

## MEMORANDUM

FGH

**TO:** Mr. Max Glikman  
B'nai B'rith Housing.  
34 Washington Street  
Brighton, MA 02135

**FROM:** F. Giles Ham, P.E. and  
Jennifer Connors  
Vanasse & Associates, Inc.  
35 New England Business Center Drive  
Suite 140  
Andover, MA 01810  
(978) 474-8800

**DATE:** July 16, 2019

**RE:** 8254 – Swampscott, MA

**SUBJECT:** Pedestrian Safety and On-Street Parking Study  
Burpee Road, Swampscott, MA

---

### INTRODUCTION

Vanasse & Associates, Inc. (VAI) has prepared this memorandum on behalf of Covenant Commonwealth Corporation (CCC) to conduct an analysis of existing traffic conditions along Burpee Road in Swampscott, Massachusetts, as it relates to pedestrian safety and parking conditions. The purpose of this memorandum is to provide an assessment of the existing traffic conditions, motor vehicle crash data, parking demand analysis and an alternative plan for Burpee Road. This review is being undertaken to satisfy condition No. 1 of the October 19, 2017 decision of the Swampscott Zoning Board of Appeals (ZBA) approving the proposed development to be located at 35 Burpee Road (Case No. 17-16) which states:

*"The Petitioner shall provide a pedestrian safety and on-street parking study and Report from a qualified expert to the Selectmen at least thirty (30) days prior to filing an application for a Building Permit for the project. The Petitioner shall make copies of the same to be made available to abutters on the street in order to provide an analysis of the area immediately adjacent to the project on Burpee Road to the Essex Street intersection by an expert of the Petitioner's choice and expense."*

### EXISTING CONDITIONS

A comprehensive field inventory of existing conditions along Burpee Road was conducted in June 2019. The field investigation consisted of an inventory of existing roadway geometrics, including roadway and sidewalks widths, posted speed limits, sight distance observations, and land use information within the study area. The study area limits include Burpee Road from Essex Street to Buena Vista Street. The following describes existing conditions within the study area roadways.

## Burpee Road

Burpee Road is a two-lane roadway under the Town jurisdiction that runs northwest/southeast extending from the Essex Street to Foster Road/Jessie Street. This roadway functions as a local collector route and based on historical traffic counts Burpee Road serves approximately 2,200 vehicles per day (2-way volume). Within the study area, Burpee Road provides a width of approximately 22 to 25-feet wide. Although narrow in width, this roadway currently carries two travel lanes (one per direction) and unrestricted on-street parking mostly on both sides of the street. Generally, the parking on both sides of the street restricts the vehicle travel lane, providing room for just one vehicle at the time. Within the study area pedestrians are served via sidewalks on both sides of the street.

During the field inventory, we noted that vehicles parked on the sidewalk on both sides of the street. Crosswalks are provided at the major intersection including Burpee Road at Essex Street and Burpee Road at Buena Vista Street. No bicycle accommodations were noted along this study area. This road has a posted speed limit of 20 miles per hour. There is generally good sight distance along most parts of the roadway. Land uses along Burpee Road generally consists of a playground park and residential uses.

## VEHICLE SPEEDS

Existing vehicle speeds along Burpee Road were recorded over a continuous 48-hour period (Wednesday through Friday, inclusive) to determine the average speed and the 85<sup>th</sup> percentile speed. The results of the speed measurements are shown in Table 1.

**Table 1**  
**VEHICLE TRAVEL SPEED MEASUREMENTS**

	Burpee Road Westbound	Burpee Road Eastbound
Mean Travel Speed (mph)	22	24
85 <sup>th</sup> Percentile Speed (mph)	25	27
Posted Speed Limit (mph)	20	20

mph = miles per hour.

As can be seen in Table 1, the mean (average) vehicle travel speed along Burpee Road was found to be approximately 22 miles per hour (mph) in the westbound directions and 24 mph in the eastbound direction. The measured 85<sup>th</sup> percentile vehicle travel speed, or the speed at which 85 percent of the observed vehicles traveled at or below, was found to be approximately 25 mph in the westbound direction and 27 mph the eastbound direction. The posted speed limit along Burpee Road is 20 mph. Overall, travel speeds were observed to be above the posted speed limit.

