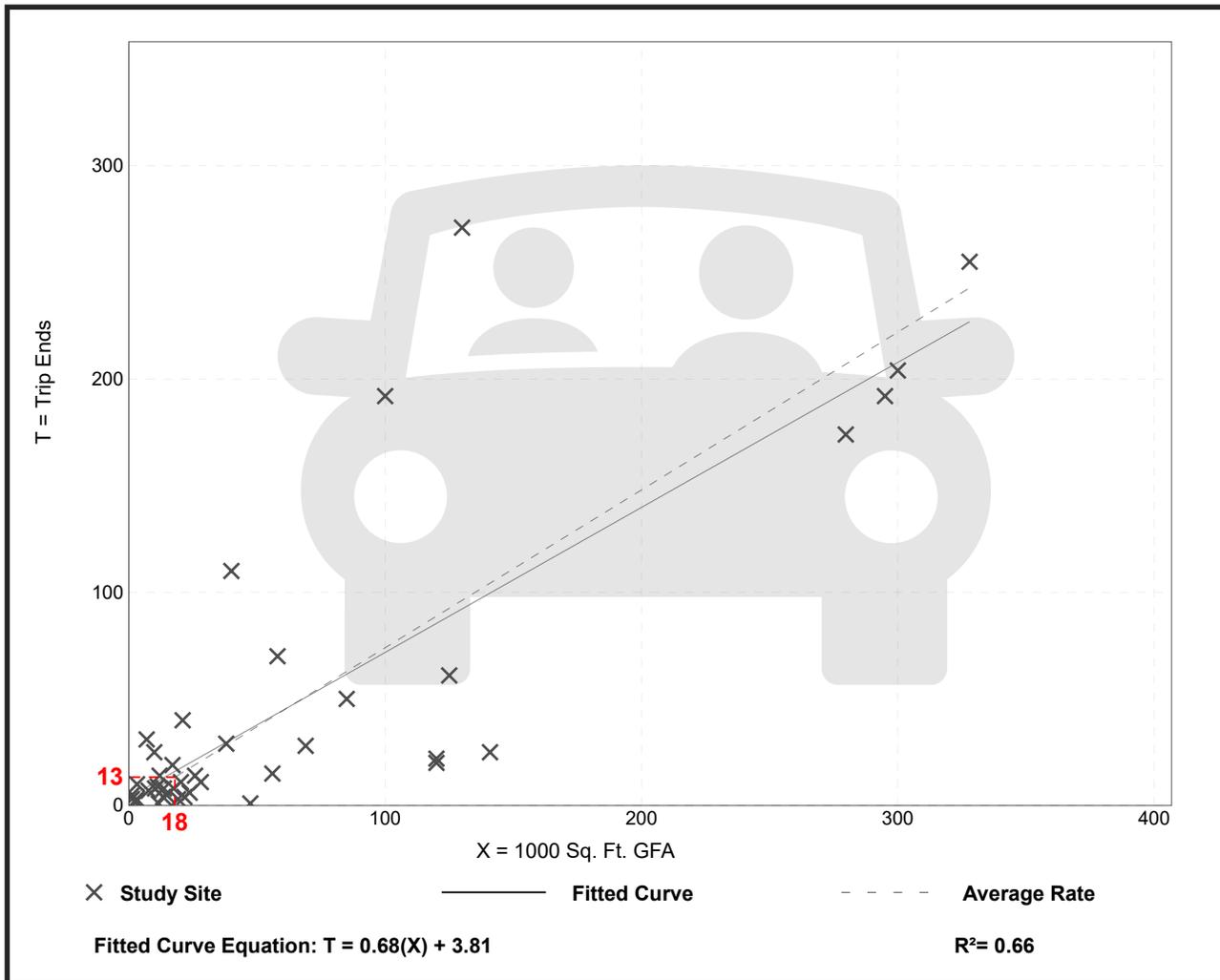
# General Light Industrial (110)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 41  
 Avg. 1000 Sq. Ft. GFA: 65  
 Directional Distribution: 88% entering, 12% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.74	0.02 - 4.46	0.61

## Data Plot and Equation



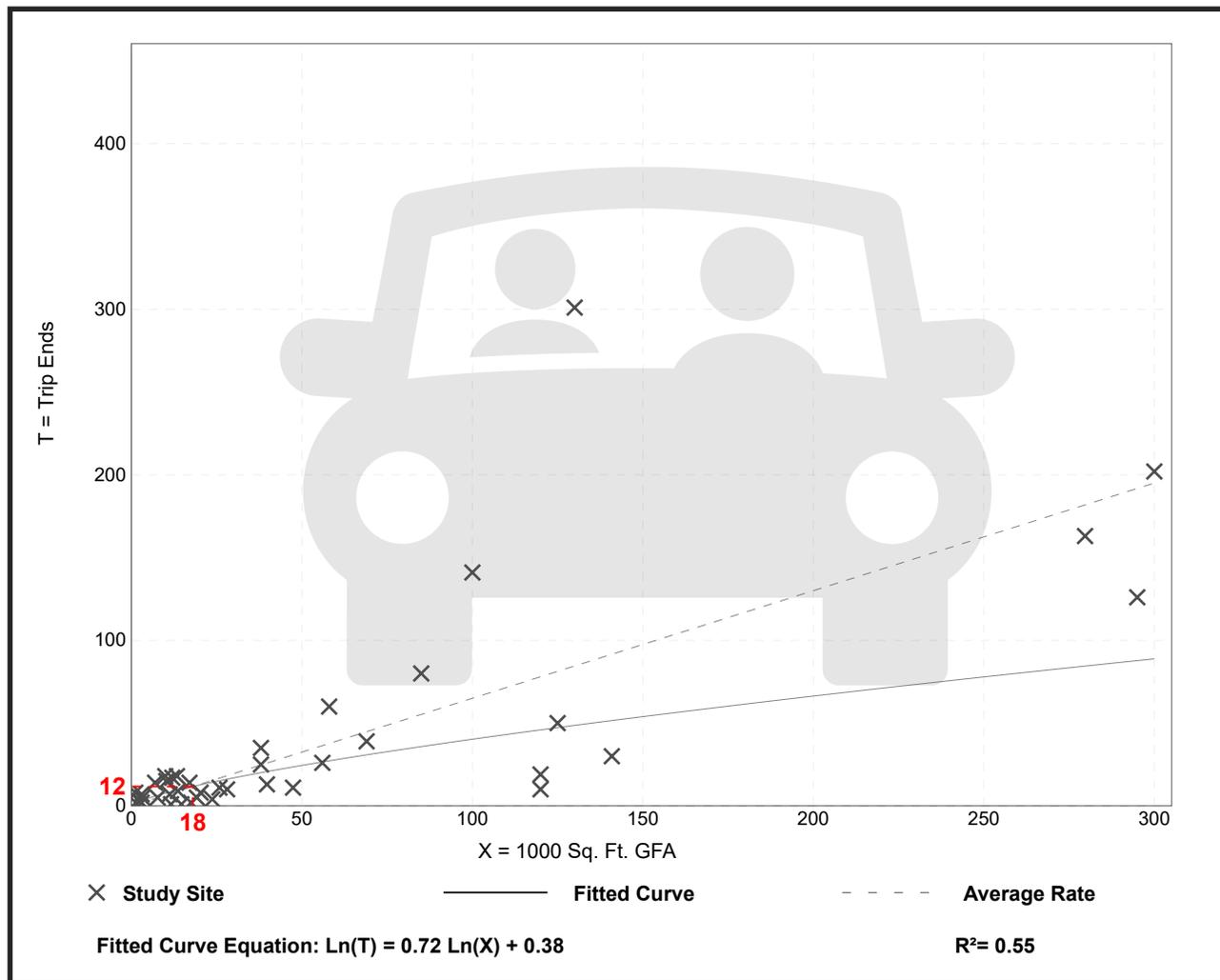
# General Light Industrial (110)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 40  
 Avg. 1000 Sq. Ft. GFA: 58  
 Directional Distribution: 14% entering, 86% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.65	0.07 - 7.02	0.56

## Data Plot and Equation



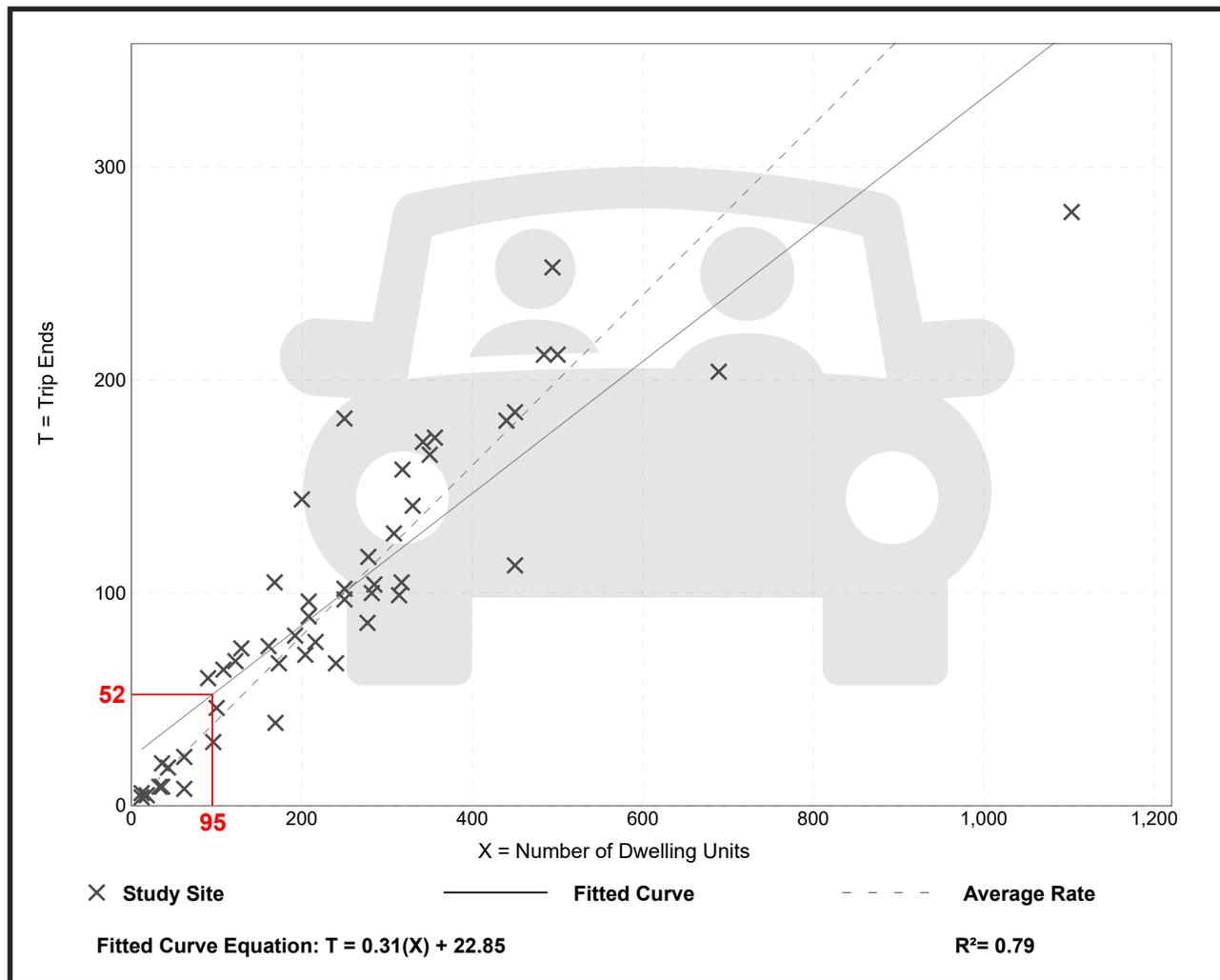
# Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units  
 On a: Weekday,  
 Peak Hour of Adjacent Street Traffic,  
 One Hour Between 7 and 9 a.m.  
 Setting/Location: General Urban/Suburban  
 Number of Studies: 49  
 Avg. Num. of Dwelling Units: 249  
 Directional Distribution: 24% entering, 76% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