## **MOTOR VEHICLE CRASH DATA**

Motor vehicle crash information for the study area intersection was provided by the MassDOT Highway Division Safety Management/Traffic Operations Unit for the most recent five-year period available (2013 through 2017 inclusive) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized by intersection, type, and severity, and is presented in Table 2.

**Table 2**  
**MOTOR VEHICLE CRASH DATA SUMMARY<sup>a</sup>**

Scenario	Burpee Road at Essex Street <sup>d</sup> (Signalized)	Burpee Road at Buena Vista Street <sup>d</sup> (Unsignalized)
<i>Year:</i>		
2013	1	0
2014	0	1
2015	0	2
2016	0	0
<u>2017</u>	<u>0</u>	<u>3</u>
Total	1	6
Average <sup>b</sup>	0.2	1.2
<i>Type:</i>		
Angle	1	4
Rear-End	0	2
Head-On	0	0
Sideswipe	0	0
<u>Fixed Object</u>	<u>0</u>	<u>0</u>
Total	1	6
<i>Lighting Conditions:</i>		
Daylight	0	4
Dawn/Dusk	0	0
Dark (lit)	1	2
<u>Dark (unlit)</u>	<u>0</u>	<u>0</u>
Total	1	6
<i>Pavement Conditions</i>		
Dry	1	3
Wet	0	2
Snow	0	1
<u>Icy</u>	<u>0</u>	<u>0</u>
Total	1	6
<i>Severity:</i>		
Property Only	0	3
Injury Accident	1	1
Fatal Accident	0	0
<u>Other</u>	<u>0</u>	<u>2</u>
Total	1	6

<sup>a</sup>Source: MassDOT, 2013 through 2017.

<sup>b</sup>Average crashes over six-year period.

As can be seen in Table 2, no accidents were identified along the Burpee Road between Buena Vista and Essex Street. However, over the five-year review period a total of 6 motor vehicle collisions were reported at the intersection of Burpee Road at Essex Street, the majority of which involved single-vehicle collisions. The majority of collisions at this location resulted in property damage and one (1) injury accident with no reported fatalities over the review period.



## **PARKING DEMAND ANALYSIS**

A comprehensive field inventory of the existing parking demand was conducted in May and June 2019 along the Burpee Road between Buena Vista and Essex Street. In order to determine the parking demand occurring within study area, a parking demand survey was conducted during a typical weekday (Wednesday, May 22, 2019) and during typical Saturday (June 1, 2019) between the hours of 8:00 AM to 8:00 PM. The parking observations were completed in 30-minute intervals during each observation period and identified the number of occupied spaces within the parking survey area. Table 3 and Figures 1 and 2 summarize the parking demand observations along Burpee Road on typical weekday and Saturday.

**Table 3**  
**PARKING DEMAND SUMMARY<sup>a</sup>**

Time of day	Typical Weekday (8:00 AM – 8:00 PM)			Typical Saturday (8:00 AM – 8:00 PM)		
	North Side of Burpee Road	South Side of Burpee Road	Total	North Side of Burpee Road	South Side of Burpee Road	Total
8:00:00 AM	2	4	6	2	6	8
8:30:00 AM	3	4	7	2	5	7
9:00:00 AM	2	3	5	2	6	8
9:30:00 AM	2	3	5	2	6	8
10:00:00 AM	2	3	5	2	5	7
10:30:00 AM	4	4	8	2	6	8
11:00:00 AM	5	3	8	2	5	7
11:30:00 AM	7	3	10	4	4	8
12:00:00 PM	3	2	5	4	2	6
12:30:00 PM	6	2	8	3	5	8
1:00:00 PM	7	2	9	4	3	7
1:30:00 PM	3	4	7	3	3	6
2:00:00 PM	2	4	6	3	3	6
2:30:00 PM	3	3	6	4	3	7
3:00:00 PM	3	3	6	4	7	11
3:30:00 PM	3	4	7	4	6	10
4:00:00 PM	2	4	6	4	7	11
4:30:00 PM	2	4	6	4	7	11
5:00:00 PM	4	3	7	4	8	12
5:30:00 PM	4	5	9	3	8	11
6:00:00 PM	5	5	10	4	8	12
6:30:00 PM	2	6	8	5	8	13
7:00:00 PM	3	6	9	4	7	11
7:30:00 PM	3	7	10	3	7	10
8:00:00 PM	3	8	11	3	6	9

As shown in Table 3 and Figures 1 and 2, the parking peak hour during the typical weekday occurs at 8:00 PM when 11 spaces were occupied, including 3 vehicles on the north side of the road and 8 vehicles on the south side. During the typical Saturday the parking peak hour occurs at 6:30 PM when 13 spaces were occupied, including 5 vehicles on the north side of the road and 8 vehicles on the south side. During the weekday, a total of 41 vehicles were observed parking on Burpee Road with 5 vehicles parked 4 hours or longer. During Saturday 39 vehicles were observed parked with 9 vehicles parked 4 hours or longer. Figure 2 summarizes the average hours parked along Burpee Road.



A review of parking indicated that most of the vehicles parked within the study area are from the residences and the children's playground.

## **CONCEPTUAL IMPROVEMENT PLAN**

Based on a review of the existing conditions and roadway constraints, three (3) alternatives were identified for this area. Alternative 1 – Leave as current condition; Alternative 2 – Prohibit on-street parking and improve pedestrian facilities; and Alternative 3– Prohibit on-street parking on one side of the road, provide narrow travel lanes and upgrade sidewalk as needed.

A detailed assessment of each of identified improvement alternatives was completed with respect to their ability to: i) facilitate the efficient flow of vehicles, pedestrians and bicyclists; ii) accommodate traffic flows; and iii) enhance safety. The following summarizes the assessment of the three (3) alternatives:

### **Alternative 1 – Leave as Current Condition**

Currently, Burpee Road is a 22-25 feet wide roadway. In order to accommodate two travel lanes and parking on both side of the street a minimum of 38 feet is desirable. The current roadway width is only sufficient for two-way travel with no parking. While the existing use of the roadway allows for parking and two-way travel it does not have sufficient width to accommodate parking and traffic flow. As such, vehicles partially park on the sidewalk and travel can be limited to an informal alternate one-way flow. Alternative 1 is to allow this condition to remain.

The cost for the Alternative 1 is \$0.00.

### **Alternative 2 – Prohibit Parking and Improve Pedestrian Facilities**

Alternative 2 will enhance traffic flow and improve pedestrian safety along Burpee Road and all improvements are depicted in Figure 3 and would consist of the following:

- Install no parking signage in the area to prohibit on-street parking along both sides of the street which provides adequate width for two-way travel.
- Install double yellow center line along Burpee Road.
- Upgrade pedestrian sidewalks with bituminous curbing and ramps to better adapt wheelchair ramps for ADA compliance, in accordance with MassDOT and Federal design guidelines and standards.

The estimated cost of Improvement Alternative 2 is \$120,000.

**Alternative 3 – Prohibit on-street parking on one side of the road, provide narrow travel lanes and upgrade sidewalk as needed**