## Data Plot and Equation



# Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 4 and 6 p.m.

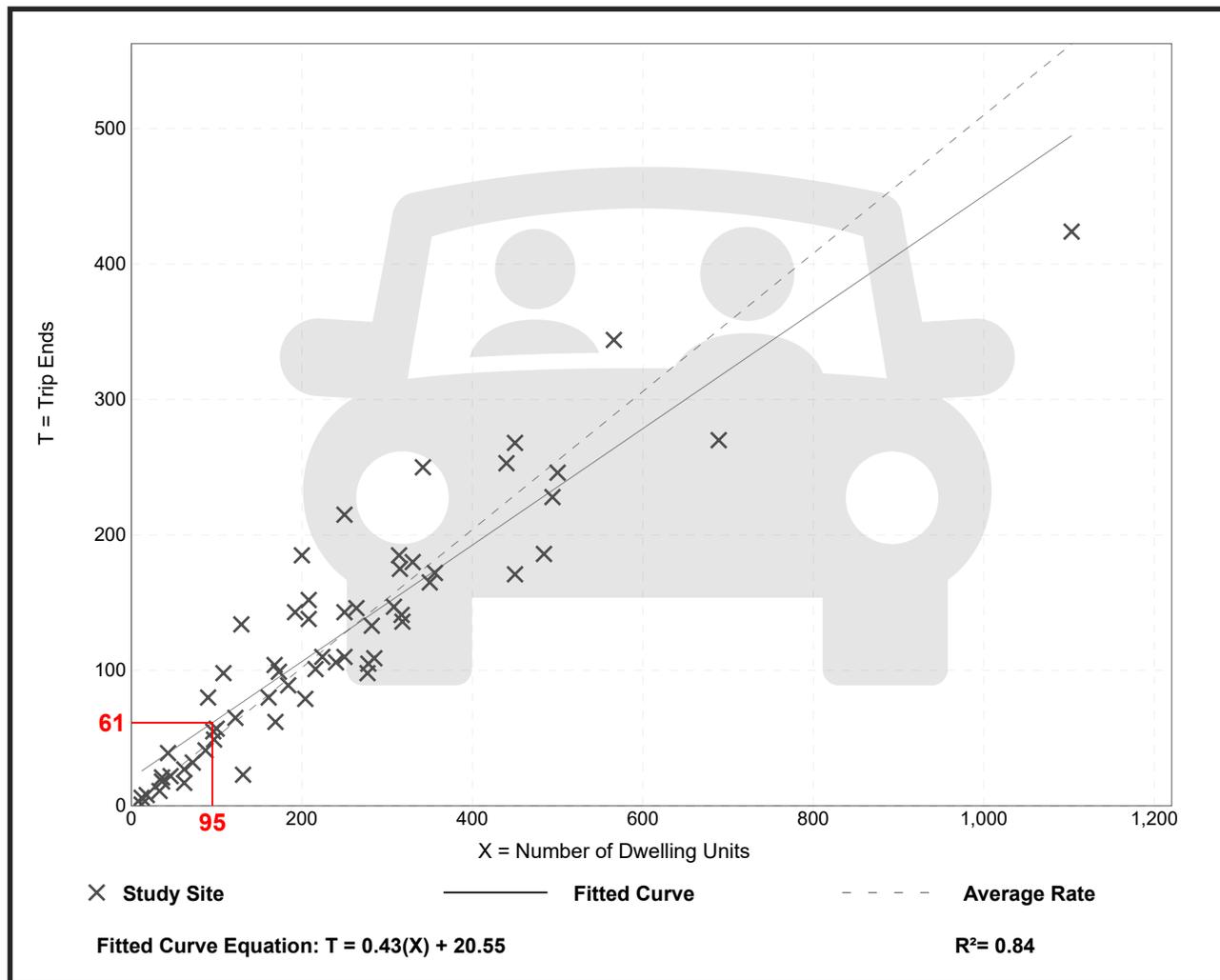
Setting/Location: General Urban/Suburban