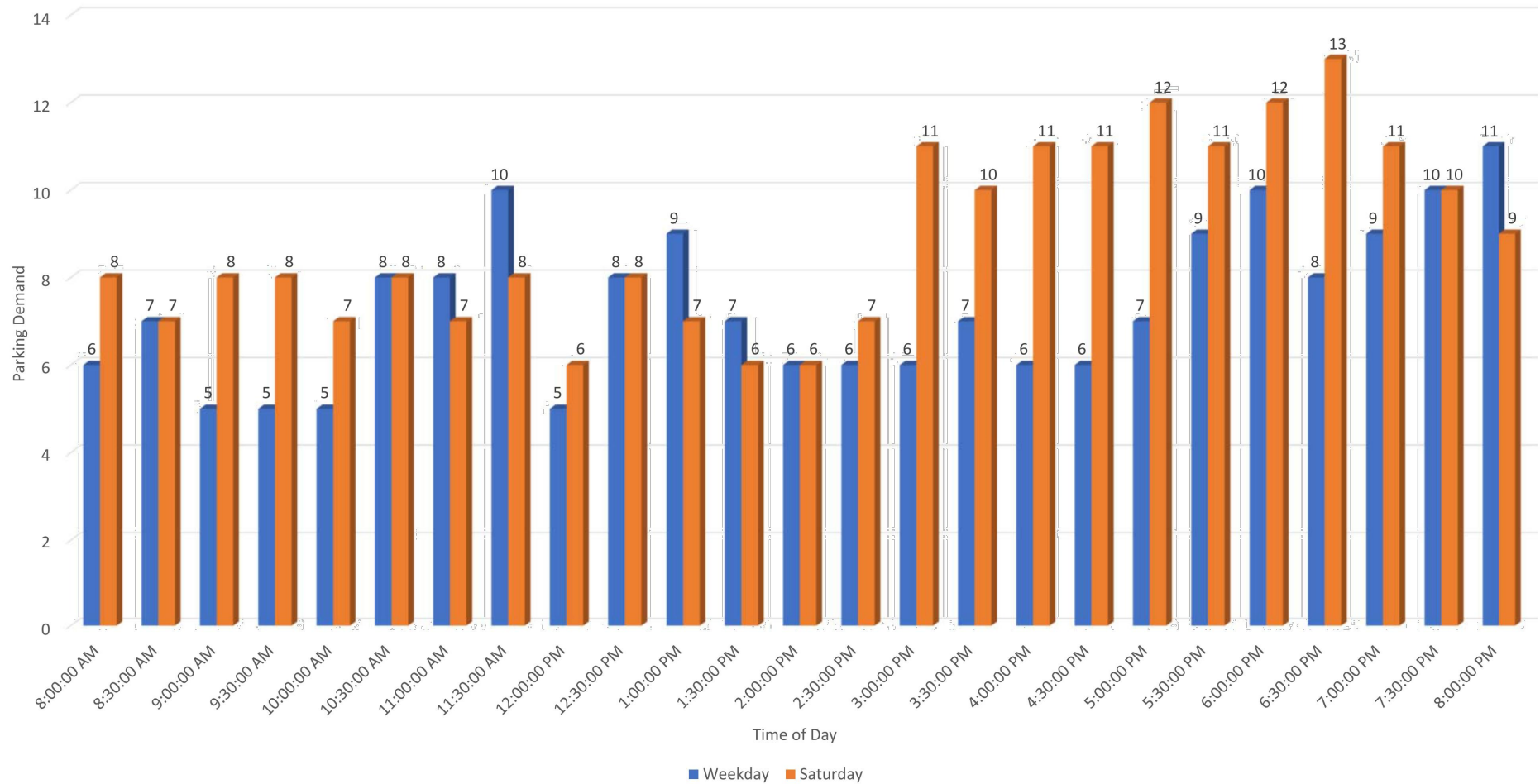
This alternative will enhance traffic flow, provide on street parking spaces and improve pedestrian safety along Burpee Road. These improvements are depicted in Figure 4 and would consist of the following:

- Install no parking signage in the area to prohibit on-street parking along the north side of Burpee Road.
- Reconfigure the travel lanes to provide 10-foot wide lanes per direction and a 5' to 6' shoulder on the south side of the street to allow on-street parking.
- Install Double Yellow Center Line along Burpee Road.
- Upgrade north side sidewalk with asphalt as depicted on Figure 4.
- Reduce existing south side sidewalk to provide a 5' foot wide asphalt sidewalk with bituminous curbing and ramps to better adapt wheelchair ramps for ADA compliance, in accordance with MassDOT and Federal design guidelines and standards.

The 5'-6' foot shoulder does not provide the desirable 8' foot parking lane but maintains parking, two-way flow and sidewalk on both sides of the street.

The estimated cost of Improvement Alternative 3 is \$120,000.

The estimate includes the costs of pavement markings, signing, new asphalt sidewalks and bituminous curbing as needed and ADA-compliant ramp construction. No drainage improvements were included. Trees on the south side of the street shall be removed to accommodate the sidewalk and shoulder. It is important to note that the cost provided are an estimation based on field review and a more in-depth analysis and surveys are required completed for final costs.



**Figure 1**

**Parking Demand Analysis  
along Burpee Road  
Weekday May 22, 2019  
Saturday June 1, 2019**



# SWAMPSCOTT

ZONE 2		
	Weekday	Saturday
Parked Vehicles	8	5
Average hours parked	2 hours	3.5 hours
Vehicles parking > 4Hours	1	2

ZONE 3		
	Weekday	Saturday
Parked Vehicles	19	14
Average hours parked	1.5 hours	1.5 hours
Vehicles parking > 4Hours	0	0

ZONE 1		
	Weekday	Saturday
Parked Vehicles	4	7
Average hours parked	7 hours	3 hours
Vehicles parking > 4 Hours	3	3

ZONE 4		
	Weekday	Saturday
Parked Vehicles	10	13
Average hours parked	2 hours	3.5 hours
Vehicles parking > 4Hours	1	4

BUENA VISTA STREET

BURPEE ROAD

BURPEE TERRACE

ESSEX STREET

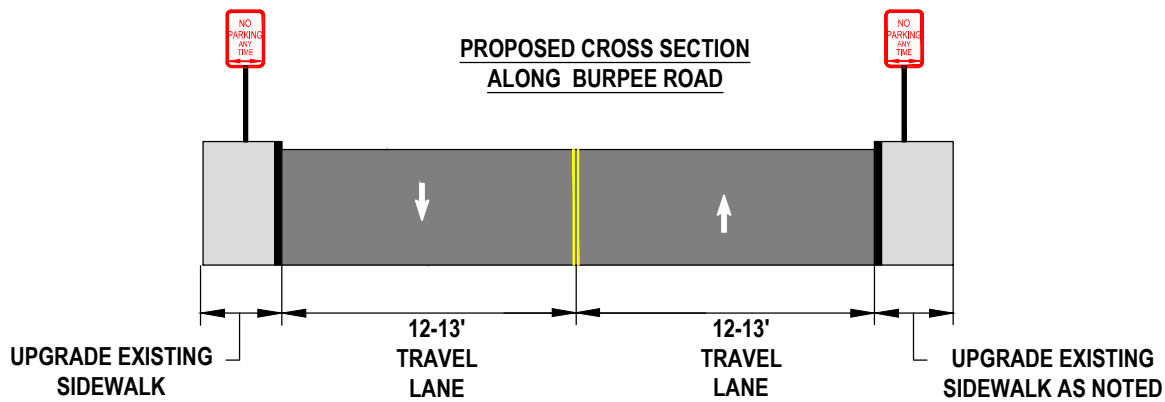
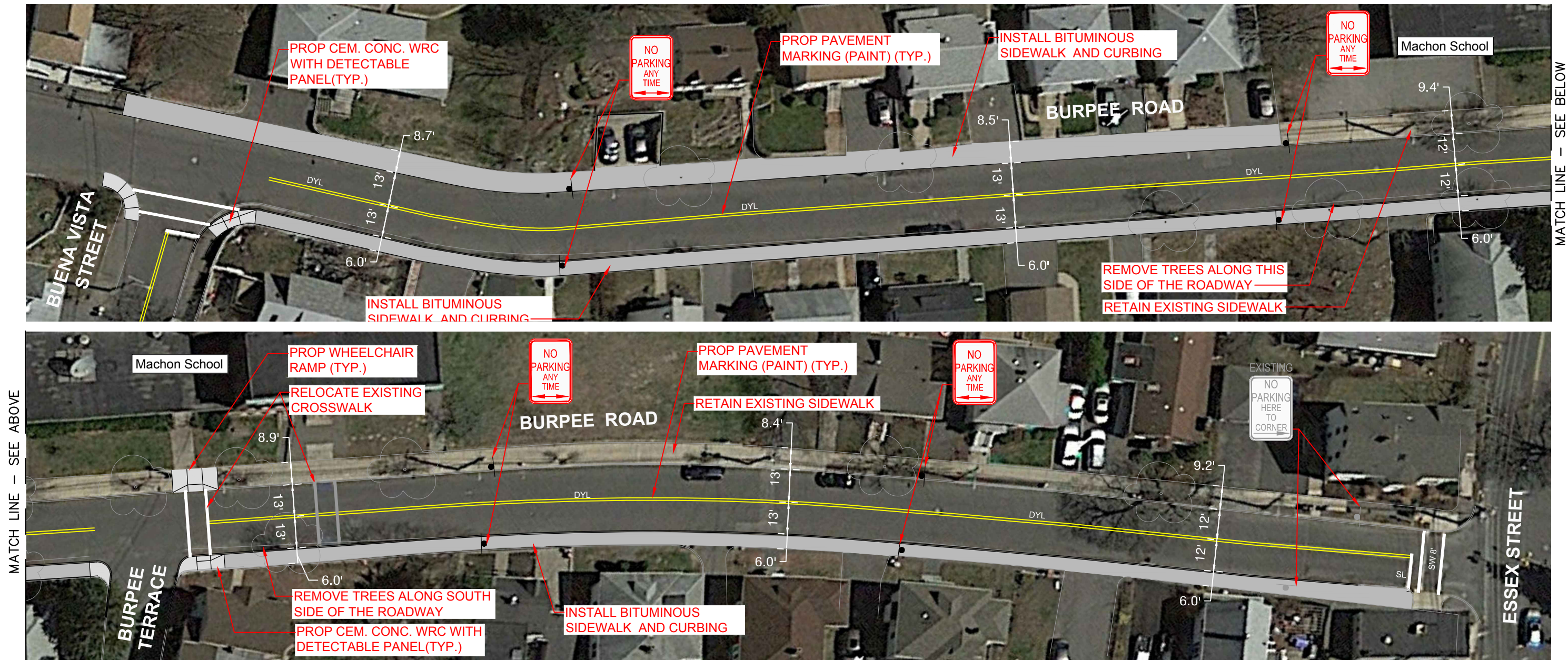
Source: Google Earth.