Number of Studies: 59  
Avg. Num. of Dwelling Units: 241  
Directional Distribution: 63% entering, 37% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

## Data Plot and Equation



# Traffic Impact Study

## Appendix D | Capacity Analysis

20000318A - Apartments at Verona  
 1: Fells Road/Linn Drive & Bloomfield Avenue (CR 506)

2024 No-Build Conditions  
 AM Peak

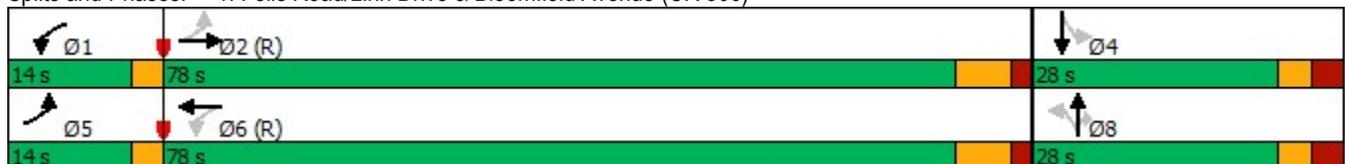


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	10	798	133	847	87	9	113	51	25
Future Volume (vph)	10	798	133	847	87	9	113	51	25
Lane Group Flow (vph)	11	928	145	925	0	105	123	0	133
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	5	2	1	6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	5	2	1	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	7.0	71.0	7.0	71.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	78.0	10.0	78.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	14.0	78.0	14.0	78.0	28.0	28.0	28.0	28.0	28.0
Total Split (%)	11.7%	65.0%	11.7%	65.0%	23.3%	23.3%	23.3%	23.3%	23.3%
Yellow Time (s)	3.0	5.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	0.0	2.0	0.0	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	3.0	7.0	3.0	7.0		6.0	6.0		6.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Min	None	C-Min	None	None	None	None	None
v/c Ratio	0.02	0.41	0.31	0.36		0.71	0.39		0.71
Control Delay	3.8	10.6	5.1	6.9		74.4	11.1		69.3
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	3.8	10.6	5.1	6.9		74.4	11.1		69.3
Queue Length 50th (ft)	2	157	21	107		79	0		100
Queue Length 95th (ft)	7	243	46	223		135	52		161
Internal Link Dist (ft)		811		277		198			488
Turn Bay Length (ft)	100		80				50		
Base Capacity (vph)	562	2287	505	2568		201	390		255
Starvation Cap Reductn	0	0	0	0		0	0		0
Spillback Cap Reductn	0	0	0	0		0	0		0
Storage Cap Reductn	0	0	0	0		0	0		0
Reduced v/c Ratio	0.02	0.41	0.29	0.36		0.52	0.32		0.52

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection  
 Natural Cycle: 105  
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Fells Road/Linn Drive & Bloomfield Avenue (CR 506)



20000318A - Apartments at Verona  
 1: Fells Road/Linn Drive & Bloomfield Avenue (CR 506)

2024 No-Build Conditions  
 AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	798	56	133	847	4	87	9	113	51	25	47
Future Volume (veh/h)	10	798	56	133	847	4	87	9	113	51	25	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1870	1856	1841	1870	1870	1870	1870	1870	1870	1841
Adj Flow Rate, veh/h	11	867	61	145	921	4	95	10	123	55	27	51
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	3	4	2	2	2	2	2	2	4
Cap, veh/h	424	2073	146	457	2376	10	203	19	291	86	47	56
Arrive On Green	0.02	0.63	0.63	0.06	0.67	0.67	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	1781	3314	233	1767	3571	16	795	102	1585	239	256	307
Grp Volume(v), veh/h	11	457	471	145	451	474	105	0	123	133	0	0
Grp Sat Flow(s),veh/h/ln	1781	1749	1799	1767	1749	1838	897	0	1585	802	0	0
Q Serve(g_s), s	0.3	15.9	15.9	3.2	14.0	14.0	0.0	0.0	8.2	7.4	0.0	0.0
Cycle Q Clear(g_c), s	0.3	15.9	15.9	3.2	14.0	14.0	13.4	0.0	8.2	20.7	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.01	0.90		1.00	0.41		0.38
Lane Grp Cap(c), veh/h	424	1094	1125	457	1164	1223	222	0	291	189	0	0
V/C Ratio(X)	0.03	0.42	0.42	0.32	0.39	0.39	0.47	0.00	0.42	0.70	0.00	0.00
Avail Cap(c_a), veh/h	555	1094	1125	517	1164	1223	222	0	291	189	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.0	11.4	11.4	7.6	9.1	9.1	45.4	0.0	43.4	50.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.2	1.1	0.4	1.0	0.9	1.6	0.0	1.0	11.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	6.2	6.3	1.1	5.2	5.5	3.0	0.0	3.4	4.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.1	12.6	12.5	8.0	10.0	10.0	46.9	0.0	44.4	61.3	0.0	0.0
LnGrp LOS	A	B	B	A	B	A	D	A	D	E	A	A
Approach Vol, veh/h		939			1070			228			133	
Approach Delay, s/veh		12.5			9.7			45.5			61.3	
Approach LOS		B			A			D			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.9	82.1		28.0	5.1	86.9		28.0				
Change Period (Y+Rc), s	3.0	7.0		6.0	3.0	7.0		6.0				
Max Green Setting (Gmax), s	11.0	71.0		22.0	11.0	71.0		22.0				
Max Q Clear Time (g_c+I1), s	5.2	17.9		22.7	2.3	16.0		15.4				
Green Ext Time (p_c), s	0.2	7.1		0.0	0.0	7.0		0.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				17.2								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	962	823	0	0	161
Future Vol, veh/h	0	962	823	0	0	161
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	3	4	2	2	3
Mvmt Flow	0	1057	904	0	0	177