0 80 160 Scale in Feet

Figure 2

Parking Analysis  
Weekday and Saturday  
8:00 AM - 8:00 PM





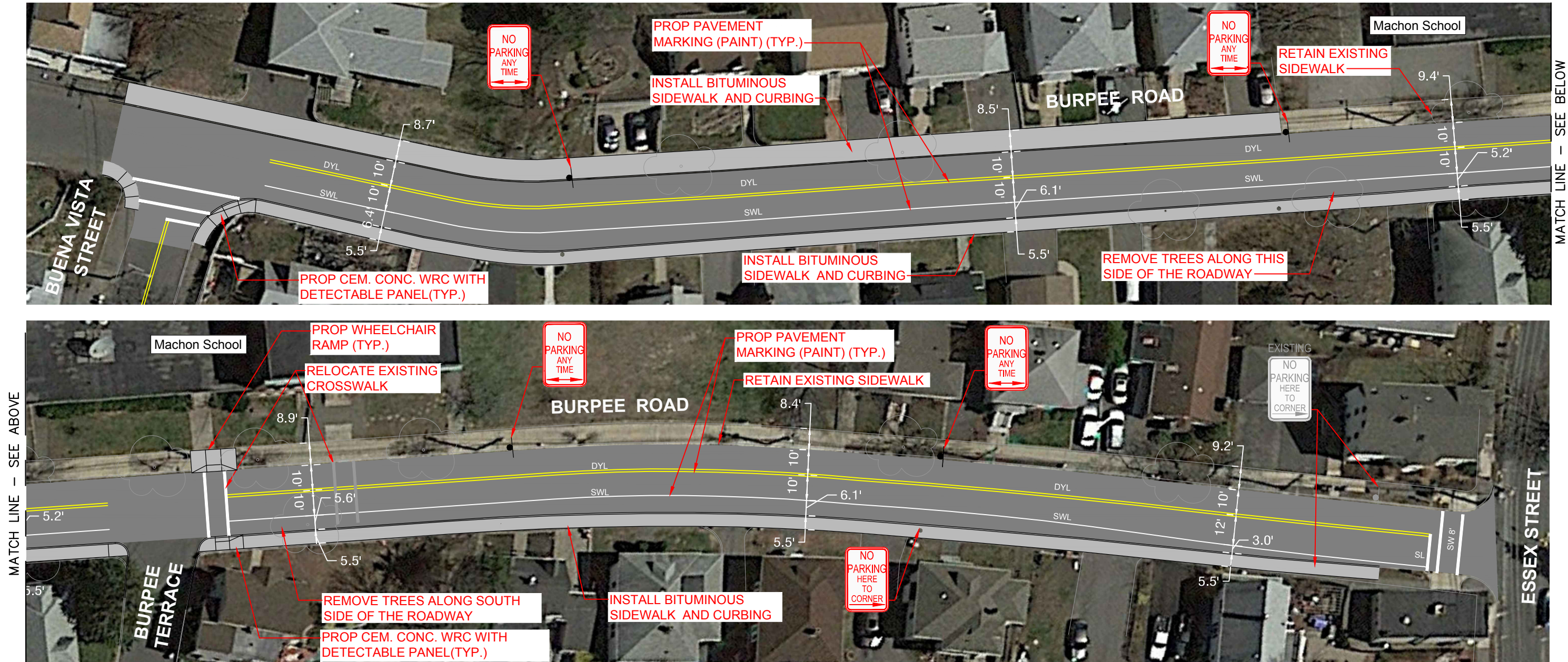
- NOTES: 1. THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION. SURVEY ON THE FINAL PLAN IS REQUIRED.
2. BASE PLAN INFORMATION OBTAINED FROM GOOGLE AND SURVEY WOULD BE NEEDED FOR DESIGN.
3. DRAINAGE IMPROVEMENTS NOT INCLUDED.

Source: Google Earth Aerial.  
0 20 40 Scale in Feet

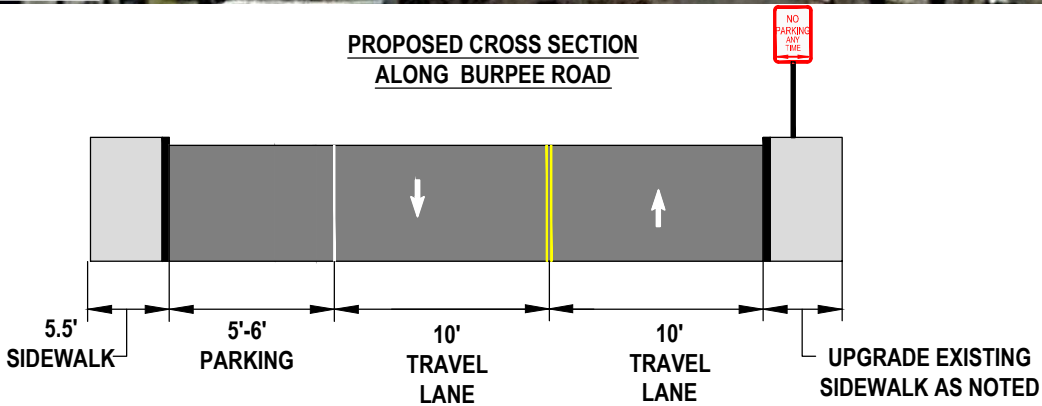


**Figure 3**  
**Conceptual Improvement Plan**  
**Alternative 2**





**PROPOSED CROSS SECTION  
ALONG BURPEE ROAD**



- NOTES: 1. THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION. SURVEY ON THE FINAL PLAN IS REQUIRED.
2. BASE PLAN INFORMATION OBTAINED FROM GOOGLE AND SURVEY WOULD BE NEEDED FOR DESIGN.
3. DRAINAGE IMPROVEMENTS NOT REQUIRED.

Source: Google Earth Aerial.  
0 20 40 Scale in Feet



**Figure 4**  
**Conceptual Improvement Plan  
Alternative 3**

APPENDIX  
PARKING SURVEY

---

## PARKING SURVEY

Weekday May 22, 2019					
Time of permanence					
	Zone 1	Zone 2	Zone 3	Zone 4	Grand Total
1			1		1
2				6.5	6.5
3				1	1
4			1.5		1.5
5			1.5		1.5
6		9			9
7		0.5			0.5
8			3		3
9		0.5			0.5
10			1.5		1.5
11			0.5		0.5
12		0.5			0.5
13		1			1
14				1	1
15		0.5			0.5
16				2.5	2.5
17			1		1
18			1.5		1.5
19	3				3
20			1.5		1.5
21		1.5			1.5
22	6				6
23			1.5		1.5
24			1		1
25	10.5				10.5
26			1.5		1.5
27			1		1
28			1		1
29				0.5	0.5
30				2.5	2.5
31	7.5				7.5
32				1	1
33				0.5	0.5
34			2		2
35			0.5		0.5
36		1.5			1.5
37			0.5		0.5
38			1.5		1.5
39				2	2
40			0.5		0.5
41				0.5	0.5
time	6.8	1.9	1.3	1.8	2.0
minutes	7.0	2.0	1.5	2.0	3.0