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	552
HCM Lane V/C Ratio	-	-	0.321
HCM Control Delay (s)	-	-	14.6
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	1.4

20000318A - Apartments at Verona  
 1: Fells Road/Linn Drive & Bloomfield Avenue (CR 506)

2024 No-Build Conditions  
 PM Peak

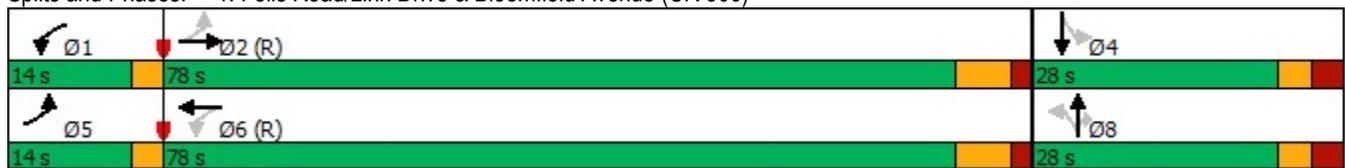


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	40	1090	132	835	110	46	163	100	45
Future Volume (vph)	40	1090	132	835	110	46	163	100	45
Lane Group Flow (vph)	41	1253	136	934	0	160	168	0	200
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	5	2	1	6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	5	2	1	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	7.0	71.0	7.0	71.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	78.0	10.0	78.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	14.0	78.0	14.0	78.0	28.0	28.0	28.0	28.0	28.0
Total Split (%)	11.7%	65.0%	11.7%	65.0%	23.3%	23.3%	23.3%	23.3%	23.3%
Yellow Time (s)	3.0	5.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	0.0	2.0	0.0	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	3.0	7.0	3.0	7.0		6.0	6.0		6.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Min	None	C-Min	None	None	None	None	None
v/c Ratio	0.09	0.58	0.43	0.42		0.73	0.44		0.97
Control Delay	4.7	15.4	8.7	11.4		66.9	18.9		103.7
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	4.7	15.4	8.7	11.4		66.9	18.9		103.7
Queue Length 50th (ft)	7	286	26	178		118	34		155
Queue Length 95th (ft)	16	363	43	222		#222	102		#306
Internal Link Dist (ft)		811		277		198			488
Turn Bay Length (ft)	100		80				50		
Base Capacity (vph)	496	2145	353	2248		218	384		207
Starvation Cap Reductn	0	0	0	0		0	0		0
Spillback Cap Reductn	0	0	0	0		0	0		0
Storage Cap Reductn	0	0	0	0		0	0		0
Reduced v/c Ratio	0.08	0.58	0.39	0.42		0.73	0.44		0.97

Intersection Summary

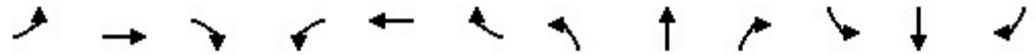
Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection  
 Natural Cycle: 105  
 Control Type: Actuated-Coordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Fells Road/Linn Drive & Bloomfield Avenue (CR 506)



20000318A - Apartments at Verona  
 1: Fells Road/Linn Drive & Bloomfield Avenue (CR 506)

2024 No-Build Conditions  
 PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1090	125	132	835	71	110	46	163	100	45	49
Future Volume (veh/h)	40	1090	125	132	835	71	110	46	163	100	45	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1841	1870
Adj Flow Rate, veh/h	41	1124	129	136	861	73	113	47	168	103	46	51
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	4	2
Cap, veh/h	445	2010	230	351	2122	180	197	64	291	81	31	23
Arrive On Green	0.04	0.63	0.63	0.06	0.64	0.64	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	1781	3213	368	1781	3316	281	793	350	1585	194	170	124
Grp Volume(v), veh/h	41	621	632	136	461	473	160	0	168	200	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1804	1781	1777	1820	1143	0	1585	488	0	0
Q Serve(g_s), s	0.9	24.1	24.2	3.1	15.2	15.2	0.0	0.0	11.6	6.1	0.0	0.0
Cycle Q Clear(g_c), s	0.9	24.1	24.2	3.1	15.2	15.2	15.9	0.0	11.6	22.0	0.0	0.0
Prop In Lane	1.00		0.20	1.00		0.15	0.71		1.00	0.51		0.25
Lane Grp Cap(c), veh/h	445	1112	1129	351	1137	1164	261	0	291	135	0	0
V/C Ratio(X)	0.09	0.56	0.56	0.39	0.41	0.41	0.61	0.00	0.58	1.48	0.00	0.00
Avail Cap(c_a), veh/h	531	1112	1129	411	1137	1164	261	0	291	135	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.5	12.9	12.9	10.0	10.5	10.5	46.4	0.0	44.8	55.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	2.0	2.0	0.7	1.1	1.1	4.2	0.0	2.8	252.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	9.6	9.8	1.1	5.9	6.0	4.9	0.0	4.8	13.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.6	15.0	15.0	10.7	11.6	11.6	50.7	0.0	47.6	307.5	0.0	0.0
LnGrp LOS	A	B	B	B	B	B	D	A	D	F	A	A
Approach Vol, veh/h		1294			1070			328				200
Approach Delay, s/veh		14.7			11.5			49.1				307.5
Approach LOS		B			B			D				F
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.9	82.1		28.0	8.2	83.8		28.0				
Change Period (Y+Rc), s	3.0	7.0		6.0	3.0	7.0		6.0				
Max Green Setting (Gmax), s	11.0	71.0		22.0	11.0	71.0		22.0				
Max Q Clear Time (g_c+I1), s	5.1	26.2		24.0	2.9	17.2		17.9				
Green Ext Time (p_c), s	0.2	11.2		0.0	0.0	7.1		0.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay												37.7
HCM 6th LOS												D

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	1353	889	0	0	149
Future Vol, veh/h	0	1353	889	0	0	149
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1424	936	0	0	157

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	542
HCM Lane V/C Ratio	-	-	0.289
HCM Control Delay (s)	-	-	14.3
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	1.2

20000318A - Apartments at Verona  
 1: Fells Road/Linn Drive & Bloomfield Avenue (CR 506)

2024 Build Conditions  
 AM Peak

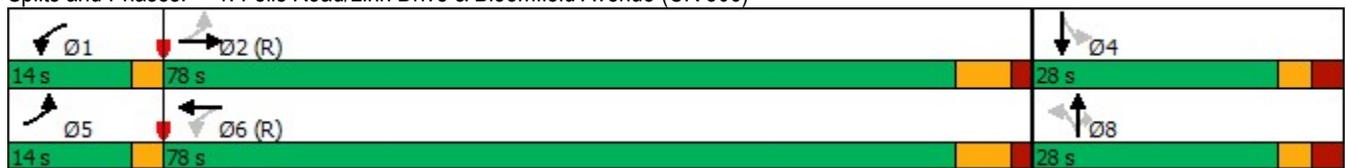


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↙	↕	↙	↕		↕	↗		↕
Traffic Volume (vph)	14	798	133	855	87	9	113	76	25
Future Volume (vph)	14	798	133	855	87	9	113	76	25
Lane Group Flow (vph)	15	928	145	938	0	105	123	0	168
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	5	2	1	6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	5	2	1	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	7.0	71.0	7.0	71.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	78.0	10.0	78.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	14.0	78.0	14.0	78.0	28.0	28.0	28.0	28.0	28.0
Total Split (%)	11.7%	65.0%	11.7%	65.0%	23.3%	23.3%	23.3%	23.3%	23.3%
Yellow Time (s)	3.0	5.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	0.0	2.0	0.0	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	3.0	7.0	3.0	7.0		6.0	6.0		6.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Min	None	C-Min	None	None	None	None	None
v/c Ratio	0.03	0.42	0.32	0.38		0.62	0.35		0.80
Control Delay	4.1	11.8	5.7	8.8		63.3	10.3		74.5
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	4.1	11.8	5.7	8.8		63.3	10.3		74.5
Queue Length 50th (ft)	2	175	25	125		76	0		125
Queue Length 95th (ft)	8	243	46	227		135	52		#212
Internal Link Dist (ft)		811		277		198			488
Turn Bay Length (ft)	100		80				50		
Base Capacity (vph)	536	2214	488	2441		200	390		251
Starvation Cap Reductn	0	0	0	0		0	0		0
Spillback Cap Reductn	0	0	0	0		0	0		0
Storage Cap Reductn	0	0	0	0		0	0		0
Reduced v/c Ratio	0.03	0.42	0.30	0.38		0.53	0.32		0.67

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection  
 Natural Cycle: 105  
 Control Type: Actuated-Coordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Fells Road/Linn Drive & Bloomfield Avenue (CR 506)



20000318A - Apartments at Verona  
 1: Fells Road/Linn Drive & Bloomfield Avenue (CR 506)