Hours  
Hours

Weekday May 22, 2019					
Vehicles per Zone					
Time	Zone 1	Zone 2	Zone 3	Zone 4	Grand Total
8:00:00 AM	2	1	1	2	6
8:30:00 AM	2	2	1	2	7
9:00:00 AM	2	1	1	1	5
9:30:00 AM	2	1	1	1	5
10:00:00 AM	2	1	1	1	5
10:30:00 AM	2	1	3	2	8
11:00:00 AM	2	1	4	1	8
11:30:00 AM	2	3	4	1	10
12:00:00 PM	1	1	2	1	5
12:30:00 PM	1	1	5	1	8
1:00:00 PM	1	1	6	1	9
1:30:00 PM	3	1	2	1	7
2:00:00 PM	3	1	1	1	6
2:30:00 PM	2	1	2	1	6
3:00:00 PM	2	1	2	1	6
3:30:00 PM	3	1	2	1	7
4:00:00 PM	3	1	1	1	6
4:30:00 PM	3	1	1	1	6
5:00:00 PM	2	1	3	1	7
5:30:00 PM	3	1	3	2	9
6:00:00 PM	3	2	3	2	10
6:30:00 PM	2	1	1	4	8
7:00:00 PM	2	2	1	4	9
7:30:00 PM	2	2	1	5	10
8:00:00 PM	2	2	1	6	11
Grand Total	54	32	53	45	184
%	29%	17%	29%	24%	

Permanece	Vehicles
0.5	11
1	9
1.5	10
2	2
2.5	2
3	2
6	1
6.5	1
7.5	1
9	1
10.5	1
Grand Total	41



4      8      19      10  
3      1      0      1

Saturday June 1, 2019					
Time of permanence					
	Zone 1	Zone 2	Zone 3	Zone 4	Grand Total
1				2.5	2.5
2				4.5	4.5
3			1.5		1.5
4			1.5		1.5
5		3.5			3.5
6		8.5			8.5
7			0.5		0.5
8				12.5	12.5
9			2		2
10			0.5		0.5
11	0.5				0.5
12	9.5				9.5
13		6			6
14		0.5			0.5
15	5.5				5.5
16				1.5	1.5
17				3	3
18	5				5
19			2.5		2.5
20			1		1
21			1.5		1.5
22			1.5		1.5
23				2	2
24	0.5				0.5
25				3.5	3.5
26		0.5			0.5
27	0.5				0.5
28			0.5		0.5
29			1		1
30				9.5	9.5
31	0.5				0.5
32			0.5		0.5
33				0.5	0.5
34				5	5
35			2.5		2.5
36				0.5	0.5
37			0.5		0.5
38				2	2
39				0.5	0.5
<b>time</b>	<b>3.1</b>	<b>3.8</b>	<b>1.3</b>	<b>3.7</b>	<b>2.7</b>
<b>minutes</b>	<b>7.0</b>	<b>2.0</b>	<b>1.5</b>	<b>2.0</b>	<b>3.0</b>

Hours  
Hours

7      5      14      13  
3      2      0      4

Saturday June 1, 2019					
Vehicles per Zone					
Time	Zone 1	Zone 2	Zone 3	Zone 4	Grand Total
8:00:00 AM	1	1	1	5	8
8:30:00 AM	1	1	1	4	7
9:00:00 AM	1	1	1	5	8
9:30:00 AM	2	1	1	4	8
10:00:00 AM	1	1	1	4	7
10:30:00 AM	1	1	1	5	8
11:00:00 AM	1	1	1	4	7
11:30:00 AM	1	1	3	3	8
12:00:00 PM	1	1	3	1	6
12:30:00 PM	3	1	2	2	8
1:00:00 PM	1	1	3	2	7
1:30:00 PM	1	1	2	2	6
2:00:00 PM	1	1	2	2	6
2:30:00 PM	1	2	2	2	7
3:00:00 PM	2	2	2	5	11
3:30:00 PM	3	3	1	3	10
4:00:00 PM	3	3	1	4	11
4:30:00 PM	3	3	1	4	11
5:00:00 PM	3	3	1	5	12
5:30:00 PM	3	2	1	5	11
6:00:00 PM	3	2	2	5	12
6:30:00 PM	3	3	2	5	13
7:00:00 PM	2	2	2	5	11
7:30:00 PM	2	2	1	5	10
8:00:00 PM	2	2	1	4	9
<b>Grand Total</b>	<b>46</b>	<b>42</b>	<b>39</b>	<b>95</b>	<b>222</b>

%      25%      23%      21%      52%

Permanece	Vehicles
0.5	14
1	2
1.5	5
2	3
2.5	3
3	1
3.5	2
4.5	1
5	2
5.5	1
6	1
8.5	1
9.5	2
12.5	1
<b>Grand Total</b>	<b>39</b>