2024 Build Conditions  
 AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	798	56	133	855	8	87	9	113	76	25	53
Future Volume (veh/h)	14	798	56	133	855	8	87	9	113	76	25	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1870	1856	1841	1870	1870	1870	1870	1870	1870	1841
Adj Flow Rate, veh/h	15	867	61	145	929	9	95	10	123	83	27	58
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	3	4	2	2	2	2	2	2	4
Cap, veh/h	423	2073	146	457	2344	23	219	20	291	107	40	54
Arrive On Green	0.02	0.63	0.63	0.06	0.66	0.66	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	1781	3314	233	1767	3549	34	884	111	1585	339	218	294
Grp Volume(v), veh/h	15	457	471	145	458	480	105	0	123	168	0	0
Grp Sat Flow(s),veh/h/ln	1781	1749	1799	1767	1749	1835	994	0	1585	851	0	0
Q Serve(g_s), s	0.4	15.9	15.9	3.2	14.5	14.5	0.0	0.0	8.2	10.5	0.0	0.0
Cycle Q Clear(g_c), s	0.4	15.9	15.9	3.2	14.5	14.5	11.5	0.0	8.2	22.0	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.02	0.90		1.00	0.49		0.35
Lane Grp Cap(c), veh/h	423	1094	1125	457	1155	1211	239	0	291	201	0	0
V/C Ratio(X)	0.04	0.42	0.42	0.32	0.40	0.40	0.44	0.00	0.42	0.84	0.00	0.00
Avail Cap(c_a), veh/h	546	1094	1125	517	1155	1211	239	0	291	201	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.9	11.4	11.4	7.6	9.4	9.4	44.6	0.0	43.4	52.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.2	1.1	0.4	1.0	1.0	1.3	0.0	1.0	25.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	6.2	6.3	1.1	5.4	5.7	3.0	0.0	3.4	6.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.0	12.6	12.5	8.0	10.4	10.3	45.9	0.0	44.4	77.7	0.0	0.0
LnGrp LOS	A	B	B	A	B	B	D	A	D	E	A	A
Approach Vol, veh/h		943			1083			228			168	
Approach Delay, s/veh		12.5			10.1			45.1			77.7	
Approach LOS		B			B			D			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.9	82.1		28.0	5.8	86.2		28.0				
Change Period (Y+Rc), s	3.0	7.0		6.0	3.0	7.0		6.0				
Max Green Setting (Gmax), s	11.0	71.0		22.0	11.0	71.0		22.0				
Max Q Clear Time (g_c+I1), s	5.2	17.9		24.0	2.4	16.5		13.5				
Green Ext Time (p_c), s	0.2	7.1		0.0	0.0	7.1		0.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				19.0								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	987	827	0	0	169
Future Vol, veh/h	0	987	827	0	0	169
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	3	4	2	2	3
Mvmt Flow	0	1085	909	0	0	186

Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	-	0	-	0	-	455
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.33
Pot Cap-1 Maneuver	0	-	-	0	0	550
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	550
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.8
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	550
HCM Lane V/C Ratio	-	-	0.338
HCM Control Delay (s)	-	-	14.8
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	1.5

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	1	23	8	1	123
Future Vol, veh/h	31	1	23	8	1	123
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, %	2	2	2	2	2	2
Mvmt Flow	34	1	25	9	1	134

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	166	30	0	0	34
Stage 1	30	-	-	-	-
Stage 2	136	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	824	1044	-	-	1578
Stage 1	993	-	-	-	-
Stage 2	890	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	823	1044	-	-	1578
Mov Cap-2 Maneuver	823	-	-	-	-
Stage 1	993	-	-	-	-
Stage 2	889	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	828	1578
HCM Lane V/C Ratio	-	-	0.042	0.001
HCM Control Delay (s)	-	-	9.5	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↶			↷
Traffic Vol, veh/h	0	0	161	3	0	8
Future Vol, veh/h	0	0	161	3	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	1	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	175	3	0	9

Major/Minor	Major2	Minor2
Conflicting Flow All	-	0
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	-	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	-
Pot Cap-1 Maneuver	-	0
Stage 1	-	0
Stage 2	-	0
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	-
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach	WB	SB
HCM Control Delay, s	0	9.2
HCM LOS		A

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	866
HCM Lane V/C Ratio	-	-	0.01
HCM Control Delay (s)	-	-	9.2
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0

20000318A - Apartments at Verona  
 1: Fells Road/Linn Drive & Bloomfield Avenue (CR 506)

2024 Build Conditions  
 PM Peak

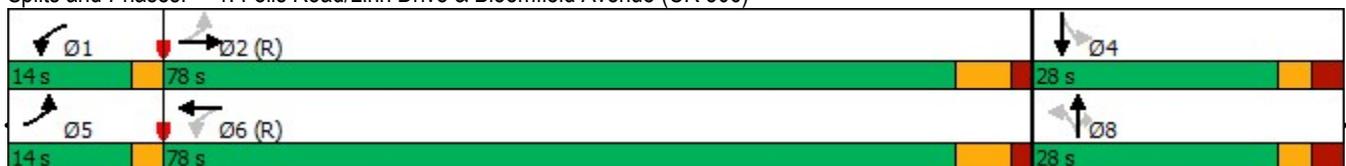


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↙	↕	↙	↕		↕	↗		↕
Traffic Volume (vph)	54	1090	132	840	110	46	163	114	45
Future Volume (vph)	54	1090	132	840	110	46	163	114	45
Lane Group Flow (vph)	56	1253	136	953	0	160	168	0	218
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	5	2	1	6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	5	2	1	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	7.0	71.0	7.0	71.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	78.0	10.0	78.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	14.0	78.0	14.0	78.0	28.0	28.0	28.0	28.0	28.0
Total Split (%)	11.7%	65.0%	11.7%	65.0%	23.3%	23.3%	23.3%	23.3%	23.3%
Yellow Time (s)	3.0	5.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	0.0	2.0	0.0	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	3.0	7.0	3.0	7.0		6.0	6.0		6.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Min	None	C-Min	None	None	None	None	None
v/c Ratio	0.13	0.58	0.43	0.43		0.73	0.44		1.06
Control Delay	4.9	15.4	8.7	11.5		66.2	18.9		127.8
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	4.9	15.4	8.7	11.5		66.2	18.9		127.8
Queue Length 50th (ft)	10	286	26	183		118	34		~186
Queue Length 95th (ft)	21	363	43	231		#221	102		#344
Internal Link Dist (ft)		811		277		198			488
Turn Bay Length (ft)	100		80				50		
Base Capacity (vph)	487	2145	353	2241		220	384		205
Starvation Cap Reductn	0	0	0	0		0	0		0
Spillback Cap Reductn	0	0	0	0		0	0		0
Storage Cap Reductn	0	0	0	0		0	0		0
Reduced v/c Ratio	0.11	0.58	0.39	0.43		0.73	0.44		1.06

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection  
 Natural Cycle: 115  
 Control Type: Actuated-Coordinated  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Fells Road/Linn Drive & Bloomfield Avenue (CR 506)



ABZ

20000318A - Apartments at Verona  
 1: Fells Road/Linn Drive & Bloomfield Avenue (CR 506)

2024 Build Conditions  
 PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	1090	125	132	840	84	110	46	163	114	45	52
Future Volume (veh/h)	54	1090	125	132	840	84	110	46	163	114	45	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1841	1870
Adj Flow Rate, veh/h	56	1124	129	136	866	87	113	47	168	118	46	54
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	4	2
Cap, veh/h	443	2010	230	351	2067	208	202	67	291	87	26	22
Arrive On Green	0.05	0.63	0.63	0.06	0.63	0.63	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	1781	3213	368	1781	3261	328	823	363	1585	224	140	120
Grp Volume(v), veh/h	56	621	632	136	472	481	160	0	168	218	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1804	1781	1777	1811	1186	0	1585	483	0	0
Q Serve(g_s), s	1.3	24.1	24.2	3.1	15.9	15.9	0.0	0.0	11.6	6.8	0.0	0.0
Cycle Q Clear(g_c), s	1.3	24.1	24.2	3.1	15.9	15.9	15.2	0.0	11.6	22.0	0.0	0.0
Prop In Lane	1.00		0.20	1.00		0.18	0.71		1.00	0.54		0.25
Lane Grp Cap(c), veh/h	443	1112	1129	351	1127	1148	269	0	291	135	0	0
V/C Ratio(X)	0.13	0.56	0.56	0.39	0.42	0.42	0.60	0.00	0.58	1.62	0.00	0.00
Avail Cap(c_a), veh/h	519	1112	1129	411	1127	1148	269	0	291	135	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.6	12.9	12.9	10.0	10.9	10.9	46.2	0.0	44.8	56.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	2.0	2.0	0.7	1.1	1.1	3.5	0.0	2.8	308.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	9.6	9.8	1.2	6.2	6.3	4.8	0.0	4.8	15.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	15.0	15.0	10.7	12.1	12.1	49.7	0.0	47.6	364.9	0.0	0.0
LnGrp LOS	A	B	B	B	B	B	D	A	D	F	A	A
Approach Vol, veh/h		1309			1089			328				218
Approach Delay, s/veh		14.6			11.9			48.6				364.9
Approach LOS		B			B			D				F
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.9	82.1		28.0	8.9	83.1		28.0				
Change Period (Y+Rc), s	3.0	7.0		6.0	3.0	7.0		6.0				
Max Green Setting (Gmax), s	11.0	71.0		22.0	11.0	71.0		22.0				
Max Q Clear Time (g_c+I1), s	5.1	26.2		24.0	3.3	17.9		17.2				
Green Ext Time (p_c), s	0.1	11.2		0.0	0.0	7.3		0.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				43.4								
HCM 6th LOS				D								

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	1367	902	0	0	154
Future Vol, veh/h	0	1367	902	0	0	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1439	949	0	0	162

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	536
HCM Lane V/C Ratio	-	-	0.302
HCM Control Delay (s)	-	-	14.6
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	1.3

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	17	1	157	27	1	194
Future Vol, veh/h	17	1	157	27	1	194
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, %	2	2	2	2	2	2
Mvmt Flow	18	1	171	29	1	211

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	399	186	0	0	200
Stage 1	186	-	-	-	-
Stage 2	213	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	607	856	-	-	1372
Stage 1	846	-	-	-	-
Stage 2	823	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	606	856	-	-	1372
Mov Cap-2 Maneuver	606	-	-	-	-
Stage 1	846	-	-	-	-
Stage 2	822	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	616	1372
HCM Lane V/C Ratio	-	-	0.032	0.001
HCM Control Delay (s)	-	-	11	7.6
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↶			↷
Traffic Vol, veh/h	0	0	149	10	0	5
Future Vol, veh/h	0	0	149	10	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	1	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	162	11	0	5

Major/Minor	Major2	Minor2
Conflicting Flow All	-	0
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	-	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	-
Pot Cap-1 Maneuver	-	0
Stage 1	-	0
Stage 2	-	0
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	-
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach	WB	SB
HCM Control Delay, s	0	9.1
HCM LOS		A

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	876
HCM Lane V/C Ratio	-	-	0.006
HCM Control Delay (s)	-	-	9.1
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0



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